

DRAFT

Candidate Conservation Agreement with Assurances
and
Candidate Conservation Agreement
for

Sagebrush Obligate Assemblage

Greater Sage-grouse (*Centrocercus urophasianus*)
Sage Sparrow (*Amphispiza belli*)
Brewer's Sparrow (*Spizella breweri*)
Sage Thrasher (*Oreoscoptes montanus*)

Shortgrass Species Assemblage

Black-tailed Prairie Dog (*Cynomys ludovicianus*)
Mountain Plover (*Charadrius montanus*)
Burrowing Owl (*Athene cunicularia*)
Ferruginous Hawk (*Buteo regalis*)

Developed in partnership by

U.S. Fish and Wildlife Service
Bureau of Land Management
U.S. Forest Service
Thunder Basin Grasslands Prairie Ecosystem Association

December 31, 2012

Executive Summary

This Candidate Conservation Agreement with Assurances (CCAA) and Candidate Conservation Agreement (CCA) is a combined document (the Agreement or CCAA/CCA) developed in partnership by the U.S. Fish & Wildlife Service (FWS), the Bureau of Land Management (BLM), the Office of Surface Mining Reclamation and Enforcement (OSM), the U.S. Forest Service (USFS), and the Thunder Basin Grasslands Prairie Ecosystem Association—a 501(c)(3) non-profit organization (Association). The Agreement will serve as the landscape-scale umbrella document for conservation measures to be administered by the Association and implemented by its members. A partial framework and precedent for this approach is found in the combined Candidate Conservation Agreement and Candidate Conservation Agreement with Assurances for the Lesser Prairie-Chicken and Sand Dune Lizard developed cooperatively by the FWS, BLM, and Center of Excellence for Hazardous Materials Management dated December 8, 2008. The Agreement also draws on principles embodied in the working agreement among the Wyoming Department of Environmental Quality-Land Quality Division, BLM, USFS, and OSM for surface mining control and reclamation.

Thunder Basin Grasslands Prairie Ecosystem Association is a non-profit, landowner-led organization working to develop a practical, science-based approach to long-term management of private lands within the five northeastern Wyoming counties—Campbell, Converse, Crook, Niobrara, and Weston. The Association formed in 1999 with the objective of addressing the habitat needs of several species of concern within the context of sustainable economic and social activities and preservation of cultural values. An important prerequisite to the long-term conservation of covered species populations and associated habitats is the creation of an environment in which livestock/agricultural producers, extractive industries, and other participants are encouraged to continue their current operations and keep landscapes intact. The Association recognized that addressing the needs of species of concern, one species at a time, was not an effective way to plan for either stewardship or economic objectives. It was also recognized that an association of private landowners working collaboratively would be more effective than each landowner working independently. Incorporated as a 501(c)(3) non-profit organization in 2002, the Association remains committed to using a landscape-scale, ecosystem-based approach to provide for the habitat needs of native species in northeastern Wyoming.

The efforts of the Association's livestock/agricultural producers and extractive industries are inextricably linked and particularly well-suited to implement conservation measures across northeastern Wyoming. Association members control an extensive land area through direct ownership or long-term leases, which facilitates management on a landscape scale. The combination of members focused on livestock grazing and those members representing extractive industries provide a unique synergy and mix of resources for implementing cooperative conservation measures to achieve enhanced habitat conditions for the covered species on a landscape scale. The conservation measures included in this Agreement are above and beyond any regulatory requirements and have been structured to provide incentives and mechanisms to facilitate these cooperative efforts and ensure these conservation measures are successful. Most of the offsite cooperative conservation measures implemented by extractive industries will provide long-term benefits in addition to those provided by habitat reclamation associated with the extractive process. This process encourages voluntary, cooperative conservation measures occurring on enrolled acres across the landscape for the benefit of the covered species.

For the sagebrush obligate species covered in the Agreement—greater sage-grouse (*Centrocercus urophasianus*), sage sparrow (*Amphispiza belli*), Brewer's sparrow (*Spizella breweri*), and sage thrasher (*Oreoscoptes montanus*)—the Agreement builds upon the local and state-wide work done by the Northeast Wyoming Sage-grouse Working Group in 2006 which was later incorporated by the Sage-grouse Implementation Team into the Governor's Executive Order 2011-5 for Greater Sage-grouse Core Area Protection. In addition, range-wide conservation issues identified by the Sage-grouse National Technical Team and the Sage-grouse Conservation Objectives Team were also addressed. These efforts provided the foundational guidelines for sage-grouse and sagebrush habitat conservation. For the covered shortgrass species—black-tailed prairie dog (*Cynomys ludovicianus*), mountain plover (*Charadrius montanus*), burrowing owl (*Athene cunicularia*), and ferruginous hawk (*Buteo regalis*)—pertinent listing decisions and species of concern documentation provided a basis for foundational guidelines.

In addition to allowing for consistent and orderly implementation of a single set of conservation measures across all surface ownerships, the strength of this CCAA/CCA comes from identification and prospective implementation of conservation measures that not only incorporate the above guidelines but also include numerous conservation measures that are above and beyond those envisioned in these foundational documents. The conservation measures contained in this Agreement were developed after a thorough analysis involving both local and regional technical and scientific experts and are intended to be the “gold-standard” for the covered species in northeastern Wyoming.

The purpose of this Agreement is to coordinate the implementation of conservation measures developed with the intent of reducing and/or eliminating known threats to the covered species across enrolled properties in the five counties of northeastern Wyoming. Based on the commingled nature of surface ownership of this area (86% private/State, 14% Federal) and extensive federal sub-surface mineral ownership, effective implementation of conservation measures will require consistent and compatible management across all of the Federal, private and State property ownerships within the coverage area.

The CCAA/CCA approach offers an opportunity for property owners, including livestock/agricultural producers, extractive industries, government and state agencies, and additional partners to voluntarily work together to identify and implement coordinated and collaborative conservation measures for covered species populations and their habitats within the commingled landscape of northeastern Wyoming. CCAA coverage will provide non-federal property owners with assurances, through the Enhancement of Survival permit held by the Association, that neither additional conservation measures nor additional land, water, or resource use restrictions, beyond those voluntarily agreed to, will be required during the period of the Agreement. Using the same set of conservation measures required for CCAA participation, the CCA coverage in this Agreement will provide lessees, permittees, and licensees of federal property, along with owners of non-federal property with a federal nexus, a high degree of certainty that the conservation measures they agree to would be considered in the biological opinion, and thus would significantly reduce the likelihood of additional land use restrictions that might otherwise apply should any of the covered species become listed.

There are two primary objectives of this Agreement. The first is to promote sustainable populations and associated habitat of the covered species in a manner that would remove the need to list the species as threatened or endangered if similar measures were implemented on all other necessary properties in the species' range. Since 2001, the Association and its members have undertaken a series of steps to remove or reduce the need for listing these species in northeastern Wyoming. The Association began by conducting an in-

depth assessment of current habitat conditions and wildlife populations which provided baseline information. Other steps include conducting scientific studies on various management tools, treating over 26,000 acres for annual brome (cheatgrass) control, and monitoring wildlife and vegetation to provide additional baseline information and support adaptive management strategies. In total, the Association has spent over \$2,000,000 from 1999 through 2011 to protect or enhance existing habitat. Association-sourced efforts to date have been designed to protect or enhance existing habitat of the covered species.

The second objective is for property owners to receive appropriate assurances against additional regulatory changes or requirements should the covered species ever be listed under the Endangered Species Act of 1973, as amended (ESA). Non-federal property owners will voluntarily implement proactive conservation measures and agree to manage their property to remove or reduce threats to species at risk of being listed under the ESA. While assurances cannot be provided to property with a federal nexus, implementation of conservation measures through a combined CCAA/CCA should make it much less likely that participating lessees, licensees, and permittees will bear additional conservation burdens. In the event any covered species is listed, the section 7 conference opinion for conservation measures undertaken on federal property would be converted to a biological opinion and include an incidental take statement. This should serve to limit the likelihood of additional requirements on members with property or activities having a federal nexus.

This Agreement is designed so that the Association will issue Certificates of Inclusion (CIs) to members who voluntarily meet agreed-upon conservation measures for enrolled non-federal property where no federal nexus exists. In addition, the Association will issue Certificates of Participation (CPs) to members who voluntarily meet agreed-upon conservation measures for enrolled property where a federal nexus exists. It is anticipated that the conservation measures included in this Agreement will reduce the likelihood of the covered species being listed under the ESA.

Under this Agreement, the FWS will issue to the Association an Enhancement of Survival permit for the covered species pursuant to Section 10(a)(1)(A) of the ESA. Subsequent CIs and CPs will be issued by the Association to participating members contingent on the development of a site-specific program of conservation measures. These individual certificates will be consistent with all activities and conservation measures identified in this Agreement and will describe specific conservation measures that will be implemented on enrolled property to conserve, restore or enhance habitat for the species, as well as to reduce any unfavorable impacts to the species arising from the management and use of this property.

This Agreement is designed to require commitment from all participants as well as to provide flexibility that fits the site-specific needs of the covered species and individual property owners. Each participating member must select five or more conservation measures totaling at least 30 points per 50,000 enrolled acres for each CI or CI/CP entered into from three categories addressing identified threats: habitat fragmentation and destruction, habitat curtailment and other threats, and lack of education. Highest values are associated with on-the-ground conservation measures occurring in close proximity to occupied habitat; measures occurring farther away will receive proportionately reduced values. Participants from various state and federal agencies, environmental NGOs, local experts, and the Association board were asked to rank two factors: 1) the value of each conservation measure to the applicable species, and 2) the likelihood that participating members would choose that conservation measure. A weighting system was developed using these two factors along with the number of species covered under the conservation measure and two factors describing the areal extent of the conservation measure. The value to the species factor was weighted more heavily within the system. A point

value or range of values was assigned to each conservation measure by consensus. The points provided for conservation measures apply to individual participants. In addition, the Association plans to continue its own conservation efforts, which are viewed as beneficial to the entire area.

Where possible, the Association will encourage each participating member to provide for a balance between the two assemblages: sagebrush obligate species and shortgrass species. The Board will monitor individual CIs and CPs as they are developed in order to ensure that no more than 67 percent of the total point value of all conservation measures comes from a single assemblage. If it appears that one assemblage is accumulating too many points, the Board will add a premium to conservation measures from the other assemblage in order to encourage selection of these measures by new participating members.

The innovative conservation system included in this Agreement will encourage participating members to engage in proactive conservation measures by allowing maximum flexibility and cooperation across multiple surface and subsurface ownerships on a landscape scale. This in turn will remove or reduce threats to species at risk of being listed under the ESA.

Table of Contents

Definitions	7
Acronyms.....	9
1 INTRODUCTION	10
1.1 Applicant Information	10
1.2 Strategy, Goals, and Implementation Overview	10
1.3 CCAA Participation.....	11
1.4 CCA Participation.....	11
1.5 Advantages of a Landscape Scale, Multi-species Agreement	12
1.6 Previous Conservation Efforts	14
1.7 Physical Landscape Setting.....	14
1.8 Ownership and Control	16
1.9 Economic Base.....	16
1.10 Land Use	17
2 LEGAL AUTHORITY AND PURPOSE.....	18
3 RESPONSIBILITIES OF THE PARTIES.....	19
3.1 CI and CP Participants.....	19
3.2 Association.....	19
3.3 FWS.....	20
4 ENROLLED LANDS AND COVERED ACTIVITIES	21
4.1 Enrolled Lands	21
4.2 Qualifying Peripheral Enrolled Lands	22
4.3 Covered Activities.....	22
5 SAGEBRUSH OBLIGATE ASSEMBLAGE	23
5.1 Greater Sage-grouse as an Umbrella Species.....	24
5.2 Status, Existing Conditions, and Factors Affecting the Species	25
5.2.1 Sage-grouse	25
5.2.2 Brewer's Sparrow	32
5.2.3 Sage Sparrow	34
5.2.4 Sage Thrasher	36
5.3 Threats, Conservation Measures, Benefits and Monitoring	38
6 SHORTGRASS SPECIES ASSEMBLAGE	47
6.1 Status, Existing Conditions, and Factors Affecting the Species	47
6.1.1 Black-tailed Prairie Dog	48
6.1.2 Mountain Plover	50
6.1.3 Burrowing Owl.....	52
6.1.4 Ferruginous Hawk.....	55
6.2 Threats, Conservation Measures, Benefits, and Monitoring	57
7 RELATIONSHIP OF THE AGREEMENT TO THE FIVE THREAT FACTORS	62
8 INCIDENTAL TAKE	63
8.1 Level of Take.....	64
8.2 Type of Take	64
8.3 Impact of Take	64
8.4 Notification of Take	65

9 ASSURANCES PROVIDED FOR NON-FEDERAL PROPERTY	65
10 ASSURANCES PROVIDED TO NON-FEDERAL PROPERTY OWNERS IN CASE OF CHANGED OR UNFORESEEN CIRCUMSTANCES	65
10.1 Changed Circumstances Provided for in the Agreement	65
10.2 Changed Circumstances not Provided for in the CCAA	67
10.3 Unforeseen Circumstances.....	67
11 PROVISIONS FOR ADAPTIVE MANAGEMENT	68
12 MONITORING PROVISIONS.....	68
13 COMPLIANCE MONITORING.....	69
14 BIOLOGICAL MONITORING	69
15 RESCUE OF COVERED SPECIES.....	69
16 DURATION OF AGREEMENT AND PERMIT.....	69
17 MODIFICATIONS	70
18 MODIFICATION OF THE AGREEMENT.....	70
19 AMENDMENT OF THE PERMIT	70
20 TERMINATION OF THE CCAA	70
21 PERMIT SUSPENSION OR REVOCATION.....	71
22 REMEDIES	71
23 DISPUTE RESOLUTION	71
24 SUCCESSION AND TRANSFER.....	71
25 AVAILABILITY OF FUNDS.....	72
26 NO THIRD-PARTY BENEFICIARIES	72
27 NOTICES AND REPORTS	72
References Cited	

Appendices

- Appendix A: Current Association Membership
- Appendix B: Memorandum of Understanding with USFS and BLM
- Appendix C: Implementation Plan
- Appendix D: Example Certificate of Inclusion and Certificate of Participation
- Appendix E: Sagebrush Obligate Conservation Measures
- Appendix F: Shortgrass Species Conservation Measures
- Appendix G: Local Seasonal Sage-grouse Habitat Parameters
- Appendix H: List of Contacts

Definitions

“Avoid” is used to indicate minimizing to the maximum extent possible. It does not infer that a specific action or condition will never occur.

“Adaptive management” is a method for examining alternative strategies for meeting measurable biological goals and objectives based on monitoring of current management, and then, if necessary, adjusting future conservation management actions according to what is learned.

“CCA participant” is any non-federal property owner with CCAA coverage who also holds a lease, license, permit, contract or other instrument with a federal agency and volunteers to enroll in the CCA.

“Changed circumstances” are those changes in circumstances that can reasonably be anticipated and planned for in the Agreement.

“Conservation measures” are the land management actions set forth in this Agreement.

“Coverage area” is the five northeastern Wyoming counties of Campbell, Converse, Crook, Niobrara, and Weston.

“Covered species” includes four sagebrush obligates: greater sage-grouse (*Centrocercus urophasianus*; hereafter *sage-grouse*), sage sparrow (*Amphispiza belli*), Brewer's sparrow (*Spizella breweri*), sage thrasher (*Oreoscoptes montanus*); and four shortgrass species: black-tailed prairie dog (*Cynomys ludovicianus*), mountain plover (*Charadrius montanus*), burrowing owl (*Athene cunicularia*), and ferruginous hawk (*Buteo regalis*).

“Deferment” is a period of non-grazing during part or all of the growing season.

“Federal nexus” occurs when a federal agency funds, authorizes or carries out a program or project on private or federal lands, including the issuance of permits and licenses.

“Go-back land” is land that was once cultivated and that is allowed to go back to whatever will volunteer on it. There is usually a progression of vegetative species, depending on extent of cultivation.

“Grazing management plan” is a strategy that outlines manipulation of the grazing animal to meet desired objectives and includes such details as habitat objectives, livestock numbers, in/out dates, range improvements, supplemental forage, monitoring specifics, drought/post-drought management, etc..

“Lek” is a traditional courtship display area attended by male sage-grouse in or adjacent to sagebrush dominated habitat. A lek is designated based on observations of two or more male sage-grouse engaged in courtship displays. Sub-dominant males may display on temporary strutting areas but these areas usually fail to become established leks. Therefore, a site where less than five males are observed strutting should be confirmed active for two years before considering the site a lek.

“Map(s)” unless otherwise specified, maps are GIS or GPS perimeters of the specified area.

“Non-federal property owner” is a person with a fee simple, leasehold, or other property interest (including owners of water or other natural resources), or any other entity that may have a property interest, sufficient to carry out the proposed management activities, subject to applicable State law, on non-federal land. This would

include states, local governments, tribes, businesses, organizations and private individuals, and includes owners of land as well as owners of other natural resources.

“Occupied habitat” is any area where the species has been observed in at least 1 of the last 10 consecutive years. This is initially based on existing mapping (e.g., core area mapping for sage-grouse, raptor nest mapping, etc.) as modified by on-going data collection (e.g., sage-grouse collaring studies, incidental sightings, pellet counts, nest locations, updated mapping, etc.)

“Occupied sage-grouse lek” is any lek where sage-grouse have been observed in at least 1 of the last 10 consecutive years.

“Participating member” is a member of the Association voluntarily conducting conservation measures under a current Certificate of Inclusion or Certificate of Inclusion/Certificate of Participation.

“Sagebrush” as used for the covered sagebrush obligate species includes all species and sub-species of the genus *Artemisia* except the mat-forming sub-shrub species *frigida* (fringed) and *pedatifida* (birdfoot).

“Sagebrush obligate assemblage” includes the greater sage-grouse (*Centrocercus urophasianus*), sage sparrow (*Amphispiza belli*), Brewer's sparrow (*Spizella breweri*), and sage thrasher (*Oreoscoptes montanus*).

“Shortgrass species assemblage” includes the black-tailed prairie dog (*Cynomys ludovicianus*), mountain plover (*Charadrius montanus*), burrowing owl (*Athene cunicularia*), and ferruginous hawk (*Buteo regalis*).

“Small acreage owner” is a non-federal property owner with less than 40 enrolled acres.

“Suitable sage-grouse habitat” is nesting, breeding, brood-rearing, or winter use areas within the mapped occupied range of sage-grouse with 5% or greater sagebrush canopy as measured by the technique(s) developed by interagency methods. Suitable habitat or occupied leks should be identified using techniques that minimize disturbance to the species.

“Suitable shortgrass species habitat” is vegetative conditions that are known or suspected of providing habitat during important life periods as determined by existing or historical records and/or by habitat assessments.

“Unforeseen circumstances” are those circumstances affecting a covered species that could not reasonably have been anticipated by the parties at the time of the Agreement’s negotiation and development, and that result in a substantial and adverse change in the status of the covered species.

Acronyms

BLM	Bureau of Land Management
CCA	Candidate Conservation Agreement
CCAA	Candidate Conservation Agreement with Assurances
CI	Certificate of Inclusion (for enrolled lands without a federal nexus)
CP	Certificate of Participation (for enrolled lands with a federal nexus)
CBNG	Coal bed natural gas (also coal bed methane)
ESA	Endangered Species Act
NRCS	Natural Resources Conservation Service
OSM	Office of Surface Mining Reclamation and Enforcement
TBGPEA	Thunder Basin Grasslands Prairie Ecosystem Association (also Association)
FWS	United States Fish and Wildlife Service
USFS	United States Forest Service
USGS	United States Geological Survey
WGFD	Wyoming Game and Fish Department

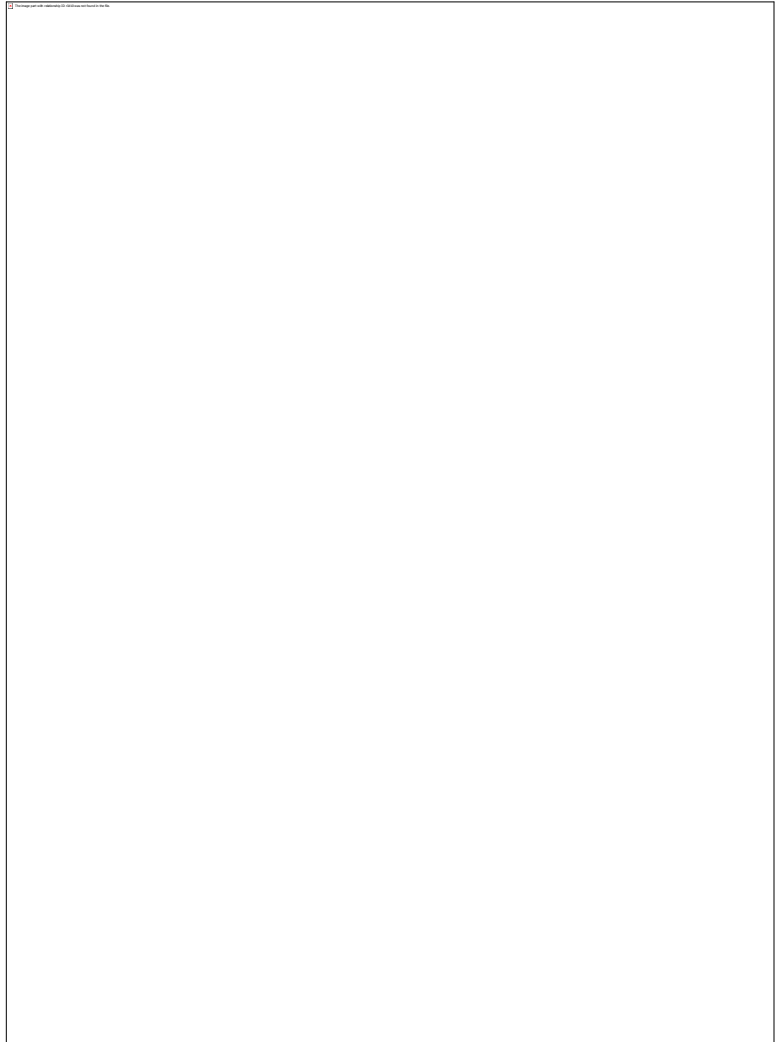
1 INTRODUCTION

1.1 Applicant Information

The Thunder Basin Grasslands Prairie Ecosystem Association (Association) is a non-profit organization which provides private landowner leadership in developing a responsible, science-based approach to long-term management of member's lands. Established in 1999, the Association was incorporated as a non-profit organization in 2002. Each member of the Association seeking coverage under this Agreement must be a non-federal property owner within the five northeastern Wyoming counties of Campbell, Converse, Crook, Niobrara, and Weston. The five county area is outlined in red on the map to the right. The 945,000 acre assessment area is shaded in red and shown as well.

Current membership includes 16 livestock/agricultural producers and 6 energy production companies (see Appendix A). All 6 energy companies have private land holdings within the coverage area.

The Association also recognizes the need for consistent and compatible land management across all of the federal, private and state land ownerships within the coverage area. Acknowledging both the inter-relationships among private, state, and federal lands, and existing gaps in information, the Association has negotiated a Memorandum of Understanding with the U.S. Forest Service (USFS) and Bureau of Land Management (BLM) in order to facilitate joint project work and information sharing throughout the Thunder Basin (see Appendix B).



1.2 Strategy, Goals, and Implementation Overview

Over the last ten years the Association has focused its efforts on addressing the habitat needs of species of concern within the coverage area in balance with the need for sustainable economic and social activities and preservation of cultural values. During the past two years, the Association has actively worked to facilitate and receive protection for its members through an agreement with the U.S. Fish and Wildlife Service (FWS).

There are two primary objectives of this Agreement. The first is to promote sustainable populations and associated habitat of the covered species in a manner that would remove the need to list the species as threatened or endangered if similar measures were implemented on all necessary properties. Covered species will initially include eight species. Four are sagebrush obligates: greater sage-grouse (*Centrocercus urophasianus*), sage sparrow (*Amphispiza belli*), Brewer's sparrow (*Spizella breweri*), sage thrasher (*Oreoscoptes montanus*); and four are shortgrass species: black-tailed prairie dog (*Cynomys ludovicianus*), mountain plover (*Charadrius montanus*), burrowing owl (*Athene cunicularia*), and ferruginous hawk (*Buteo regalis*). The second objective is for landowners to receive appropriate assurances against additional regulatory requirements should the covered species ever be listed under the Endangered Species Act of 1973, as amended (ESA).

Under this Agreement, the FWS will issue to the Association an Enhancement of Survival permit for the covered species pursuant to Section 10(a)(1)(A) of the ESA. Subsequent CIs and CPs will be issued by the Association to participating members contingent on the development of site-specific conservation measures. These individual voluntary agreements will be consistent with all activities and conservation measures identified in this Agreement and will describe each ownership and specific conservation practices that will be maintained or implemented on enrolled lands to conserve, restore or enhance habitat for the species, as well as to reduce any unfavorable impacts to the species arising from the management and use of this property. For more information on how the Association will administer the CIs and CPs, please see Appendix C.

1.3 CCAA Participation

A Candidate Conservation Agreement with Assurances (CCAA) is an agreement between the FWS and any non-federal property owner who voluntarily agrees to manage their lands to remove or reduce threats to species at risk of becoming listed as threatened or endangered under the Endangered Species Act. In return, the Federal Government provides assurances by agreeing that, during the term of the permit or certificate of inclusion, it will not seek further commitments of resources or additional conservation measures from the non-federal property owner if any of the covered species are ever listed under the ESA. Certificates of Inclusion with assurances will be issued by the Association to members who voluntarily implement agreed-upon conservation measures for enrolled private lands where no federal nexus exists. For more information on how the Association will administer the CIs, please see Appendix C.

1.4 CCA Participation

Using the same set of conservation measures required for CCAA participation, the Candidate Conservation Agreement (CCA) coverage in this Agreement will provide lessees, permittees, and licensees of federal property, along with owners of non-federal property with a federal nexus, a high degree of certainty that the conservation measures they agree to will be considered in the biological opinion. In the event any covered species is listed, the section 7 conference opinion for conservation measures undertaken on federal property would be converted to a biological opinion and include an incidental take statement. This should serve to protect participating members from additional land use restrictions on property with a federal nexus.

Since the conservation measures in this document are the “gold standard” for northeastern Wyoming and meet the high bar required by the FWS to provide assurances for CCAA coverage, by signing this

Agreement, the BLM and USFS have agreed they are not likely to impose additional stipulations pertaining to the covered species through any lease, license, permit, contract or other instrument upon members participating in this Agreement. However, this waiver of additional stipulations applies only to participating members who remain in good standing with the Association and continue to meet the requirements of their CPs. Unless other written arrangements have been made, good standing means paying annual dues within 60 days of receipt of invoice. A lapse of membership shall allow BLM and/or USFS to apply any additional stipulations prospectively from when membership ceased. The Association agrees to notify the BLM and/or USFS no later than 15 days after a CCA participant drops their membership. Language acknowledging this Agreement will be included in Resource Management Plans and Land and Resource Management Plans covering the five county Agreement area when they are revised or amended.

Certificates of Participation without assurances will be issued by the Association to members who voluntarily meet agreed-upon conservation measures for enrolled property where a federal nexus exists. These CPs will be administered similarly to the CIs for non-federal property without a federal nexus. For more information on how the Association will administer the CPs, please see Appendix C.

Although not required by the ESA, prior to the approval of this Agreement, the FWS will issue a section 7 “conference opinion” pursuant to section 7(a)(4) of the ESA to identify and resolve potential conflicts between the proposed action and the covered species (in this case the federal actions are the approval of this agreement between three Federal agencies and a non-governmental entity; and the potential issuance of a section 10(a)(1)(A) permit for the CCAA, should any covered species be listed at some time in the future). Any federal agency has the option of conducting a 7(a)(2) conference for non-listed species to ensure that the actions they authorize, fund, permit, or carry out are not likely to jeopardize the existence of those species.

The FWS supports a proactive approach to conserving candidate species, which may reduce and/or eliminate the need for future protection under the ESA. The FWS will issue a section 7 conference opinion analyzing the potential effects to the covered species from the proposed action and the implementation of conservation measures as identified in this Agreement. A decision to list any of the covered species would be based on the five factor threats analysis required under the ESA. The overall effects of this Agreement and its conservation measures would be considered in the listing determination. Should any species covered under the conference opinion become listed, the FWS would review the conference opinion in coordination with the appropriate federal agencies. If no significant changes have been made in this Agreement or other information used in the conference opinion, the FWS would confirm the conference opinion (as is) as the biological opinion and include an incidental take statement (required for the biological opinion). It is the goal of this Agreement to ensure adequate conservation measures, sufficient adaptive management, and monitoring obligations to allow the conference opinion to be converted into a biological opinion on the effective date of any decision to list any of the covered species.

1.5 Advantages of a Landscape Scale, Multi-species Agreement

The efforts of the Association's livestock/agricultural producers and extractive industries are inextricably linked and particularly well-suited to implement conservation measures across northeastern Wyoming. Either through direct ownership or arrangements of long-term leases, Association members control an

extensive land area that facilitates management on a landscape scale. The combination of members focused on livestock grazing and those members representing extractive industries provide a unique synergy for implementing cooperative conservation measures to achieve enhanced habitat conditions for the covered species. While energy companies will implement conservation measures on lands they control, the vast majority of the area covered by the Agreement is owned by members engaged in livestock grazing. The system of conservation measures included in this Agreement has been structured to provide incentives and mechanisms to facilitate these cooperative efforts and ensure these conservation measures are successful. This process encourages voluntary, cooperative conservation measures occurring on enrolled property across the landscape for the benefit of the covered species.

By working on a landscape scale, the Association seeks to maintain and enhance sustainable populations and associated habitat of the covered species in a manner that would remove the need to list the species as threatened or endangered. Creating an environment in which existing livestock/agricultural producers, extractive industries, and other participants are encouraged to continue their current operations and keep landscapes intact is important to the long-term conservation of covered species populations and associated habitats. The CCAA/CCA approach offers an opportunity for property owners, including extractive industries, government and state agencies, and additional partners to work together voluntarily to identify and implement conservation measures to preserve covered species populations and their habitats within the coverage area.

The area of Wyoming covered by this Agreement is home to one species that is a candidate for listing under the ESA (greater sage-grouse) and additional species of concern including Brewer's sparrow, sage sparrow, sage thrasher, black-tailed prairie dog, mountain plover, burrowing owl, and ferruginous hawk. Recognizing the landscape-scale habitat needs of the greater sage-grouse in particular, the Association has created a strategic partnership among property owners in northeastern Wyoming. This partnership leverages livestock/agricultural producer and energy company resources by securing and enhancing covered species populations and appropriate habitats within a wide landscape (the five county area covers approximately 17,000 square miles) through the enrollment of individual non-federal property owners and CCA participants who agree to meet the CCAA/CCA standards. In the future, this Agreement can be expanded to cover additional species of concern within this landscape. Additional species will be added after species-specific threats have been identified and appropriate conservation measures have been developed and agreed to.

For the sagebrush obligate species, the Agreement builds upon the local and state-wide work done by the Northeast Wyoming Sage-grouse Working Group in 2006 which was later incorporated by the Sage-grouse Implementation Team into the Governor's Executive Order 2011-5 for Greater Sage-grouse Core Area Protection. In addition, range-wide conservation issues identified by the Sage-grouse National Technical Team¹ and the Sage-grouse Conservation Objectives Team² were also addressed. These efforts provided the foundational guidelines for sage-grouse and sagebrush habitat conservation. For the shortgrass species, pertinent listing decisions and species of concern documentation provided a basis for foundational guidelines. In addition to allowing for consistent and orderly implementation of a

¹ Morales et.al. (2011)

² Budd et.al. (2012)

single set of conservation measures across all surface ownerships, the strength of this CCAA/CCA comes from identification and prospective implementation of conservation measures that not only incorporate the above guidelines but also include numerous conservation measures that are above and beyond those envisioned in these foundational documents. The conservation measures contained in this Agreement were developed after a thorough analysis involving both local and regional technical and scientific experts and are intended to be the “gold-standard” for the covered species in northeastern Wyoming.

1.6 Previous Conservation Efforts

Since 2001, the Association and its members have undertaken a series of steps to remove or reduce the need for listing any of the covered species in northeastern Wyoming. These steps included conducting an in-depth assessment of current habitat conditions and wildlife populations which provided baseline information. The initial assessment was followed up with extensive vegetation monitoring and wildlife monitoring in selected locales to provide additional baseline information and support adaptive management strategies. The Association has also conducted a series of research studies to determine the relative benefits of fire, inter-seeding, selected grazing practices, and annual brome (cheatgrass) control—both independently and in various combinations—as management tools for northeastern Wyoming. In addition, the Association has successfully treated over 26,000 acres for annual brome control. Most of these efforts have been focused on protecting or enhancing occupied sagebrush habitat.

While all of the Association-sourced efforts have been designed to protect or enhance existing habitat of the covered species, points for these efforts have not been included in the conservation measure point system except for a few members who may choose to include projects initiated after January 1, 2006 as part of their conservation measures. In total, the Association has invested over \$2,000,000 during the past nine years to protect or enhance existing habitat. To develop funding for these projects, the Association has worked with a wide range of partners including the Natural Resource Conservation Service, State of Wyoming, Wyoming Game and Fish Department, National Fish and Wildlife Foundation, US Fish & Wildlife Service, Sand County Foundation, Sonoran Institute, The Nature Conservancy, Wyoming Wildlife and Natural Resource Trust, Bureau of Land Management, US Forest Service, Peabody Energy, Cloud Peak Energy Resources LLC, and Buckskin Mining Company among others. In addition, several of these partners along with Alpha Coal West, Inc., have contributed to on-going support of the Association.

1.7 Physical Landscape Setting

Located in northeastern Wyoming, the coverage area is recognized as an ecologically significant landscape containing mixed and short-grass prairies and sagebrush ecosystems and supports numerous grassland and sagebrush obligate and associated species of concern. This area falls within Bailey's Temperate Steppe Division of the Dry Domain ecoregion³. Ecoregions are comprised of large areas of similar climate where ecosystems are present in predictable patterns. The defining characteristic of a dry climate is that annual losses of water through evaporation at the earth's surface exceed annual water gains from precipitation. As a result of this overall water deficiency, few permanent streams

³ Bailey (1998)

originate in dry climate zones. Dry climates are the most extensive ecosystem in the world, and occupy one-quarter or more of the earth's land surface.

Climate is typical of a semi-arid, high plains steppe environment with relatively large seasonal and diurnal variations in temperature. Recurring periods of extended drought, sometimes lasting several years, are not unusual. Summers are relatively short and warm, while winters are longer and cold. Away from the mountains, the mean maximum temperature in July ranges from 85 to 95° F⁴. January is typically the coldest month, with mean minimum temperatures ranging from 5 to 10° F. Freezes can occur early in the fall and late in the spring, producing a generally short (average 125 day) growing season. Sunshine dominates approximately 60% of winter days and about 75% of summer days. Spring and summer are the wettest months, although rainfall amounts are highly variable and can be somewhat localized. Relative humidity ranges from 5 to 75%, depending on the season, with an average of 25 to 30% on the warmer summer days. The area is quite windy, with frequent periods of sustained winds from 30 to 40 miles per hour (mph) and regular gusts exceeding 60 mph. Snow typically falls from November through May, with periodic accumulations of more than 10 feet in the mountains and more moderate levels of snowfall and accumulation at lower elevations. The low relative humidity, high percentage of sunshine, and high average winds all contribute to a high rate of evaporation across the area.

Precipitation occurs predominantly during the spring and fall, with approximately 10% in the form of snow. The average annual precipitation measured at the Gillette 9ESE National Oceanic and Atmospheric Administration meteorological station located in the west-central portion of the coverage area was 15.67 inches⁵. May (2.67 inches) and June (2.69 inches) are the wettest months, while January (0.57 inch) and February (0.56 inch) are the driest. Snowfall averages 56.4 inches per year at the Gillette station, with the highest monthly averages occurring in March (10.4 inches) and April (8.4 inches). As is expected in a dry climate, average evapotranspiration of approximately 31 inches of water per year greatly exceeds annual precipitation⁶.

The majority of the coverage area is comprised of high plains and is part of the unglaciated Missouri Plateau subregion of the Great Plains province. The area includes most of the Powder River Basin which is both a geologic structural and a topographic drainage basin. The structural basin is an elongated, asymmetrical syncline approximately 120 miles east to west and 200 miles north to south. It is bounded by the Black Hills on the east; the Casper arch, Bighorn Mountains, and Hardin platform on the west; and the Hartville uplift, and Laramie Range on the south. The northern extent of the structural basin is the Miles City arch, Porcupine dome, and Bull Mountains in Montana⁷. The axis of the structural basin trends from the southeast to the northwest near the western margin of the syncline. The majority of the coverage area is located on the gently dipping eastern limb of the structural basin, with the geological strata in that area dipping gently to the west at 1 to 2 degrees toward the axis of the basin.

The Powder River Basin is drained by its namesake, the Powder River, although it is also drained by other major rivers. The coverage area is located in the headwaters of the Belle Fourche River (Middle

⁴ National Oceanic and Atmospheric Administration (1985)

⁵ Western Regional Climate Center (2008)

⁶ National Oceanic and Atmospheric Administration (1969)

⁷ United States Geological Survey (2009)

and Upper Belle Fourche sub-basins), Cheyenne River (Angostura Reservoir, Antelope, Beaver, Dry Fork Cheyenne, Hat, Lance, Lightning, and Upper Cheyenne sub-basins), Little Missouri River (Upper Little Missouri sub-basin), and Niobrara River (Niobrara Headwaters sub-basin) Basins and includes part of the North Platte River (Glendo Reservoir and Middle North Platte-Casper sub-basins), and Powder River (Little, Middle, and Upper Powder sub-basins) basins.

Broad plains, rolling hills, and tablelands dominate the landscape within the coverage area. Internally drained playas are common in the basin, as are buttes and plateaus capped by sandstone or porcelanite clinker (baked and fused rock resulting from in-place burning of coal deposits during the prehistoric era). Elevations throughout the area range from less than 3,200 feet to more than 6,400 feet above mean sea level. The major river valleys have wide, flat floors and broad floodplains. The drainages bisecting the basin are incised and typically are intermittent (do not flow year-round) or ephemeral (respond only to rainfall or snowmelt events) and, thus, do not provide year-round water sources.

The area is characterized by open high hills and sagebrush-grassland tablelands having intermittent escarpments. Many hills are bisected by drainages that create moderate variations in local relief. The overall topographic trend of hills is roughly northwest to southeast. Covered species are generally found throughout the area except in the forested regions of the Black Hills and Rochelle Hills.

1.8 Ownership and Control

Surface ownership of the coverage area includes 8.5 million acres in private ownership (79 percent), 841,000 acres owned by the State of Wyoming (8 percent) and 1.4 million acres owned by the Federal Government (13 percent). For the Federal Government, 799,000 acres is managed by the Forest Service (7 percent), 646,000 acres is managed by the Bureau of Land Management (6 percent), the Bureau of Reclamation manages 19,000 acres, the National Park Service manages 1,300 acres, and the Corps of Engineers manages 1,000 acres. Approximately 14 percent of the private land subject to this Agreement is adjacent to and often managed concurrently with federal lands within the Thunder Basin National Grassland. These federal lands are administered by the Spring Creek, Inyan Kara, and Thunder Basin Grazing Associations, acting as agents for the USFS. The subsurface estate is of mixed ownership as well, with the Federal Government having, by far, the largest extent of ownership.

1.9 Economic Base

Ranching and energy production (coal, oil and gas) are the main economic activities. The coverage area contains large reserves of oil, natural gas (from both conventional reservoirs and coal beds), and some of the largest surface coal mines in the world, primarily in the Gillette Coalfield. As of 2008, the United States Geological Survey (USGS) estimated that total recoverable coal resources in the Gillette Coalfield were about 77 billion short tons⁸. During 2011, the 12 mines in the area produced over 426 million tons of coal (approximately 39% of the coal mined in the United States) while employing over 6,160 people⁹. Workers employed by the coal industry earned \$81,700 on average (compared to the state-wide average of \$43,400) and coal-based revenue to federal state and local governments approximated \$1.97 billion. In addition, uranium, bentonite, and clinker are mined in the local area¹⁰. The ability to lease

⁸ United States Geological Survey (2008)

⁹ Wyoming Mining Association (2012)

¹⁰ Wyoming State Geological Survey (2003)

federal land for livestock grazing is important to this area economically and culturally, and in most cases is essential to the private landowners.

The Powder River structural basin is one of the richest petroleum provinces in the Rocky Mountain area. As of 2009, the USGS estimated the mean levels of undiscovered oil and non-coal bed natural gas resources in the Powder River Basin as 639 million barrels of oil, 16.6 trillion cubic feet of natural gas, and 131 million barrels of natural gas liquids¹¹. Conventional oil and natural gas (excluding CBNG) have been produced in the Powder River Basin for more than 100 years, with an estimated 500 fields producing oil or natural gas from oil-bearing strata during that period. Depths to conventional gas and oil-bearing strata generally range from 4,000 to 14,000 feet, although some early wells on the Basin margins were as shallow as 150 feet. Coal bed natural gas wells are generally much shallower than conventional gas wells, typically less than 2,000 feet. Coal bed natural gas is naturally occurring methane trapped by water pressure in the coal or by impermeable strata above it. In the Powder River Basin, this gas is primarily biogenic in origin and is generated by large, subsurface, naturally occurring microbial communities residing in the coal¹².

Bentonite, uranium, and clinker also are commercially produced in the coverage area, though to a far lesser degree than the other resources discussed above. Layers of bentonite (weathered volcanic ash) of varying thickness are mined where they are near the surface, mostly along the eastern edges of the area. Most of the uranium resources currently in production or being developed are found in southwestern Campbell and northwestern Converse counties. Localized clinker deposits are mined throughout the area and are used for construction aggregate as well as a road treatment to provide traction during wet weather.

1.10 Land Use

As indicated above, the coverage area supports the private enterprises of energy production and ranching. In addition, the general public uses the Thunder Basin National Grassland and Black Hills National Forest for a variety of recreational uses including, hunting, camping, off-highway travel, bird watching, photography, and rock hunting.

The five county area contains approximately 17,000 square miles. Of this, approximately 2% is forest land which is not used by the covered species. Slightly more than 1% has been disturbed by oil and gas development (46,400 wells using 3 acres disturbance per well), and slightly less than 1% has been disturbed by coal mine development. Note that oil & gas and coal mine numbers do not include all ancillary disturbances such as railroad tracks, access roads, or pipelines. However, almost half of the noted disturbance from energy development has been reclaimed or is in the reclamation process.

In addition, sod was broken on small parcels of land during the homesteading era—primarily the first three decades of the 20th century. Most of these disturbances have returned to some level of native vegetation, although some fields were planted to non-native grasses, such as crested wheatgrass, when farming ceased.

¹¹ Unites States Geological Survey (2006)

¹² Ulrich and Bower (2008)

2 LEGAL AUTHORITY AND PURPOSE

Sections 2, 7, and 10 of the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 *et seq.*, authorize the FWS to enter into this Agreement. Section 2 of the ESA states that encouraging interested parties, through federal financial assistance and a system of incentives, to develop and maintain conservation programs is a key to safeguarding the Nation's heritage in fish, wildlife, and plants. Section 7 of the ESA requires the FWS to review programs that it administers and to utilize such programs in furtherance of the purposes of the ESA. By entering into this Agreement, the FWS is utilizing its Candidate Conservation Programs to further the conservation of the Nation's fish and wildlife. Lastly, section 10(a)(1)(A) of the ESA authorizes the issuance of permits to "enhance the survival" of a listed species.

The Federal Land Policy and Management Act (FLPMA, Section 307, 43 USC 1737), which provides overall direction to the BLM for conservation and management of public lands, allows the BLM to participate in conservation agreements. The BLM manual, Section 6840 ("Special Status Species Management") provides overall policy direction to BLM managers to conserve listed threatened or endangered species on BLM administered lands, and to assure that actions authorized on BLM administered lands do not contribute to the need to list species deemed by the BLM to be "sensitive." Finally, the BLMs "Guide to Agreements" notes that "Cooperative Management Agreements" are typically long-term agreements with other parties interested in joint management of wildlife habitats or other areas.

The National Forest Management Act of 1976, as amended, which provides overall direction to the USFS for conservation and management of public lands, allows the USFS to participate in conservation agreements. The Forest Service Manual, Sections 2600-2670, provides overall policy direction to USFS managers to conserve listed threatened or endangered species on USFS administered lands. Section 2670.12 directs the Forest Service to manage "habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species", to conduct activities and programs "to assist in the identification and recovery of threatened and endangered plant and animal species", and to avoid actions "which may cause a species to become threatened or endangered."

Consistent with the FWS's "Candidate Conservation Agreement with Assurances Final Policy" (64 FR 32726), the conservation goal of this Agreement is to protect and enhance the greater sage-grouse (*Centrocercus urophasianus*), sage sparrow (*Amphispiza belli*), Brewer's sparrow (*Spizella breweri*), sage thrasher (*Oreoscoptes montanus*), black-tailed prairie dog (*Cynomys ludovicianus*), mountain plover (*Charadrius montanus*), burrowing owl (*Athene cunicularia*), and ferruginous hawk (*Buteo regalis*) habitat and populations on non-federal lands within the historic range of the species in northeastern Wyoming. This conservation goal will be met by giving the participating landowners incentives to implement conservation measures in exchange for regulatory certainty concerning land use restrictions that might otherwise apply should these species become listed under the ESA. These measures will also help support the goals of the Northeast Wyoming sage-grouse working group relating to long-term conservation and enhancement of the sagebrush steppe/mixed grass prairie complex in Wyoming¹³.

¹³ Northeast Wyoming Sage-Grouse Conservation Plan (2006)

The purpose of this Agreement is for the FWS, BLM, USFS, and OSM to join with the Association to implement conservation measures for the covered species by preserving and enhancing habitat for these species, while reducing threats that are controllable within the defined coverage area.

3 RESPONSIBILITIES OF THE PARTIES

3.1 CI and CP Participants

To obtain CCAA coverage, interested non-federal property owners must be a member of the Association and must enroll their property by completing and submitting a Certificate of Inclusion (Appendix D), which will include conservation measures that the member commits to. An approved CI will provide landowner protection under the Enhancement of Survival Permit associated with the CCAA if the species is listed.

If a member who has enrolled in the CCAA so desires, they can also become a CCA participant by completing and submitting a Certificate of Participation (Appendix D), which will include the conservation measures that the member commits to.

Conservation measures will increase the existing biodiversity of Association lands through the enhancement of habitat conditions conducive to the covered species. This includes efforts to control invasive species, shrub and understory vegetation management, grazing management, and water resource management, among other measures.

3.2 Association

Implement and administer this Agreement by:

- 1) Encouraging enrollment of landowner members under the CCAA through CIs when their property is occupied by or contains potentially suitable habitat for the covered species.
- 2) Encouraging enrollment of members under the CCA through CPs when areas they hold under a lease, license, or permit with a federal agency are occupied by or contain potentially suitable habitat for the covered species.
- 3) Working with appropriate land management / wildlife professionals and researchers to ensure that conservation measures remain current and incorporate appropriate best management practices.
- 4) Working with participating members to ensure CIs and CPs dealing with sagebrush ecosystems incorporate applicable conservation strategies in the Wyoming Greater Sage-Grouse Conservation Plan (July 2003), the Northeast Wyoming Sage-Grouse Conservation Plan (August 2006), the Sage-Grouse Habitat Management Guidelines for Wyoming (July 2007), and other provisions consistent with this Agreement. Conservation strategies should maintain or enhance, where feasible, the quantity and quality of habitat for the sage sparrow, Brewer's sparrow, and sage thrasher. All applicable CIs and CPs dealing with high structure conservation measures should include drought mitigation strategies.
- 5) Working with landowner members to ensure CIs and CPs dealing with low-structure grassland ecosystems maintain or enhance the quantity and quality of habitat for the mountain plover, burrowing owl, and ferruginous hawk. Where applicable, CIs and CPs covering black-tailed prairie dog habitat

should incorporate plans, processes and incentives to help manage Category 1, 2, and 3 Prairie Dog Management Areas and maintain viable and self-sustaining prairie dog populations by enhancing desirable vegetation and controlling undesirable vegetation (the Category 1 area is designed to provide sustainable habitat for black-footed ferrets, Category 2 areas provide an adequate distribution of prairie dogs and their associated species across the landscape and provide some level of protection against a landscape-wide plague epizootic , and Category 3 areas provide a source for natural dispersal to Category 1 and 2 areas following a plague outbreak and provide a widespread geographic distribution of prairie dog colonies and their associated species across the planning area. See the Forest Service's Prairie Dog Management Strategy and Land and Resource Management Plan Amendment #3 for the Thunder Basin National Grassland for more detailed information.) All CIs and CPs should include conservation strategies to ensure that rangeland health is maintained, especially during drought.

- 6) Continuing to support the management of the Association lands as set forth in the grazing management plans of the Association members.
- 7) Approving and signing CIs and CPs utilizing the conservation measures as given in Appendix E for sagebrush obligates and Appendix F for shortgrass species. All CIs and CPs will be available to the FWS for their review.
- 8) Being the primary party responsible for conducting monitoring activities as specified in this Agreement.
- 9) Working with landowner members to ensure appropriate implementation of the provisions of their individual CIs and CPs.
- 10) Submitting an annual report to the FWS that documents activities implemented under this Agreement, their effects, and effects of activities undertaken in prior years that require multi-year monitoring.

3.3 FWS

The FWS agrees to provide the following administrative and technical assistance to aid the Association in implementing the conservation measures, subject to authorized and appropriated funds:

- 1) Issue a permit to the Association, under section 10(a)(1)(A) of the Endangered Species Act with an initial term of 30 years; opportunity to amend within the initial 30 year term; and renew at the end of the 30 year term. The permit will provide the Association's members, operating in compliance with their individual CIs and CPs, authorization for incidental take of the covered species. For individual CIs, it will provide regulatory assurances should any of the covered species be listed under the ESA in the future. The permit will authorize incidental take of the covered species resulting from otherwise lawful activities on the lands enrolled under CIs and CPs approved by the Association and the FWS. These activities will be specified in each CI or CI/CP as applicable. For CIs, such take would be authorized in the permit under the authority of regulations implementing Candidate Conservation Agreements with Assurances for species federally listed as endangered (50 CFR 17.22(d)) or for species federally listed as threatened (50 CFR 17.32(d)). The CCAA would include the ESA's regulatory assurances set forth at CFR 50 17.22(d)(5). For CPs, in the event a covered species is listed, incidental take coverage provided by the section 7 conference opinion for

conservation actions undertaken on lands with a federal nexus, would likely be converted to a biological opinion (see Section 1.4).

- 2) Review within 60 days those monitoring and other reports submitted by the Association to the FWS for compliance with the terms of the Agreement and associated CIs and CPs..
- 3) Serve as an advisor to the Association and its participating members, providing expertise on the management and conservation of the covered species and providing assistance in coordinating implementation of this Agreement.
- 4) Make every effort to assist the Association in obtaining funds for preserving habitat, monitoring assistance, and/or habitat improvements to achieve the conservation measures and implement monitoring and adaptive management activities outlined in the conservation measures given in Appendices E and F.

4 ENROLLED LANDS AND COVERED ACTIVITIES

4.1 Enrolled Lands

This Agreement applies to all lands in the five eastern Wyoming counties of Campbell, Converse, Crook, Niobrara, and Weston owned or beneficially managed by participating Association members or where members hold a lease, license, permit, or contract with a federal agency. Association members seeking coverage must be willing and able to conduct appropriate conservation measures on properties which lie within the coverage area. This requirement is intended to support the Association's landscape conservation strategy within that particular area.

Association members with extractive mineral projects seeking coverage under this Agreement are encouraged to conduct conservation measures on reclaimed areas either owned or under their management control through the term of the Agreement and/or those lands they own but are not scheduled for energy development. While extractive industries will implement conservation measures on lands they control, the Association recognizes that the vast majority of the area covered by the Agreement is owned by members engaged in livestock grazing.

The NEPA analysis conducted for this Agreement will cover current Association members (approximately 240,000 acres), the potential coal development area¹⁴ and potential oil and gas development area (approximately 350,000 acres each), and other property owners reasonably expected to participate. The Association will notify the FWS if new members desire coverage for large blocks of land or lands with significant impact after the initial NEPA analysis has been completed. Lands with minimal impact (e.g., ranch properties with appropriate grazing management) would require a determination of NEPA adequacy. For lands with significant impact which requires additional NEPA analysis, the CI or CP applicant shall either provide or fund the analysis.

¹⁴ BLM Buffalo Resource Management Plan

Members focused on livestock grazing and those members representing extractive industries provide a unique synergy for implementing cooperative conservation measures to achieve enhanced habitat conditions for the covered species. The system of conservation measures included in this Agreement has been structured to provide incentives and mechanisms to facilitate these cooperative efforts and ensure these conservation measures are successful. This process encourages voluntary, cooperative conservation measures occurring on enrolled acres across the landscape for the benefit of the covered species. When cooperative conservation measures occur, points credited to participating CI or CP holders will be proportional to the resources provided by each partner. These particular areas and associated acres will be defined in signed agreements between the individual ranching landowner and the Association and included as an attachment to the relevant CI or CI/CP.

4.2 Qualifying Peripheral Enrolled Lands

Where Association members own lands outside the coverage area but within 50 miles that can be demonstrated through vegetation and/or habitat baseline assessments to have characteristics that are commensurate with those found within the coverage area, they are considered to qualify for potential enrollment under this Agreement. To allow for appropriate NEPA analysis, Association members desiring coverage must identify peripheral lands by January 31, 2013. By February 28, 2013, the Association and member will conduct an on-site visit and make an initial determination of the similarity of peripheral acreage to the coverage area.

After February 1, 2013, only contiguous lands within 10 miles of coverage boundaries and with minimal impact (e.g., ranch properties with appropriate grazing management) will be considered for peripheral enrollment. These lands will be included in the EA analysis but will require a determination of NEPA adequacy by the FWS prior to enrollment. If necessary, the participating member applying for peripheral acreage shall either provide or fund any additional analysis that may be necessary.

In order to enroll peripheral lands with covered energy activities, the requesting member is required to arrange for or ensure contemporaneous collaboration with agricultural property(s) in the general vicinity. Final enrollment will occur concurrently with the member's full CI or CI/CP process. This requires formal request by the Association member within a CI or CI/CP application that includes documentation of commensurate characteristics, and formal approval by the Association upon favorable review of that application and documentation.

4.3 Covered Activities

Covered activities will be specified in each CI or CI/CP, as applicable. Reasonably associated activities include, but are not limited to, the items set forth below:

1. *General farm operations*: Cultivation of fields; planting, cultivation and harvesting small grain, seed and/or hay crops; irrigation by flooding or sprinklers; construction and placement of watering sources; installation, maintenance, and reconstruction of access roads, fences, and power lines; leasing of fee minerals; agricultural equipment operation; weed control; and construction and maintenance of houses, outbuildings, fences and corrals.
2. *General ranching operations*: Grazing of forage; feeding hay and dietary supplements in feedlots and in pastures; calving and branding operations, including temporary penning of animals; disposal of

dead animals; construction and placement of watering sources; installation of access roads, fences, and power lines; gathering and shipping livestock; general stewardship and animal husbandry practices; leasing of fee minerals; and construction and maintenance of houses, outbuildings, fences and corrals.

3. *Recreation*: Participating members' lands provide numerous recreational benefits for family members and guests, some of whom pay for recreational services by leasing hunting rights or through other mechanisms. For the purposes of this Agreement, the following land use, management and recreational activities are defined as "covered activities:" legal hunting and fishing, use of recreational vehicles both on and off established roads, horseback riding, camping, and hiking.
4. *Oil and gas production activities*: Exploration, construction, operation and maintenance of oil and gas wells, including production facilities, gathering systems, waste water reservoirs, access roads, fences, power lines, and other ancillary activities necessary to produce oil and gas from federal, state and fee mineral leases.
5. *Surface/in-situ mining activities*: Exploration, leasing, construction, operation and maintenance of a surface or in-situ mine. This would include activities such as establishment and utilization of mine facilities; overstripping operations (including drilling and blasting); stockpiling overburden and topsoil; mineral removal (including drilling and blasting); backfilling; grading; establishment and utilization of drainage diversions, sedimentation ponds, waste water reservoirs, haul roads, fences, power lines, and railroads; environmental monitoring activities, reclamation of mined lands, and other ancillary activities necessary to mine minerals from federal, state and fee leases and reclaim associated mined lands. For example, surface coal mining involves progressive sequencing of topsoil salvage, overburden removal, coal removal, backfilling/recontouring, topsoil reapplication, seedbed preparation and reseeded. This results in a void moving progressively through the sequence, with contemporaneous reclamation following in that sequence.

5 SAGEBRUSH OBLIGATE ASSEMBLAGE

The parties to this Agreement recognized that an ecosystem assessment of the designated planning landscape was needed to ensure the most current knowledge of existing conditions across the landscape was available before they determined needed conservation measures. Data for the Thunder Basin Grasslands assessment was collected in 2003 through 2005, and the final report was published in 2008 by the Ecosystem Management Research Institute. This assessment has been supplemented and modified by additional wildlife and vegetation data collected by the Association in 2006 through 2012 and by information contained in the Northeast Wyoming Sage-Grouse Conservation Plan.

Data developed during this phase include GIS maps of the landscape including ecological sites, existing ecological communities, human infrastructure, and political and management boundaries and attribute data and characteristics of each ecological community. To the extent possible, the data, maps and knowledge were acquired from existing sources. Where necessary data, maps and/or knowledge were insufficient, they were generated through research, sampling, or other sources. Knowledge of ecological

relationships, historical disturbances and the status of species were developed using an open process initiated and managed by the Association and involving scientists and natural resource managers.

5.1 Greater Sage-grouse as an Umbrella Species

The Association has developed and is implementing a landscape conservation strategy focused on sagebrush and grassland ecosystems and corresponding wildlife habitat. Specific emphasis on conservation efforts in sagebrush ecosystems is being placed in areas within and adjacent to the sage-grouse core habitat management areas that were recently designated by the State of Wyoming (Figure 1) and lie within the coverage area. In addition, other areas located outside the core areas on member-owned lands within the coverage area that include potential habitat or sign of sage-grouse use in the recent past may be included in efforts to maintain or enhance habitat conditions for this species.

The Association's landscape-wide focus on maintaining and restoring sagebrush habitat to meet the needs of sage-grouse supports inclusion of the other three sagebrush obligate species within this Agreement. Several of these species—including greater sage-grouse (*Centrocercus urophasianus*), sage sparrow (*Amphispiza belli*), Brewer's sparrow (*Spizella breweri*), and sage thrasher (*Oreoscoptes montanus*)—are native to the Thunder Basin area and are listed as "species of concern" by the Wyoming Game and Fish Department. The Association proposes that coverage for all these species under the sage-grouse umbrella approach is supported by the premises and conclusions of the study entitled "Greater sage-grouse as an umbrella species for sagebrush-associated vertebrates"¹⁵. Specifically, this study states:

"Sage-grouse have been advanced as an indicator or umbrella species for other sagebrush-associated species and the sagebrush ecosystem (Dobkin, 1995; Rich and Altman, 2001; Rich et al., 2005). The umbrella species concept is used in conservation planning to protect biodiversity of typically lesser-known taxa (Simberloff, 1998; Caro and O'Doherty, 1999; Andelman and Fagan, 2000; Fleishman et al., 2000, 2001). Roberge and Angelstam (2004, 77) defined an umbrella species as one "whose conservation confers protection to a large number of naturally co-occurring species." The most common criterion in selecting an umbrella species is a broad geographic range, and thus presumed co-occurrence with a large number of other species (Fleury et al., 1998; Simerloff, 1998; Caro and O'Doherty, 1999; Andelman and Fagan, 2000). How well a species or group of species functions as an umbrella depends largely on the objective of the umbrella application. If the objective is to benefit multiple species through improvement of habitats for the umbrella species, criteria in addition to co-occurrence must be considered. First, resource requirements of the umbrella species must overlap with those of other targets of protection. Species with similar geographic distributions but dissimilar land-cover associations may not benefit from habitat management for the umbrella species. Second, management prescriptions appropriate for the umbrella species must also benefit other targeted species. Other criteria used to select umbrella species include a moderate level of prevalence and high sensitivity to human disturbance (Fleishman et al., 2000), sound knowledge of the species' biology and life history (Caro and O'Doherty, 1999), and legal protection (Rubinoff, 2001).

¹⁵ Rowland et.al. (2006)

Based on these criteria, greater sage-grouse hold promise as an umbrella species because they are: (1) closely associated with sagebrush communities across their wide range, and thus co-occur with a host of other shrubland species (Paige and Ritter, 1999; Connelly et al., 2004; Rich et al., 2005); (2) currently neither rare nor ubiquitous (Connelly et al., 2004; Schroeder et al., 2004); (3) sensitive to anthropogenic disturbances (Lyon and Anderson 2003; Aldridge, 2005); and (4) better-studied than most species associated with sagebrush (Rowland and Wisdom, 2002; Connelly et al., 2004). In addition, explicit guidelines for managing habitat for sage-grouse (Connelly et al., 2000) and monitoring their populations (Connelly et al., 2003) have been published.

Rowland¹⁶ found that these species shared substantial habitat with greater sage-grouse: sage thrasher (mean ϕ = 0.57), sage sparrow (mean ϕ = 0.55), and Brewer's sparrow (mean ϕ = 0.50) where mean ϕ values from 0.85 to 0.30 indicated sharing of substantial habitat. With this in mind, the following conservation measures are designed to positively impact sagebrush habitat in ways that will be beneficial to the four sagebrush-obligate covered species. In addition, conservation measures that apply specifically to one or more of these four species are clearly identified.

5.2 Status, Existing Conditions, and Factors Affecting the Species

Sagebrush habitats are becoming increasingly degraded and fragmented due to the impacts of multiple threats, including direct conversion, urbanization, infrastructure (roads, power lines, etc.), wildfire and the change in wildfire frequency, incursion of invasive plants, and nonrenewable and renewable energy development. Many of these threat factors could be exacerbated by effects of climate change, which may influence long-term habitat trends. For sagebrush obligates such as the greater sage-grouse, Brewer's sparrow, sage sparrow, and sage thrasher (species covered by this Agreement), the dramatic decline in sagebrush habitat is of critical concern.

5.2.1 Sage-grouse

The Washington State population of the greater sage-grouse was petitioned to be listed as threatened or endangered in 1999. In May 2001, the FWS determined that listing was warranted but precluded for the Columbia Basin Distinct Population Segment. Under FWS policy, it became a candidate for listing. The entire population of greater sage-grouse was petitioned to be listed as threatened or endangered in 2002 and 2003. In January 2005, the FWS determined that listing of the greater sage-grouse was not warranted. The Idaho District Court set aside the USFWS finding in December 2007 holding that it was tainted and arbitrary. The USFWS performed a second review and in March 2010, the FWS determined that listing of the greater sage-grouse was warranted but precluded due to other, higher priority species. The Gunnison sage-grouse, a distinct but closely related species of grouse inhabiting portions of Colorado and Utah, was designated as a candidate in 2000 but taken off the candidate species list in 2006. A lawsuit challenging that determination was filed in November 2006. In the above-referenced March 2010 finding, the FWS determined that listing of the Gunnison sage-grouse was warranted but precluded due to other, higher priority species. The Wyoming Game and Fish Department¹⁷ identifies the greater sage-grouse on its list of Species of Greatest Conservation Need because populations have declined and critical sagebrush habitats have declined in both quantity and quality. The greater sage-

¹⁶ Rowland et.al. (2006)

¹⁷ Wyoming Game and Fish Department (2006)

grouse is also designated as endangered by the Committee on the Status of Endangered Wildlife in Canada. In-depth information on greater sage-grouse habitat requirements and key aspects of life-history stages are presented in the Wyoming Greater Sage-Grouse Conservation Plan (July 2003), the Northeast Wyoming Sage-Grouse Conservation Plan (August 2006), and Sage-Grouse Habitat Management Guidelines for Wyoming (July 2007). Information provided below is primarily from these documents.

5.2.1.1 Sage-grouse Natural History

While much research has been conducted on sage-grouse, particularly in the last decade, the bulk of the information deals with sage-grouse habitat needs in the western portion of their range including the Great Basin (which covers portions of Nevada, Idaho, Utah, Oregon, and California) and southwestern Wyoming. While it is generally agreed that habitat parameters (structure, cover, etc.) are different in eastern Wyoming, only limited research has been conducted to address which parameters might be appropriate in the region. Local parameters detailed below are drawn from a research study conducted by Thunderbird Wildlife Consulting, Inc. and information gathered by the Association (see Appendix G for local seasonal habitat parameters). More general, in-depth information on greater sage-grouse habitat requirements and key aspects of life-history stages is presented in the Wyoming Greater Sage-Grouse Conservation Plan (July 2003), the Northeast Wyoming Sage-Grouse Conservation Plan (August 2006), and Sage-Grouse Habitat Management Guidelines for Wyoming (July 2007).

Sage-grouse belong to the order Galliformes, family Phasianidae, and subfamily Tetraoninae. There are two species of sage-grouse: greater sage-grouse (*Centrocercus urophasianus*) and Gunnison sage-grouse (*C. minimus*)¹⁸. The latter is a recently recognized species that occurs only within a restricted range in Colorado and Utah. Sage-grouse are native to the sagebrush steppe/mixed grassland complex of western North America and historically occurred in parts of sixteen states and three provinces¹⁹.

Sage-grouse are a landscape-scale, sagebrush obligate species, which means that large, interconnected blocks of sagebrush habitat are essential for sage-grouse survival²⁰. Sagebrush is used as cover and is an important component in their diet throughout the year²¹. Both quantity and quality—varying sagebrush canopy covers, densities and heights, age classes, patch sizes, and moisture availability—of the sagebrush habitat determines suitability for, and productivity of, sage-grouse. Suitable habitat consists of plant communities dominated by sagebrush with a diverse native grass and forb (flowering herbaceous plants) understory²². The composition of shrubs, grasses and forbs varies with the subspecies of sagebrush, the management history, and range site potential.

In eastern Wyoming, most sage-grouse habitat occurs in Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) dominated plant communities. Western wheatgrass (*Pascopyrum smithii*) and needle and thread (*Hesperostipa comata*) are the dominant grass species and the area supports a variety of which are important to sage-grouse survival including common yarrow (*Achillea millefolium*), milkvetch

¹⁸ Connelly et al. (2004)

¹⁹ Connelly and Braun (1997)

²⁰ Patterson (1952)

²¹ Connelly et al. (2009b)

²² Connelly et al. (2004)

(*Astragalus spp.*), littlepod false flax (*Camelina microcarpa*), fleabane (*Erigeron spp.*), buckwheat (*Eriogonum spp.*), curlycup gumweed (*Grindelia squarrosa*), prickly lettuce (*Lactuca serriola*), common pepperweed (*Lepidium densiflorum*), desert biscuitroot (*Lomatium spp.*), phlox (*Phlox spp.*), common dandelion (*Taraxacum officinale*), yellow salsify (*Tragopogon dubius*), and American vetch (*Vicia americana*)²³.

For sage-grouse populations to survive, appropriate seasonal habitat must be available depending on life cycle needs. Research has found that nest success and early brood survival rates are some of the most significant vital rates influencing population dynamics of sage-grouse²⁴. Sage-grouse generally have lower reproductive rates and higher annual survival rates than other species of upland game birds²⁵. They also live longer than most upland game bird species; individual birds four to five years old are common. Annual survival rates for yearling and adult female sage-grouse range from 35 to 85 percent. Male survival rates range from 38 to 54 percent²⁶ which may be related to higher lek predation rates and increased physiological demands due to sexual dimorphism²⁷.

Seasonal habitats occur in a patchwork or mosaic across the landscape. The amount of each seasonal habitat, the vegetative condition, and spatial arrangement determine the landscape's potential for sage-grouse. Throughout the range of sage-grouse, spatial arrangement of these habitats can be an important factor in determining if a population is migratory or non-migratory in nature. In eastern Wyoming, where close interspersions of wintering, nesting, and brood rearing habitat rarely requires large seasonal movements, sage-grouse are essentially non-migratory and may spend the entire year within an area of 10 mi² (27 km²) or less²⁸. Sage-grouse in other regions may be migratory, moving between separate summer and winter areas that may be more than 50 miles (80 km) apart²⁹. In some areas, both migratory and non-migratory populations coexist.

Seasonal movements are likely influenced by site fidelity³⁰ and vegetation requirements. Sage-grouse exhibit a high degree of site fidelity to nesting and early brood rearing habitat, while movement through late summer and early fall habitat appears related to availability of herbaceous vegetation. There is reduced fidelity to winter habitats, but this appears to be related to the availability of sagebrush under a variety of snow depths³¹. The following seasonal habitats are necessary for survival of sage-grouse.

Most breeding occurs on strutting grounds (leks) during March and April, although reneesting hens can return to the lek in May. Leks are generally situated on sites having minimal sagebrush with lower herbaceous height and less shrub cover than surrounding areas. Surrounding stands of sagebrush are used extensively by sage-grouse for foraging, loafing, escape, and protection from predators³². Leks are

²³ Peterson (1970), Barnett (1992), Barnett and Crawford (1994), Drut et al. (1994)

²⁴ Connelly et al. (2009a)

²⁵ Connelly and Braun (1997)

²⁶ Connelly et al. (1994), Zablan et al. (2003)

²⁷ Swenson (1986)

²⁸ Brown and Clayton (2004)

²⁹ Dalke et al. (1963)

³⁰ Fischer et al. (1993)

³¹ Hupp and Braun (1989), Robertson (1991)

³² Patterson (1952), Gill (1965)

generally located close to nesting habitat and may occur on broad ridge tops, old lake beds or playas, areas farmed during the Great Depression or other areas of low sagebrush flats, and disturbed sites such as burns, abandoned well locations, airstrips or roads³³. For non-migratory populations the lek may be an approximate center of their annual range³⁴. Adult females may select suitable nesting habitat prior to breeding, drawing males to the general vicinity, thus creating leks in close proximity to the nesting habitat³⁵. Adult females return to the same area to nest each year³⁶ and may nest within 660 feet (200 m) of the previous year's nest³⁷. Juvenile birds follow hens during their first summer and fall and generally return to these seasonal ranges in subsequent years³⁸, and males return to leks where they have achieved stature in the breeding hierarchy.

On average, most nests are located within 3.9 miles (6.2 km) of the lek. However, nests have been found more than 12.4 miles (20 km) away from the lek³⁹. Slater (2003) found that 75 to 87 percent of nests were located within 3.2 miles (5 km) of the lek in his two study areas in southwest Wyoming. In an analysis of sage-grouse studies conducted in seven areas in Wyoming since the mid-1990s, Holloran and Anderson (2005) found that 45 percent of nests were located within 2 miles (3 km) of the lek where the hen was bred, and 64 percent of the nests were within 3 miles (5 km) of the lek. A collaring study in the Grasslands found that nest locations ranged from 330 feet to 17.6 miles (0.1 to 28.4 km) from the lek and slightly over 87 percent of the nests were within 2 miles (3 km) of the lek⁴⁰. Sage-grouse typically nest under sagebrush⁴¹, but may use other large shrubs as well⁴². In Wyoming, sagebrush in nesting areas ranged from 8 to 14 inches (20 to 36 cm) in height with a canopy cover from 6 to 26 percent⁴³. Wyoming studies indicate sage-grouse select nesting sites where total shrub and dead sagebrush canopy cover and residual grass cover are higher than surrounding areas⁴⁴. Selected sagebrush stands have sagebrush of varying heights with good residual grass under the sagebrush canopy. Areas between the sagebrush have good forb cover while maintaining some grass and litter cover. Live grass heights measured immediately after hatch range from 4 to 9 inches (10 to 23 cm) with residual grass heights from 2 to 6 inches (5 to 15 cm)⁴⁵. Data collected by the Association indicates sagebrush in nesting areas is 6 to 19 inches (15 to 48 cm) tall with a canopy cover from 6 to 27 percent. Live grass screening height ranges from 3 to 9 inches (8 to 23 cm).

Early brood-rearing habitats are used during the chick's first month of life from June to early July. Hens move their brood immediately upon hatching from the nest site to brood-rearing areas. Early brood-

³³ Connelly et al. (1981), Gates (1983)

³⁴ Eng and Schladweiler (1972), Wallestad and Pyrah (1974), Wallestad and Schladweiler (1974)

³⁵ Connelly et al. (2009a), Messmer (2010)

³⁶ Fischer et al. (1993), Holloran (2005)

³⁷ Gates (1983)

³⁸ Schroeder et al. (1999)

³⁹ Hanf et al. (1994), Wakkinen et al. (1992), Lyon (2000), Holloran and Anderson (2005)

⁴⁰ Brown and Clayton (2004)

⁴¹ Patterson (1952), Gill (1965), Wallestad and Pyrah (1974), Schroeder et al. (1999)

⁴² Connelly et al. (1991)

⁴³ Patterson (1952), Holloran (1999), Lyon (2000)

⁴⁴ Holloran (1999), Lyon (2000), Slater (2003), Holloran et al. (2005)

⁴⁵ Holloran (1999), Lyon (2000), Slater (2003)

rearing areas are generally within 1.5 miles (2.4 km) of the nest site, and sage-grouse will stay in these locations for the first 14 to 21 days after hatching⁴⁶. The majority of chick mortality occurs during this period⁴⁷. After the first three weeks, broods may have dispersed five or more miles from the nest. Denser patches of sagebrush in the habitat are used for nesting and the smaller openings and patches of sagebrush with a relatively sparse canopy and a good herbaceous understory are used as feeding sites. Optimum early brood habitat consists of sagebrush stands that are 11 to 32 inches (30 to 80 cm) tall with a canopy cover of 10 to 25 percent and an herbaceous understory of 15 percent grass canopy and 10 percent forb canopy⁴⁸. Insects are crucial during the first ten days post-hatch and can make up to 60 percent of chick diets during this time, remaining an important source of protein throughout the summer⁴⁹. Brood-rearing habitats having a wide diversity of plant species tend to also provide an equivalent diversity of insects that are important chick foods. Data collected by the Thunder Basin Grasslands Prairie Ecosystem Association indicates sagebrush in early brood-rearing areas is 5 to 19 inches (13 to 48 cm) tall with a canopy cover from 0 to 27 percent. Live grass cover in 2008 was 21 to 87 percent and forb cover was 1 to 48 percent.

As summer progresses (mid-July through mid-September) and sagebrush habitats dry and herbaceous plants mature, sage-grouse move to moister areas still supporting succulent herbaceous vegetation⁵⁰. In eastern Wyoming, these areas are generally riparian or moister habitats along streams and draw bottoms: native meadows or irrigated hay and alfalfa meadows adjacent to sagebrush habitats⁵¹ are used where available. Sage-grouse continue to rely on adjacent sagebrush for protection from weather and predators, and for roosting and loafing. In years with good summer precipitation, hens with broods tend to remain dispersed in the upland sagebrush communities where succulent forbs are available until late summer⁵². In more arid years wet meadows, springs and streams are the primary sites that produce forbs and insects necessary for juvenile birds, whose diet shifts from insects to forbs as summer progresses⁵³.

Fall movements to winter ranges are slow and meandering and occur from mid-September to the first major snowfall⁵⁴. Time spent in transitional fall habitat is highly dependent upon weather conditions. As fall precipitation increases and temperatures decrease, sage-grouse move into mixed sagebrush-grassland habitats in moist upland and mid-slope draws where fall green-up of cool-season grasses and some forbs occur. As these areas dry and frost kills grasses and forbs, sagebrush consumption increases⁵⁵. With major snowfall accumulation, sage-grouse move onto winter range.

⁴⁶ Berry and Eng (1985)

⁴⁷ Patterson (1952)

⁴⁸ Sveum et al. (1998)

⁴⁹ Peterson (1970)

⁵⁰ Gill (1965), Klebenow (1969), Savage (1969), Connelly and Markham (1983), Gates (1983), Connelly et al. (1988), Fischer and Reese (1996)

⁵¹ Martin (1970), Connelly and Markham (1983), Connelly et al. (1988)

⁵² Martin (1970), Wallestad (1971), Fischer and Reese (1996), Holloran (1999)

⁵³ Patterson (1952), Klebenow (1969), Peterson (1970), Drut et al. (1994)

⁵⁴ Connelly et al. (1988)

⁵⁵ Patterson (1952)

During winter, sage-grouse feed almost exclusively on sagebrush leaves and buds⁵⁶ and will select relatively tall and large expanses of dense sagebrush. Typical wintering sites have sagebrush 10 to 14 inches (25 to 36 cm) above the snow, with above snow canopy covers from 10 to 30 percent. Data collected by the Association indicates sagebrush in winter areas is 7 to 24 inches (18 to 61 cm) tall with a canopy cover from 10 to 26 percent. Sage-grouse generally return to traditional wintering areas before heavy snowfall. Foraging areas tend to be gentle southwest facing slopes and windswept ridges. On clear, calm nights sage-grouse will roost in open, low sagebrush sites, but during windy periods or snowstorms sage-grouse seek taller shrubs with greater canopy cover. Doherty et al. (2007) identified landscape-scale habitat features that influence sage-grouse winter habitat selection in the Powder River Basin of Wyoming. Sage-grouse selected for large expanses of intact sagebrush in relatively flat terrain and avoided areas with conifer habitat and more rugged terrain.

5.2.1.2 Sage-grouse Distribution

Sage-grouse are native to the sagebrush steppe/mixed grassland complex of western North America and historically occurred in parts of sixteen states and three provinces⁵⁷. Today, the species is present in eleven states (California, Colorado, Idaho, Montana, Nevada, North Dakota, South Dakota, Oregon, Utah, Washington, and Wyoming) and two provinces (Alberta and Saskatchewan.) Greater sage-grouse have been eliminated from small historic ranges in Arizona, Kansas, Nebraska, Oklahoma, and British Columbia and from a larger historic range in New Mexico. Range contractions have occurred throughout the species' range, most notably in Montana, North Dakota, South Dakota, Utah, and Washington⁵⁸.

5.2.1.3 Factors Affecting Sage-grouse

Many factors influence the ability of sage-grouse to survive across their range. In January 2005 the US Fish and Wildlife Service issued a 12-month finding⁵⁹ on a petition to list the greater sage-grouse as threatened or endangered under the Endangered Species Act. As part of that study, the FWS convened an expert panel to identify sage-grouse threats throughout their current range. The 2010 finding reaffirmed these critical threats and identified additional areas of concern⁶⁰. The top five factors identified by the panel in decreasing order of importance were: 1) invasive species, 2) infrastructure related to energy development and urbanization, 3) wildfire, 4) agriculture, and 5) grazing.

While some livestock management methods may be detrimental to sage-grouse habitat, it was not a primary contributor to the 2010 “warranted” determination. The FWS determined the act of grazing was not the actual threat, rather it was some aspects of livestock management and the potential influence it may have on habitat loss, fragmentation, and degradation. Ranch and livestock management can have positive or negative impacts on sage-grouse, depending on the management techniques employed. Some benefits of livestock management may include:

- Maintenance of large tracts of unfragmented and undeveloped land;
- Increased rangeland plant diversity, including perennial grasses and forbs;

⁵⁶ Patterson (1952), Connelly and Markham (1983), Connelly et al. (1988)

⁵⁷ Connelly and Braun (1997)

⁵⁸ Schroeder et al. (2004)

⁵⁹ Federal Register 70:2244-2282

⁶⁰ US Fish and Wildlife Service (2010)

- Weed and invasive species management; and
- Maintenance of productive springs and seeps (Beck and Mitchell 2000, Connelly et al. 2004, Crawford et al. 2004, Cagney et al. 2010).

However, some livestock and ranch management activities can also have negative impacts to sage-grouse by:

- Compacting soils and increasing bare ground, thus increasing the risk of establishing invasive species;
- Installation of water developments in inappropriate locations, which may degrade nesting and brood-rearing habitat or increase the risk of West Nile virus;
- Removing sagebrush to increase forage for livestock, resulting in loss of sage-grouse habitat;
- Over-grazing, decreasing residual cover and beneficial grasses and forbs in nesting and brood-rearing habitat; and
- Installation of fences in certain locations, causing direct mortality to sage-grouse and increasing fragmentation of habitats (Beck and Mitchell 2000, Connelly et al. 2004, Crawford et al. 2004, Cagney et al. 2010).

During their study of sage-grouse in eastern Wyoming, the Northeast Wyoming Sage-Grouse Working Group identified the top five threats in decreasing order of importance as: 1) oil, gas and coal bed natural gas development, 2) weather, 3) vegetation management, 4) invasive plants, 5) parasites and diseases. At the local level, the Association identified the following five threats in decreasing order of importance: 1) invasive species, 2) drought and climate change, 3) inappropriate grazing management, 4) energy development, and 5) predation.

Nest success and early brood survival rates are the most significant vital rates influencing population dynamics of sage-grouse⁶¹. Up to 90% of chick mortality occurs within the first month after hatching⁶², a period which extends from late May to late June. Invasive species, drought and climate change directly impact the quantity and quality of nesting and brood-rearing habitat by displacing perennial grasses and beneficial forbs which are used for screening cover and forage. Cheatgrass (*Bromus tectorum*) is especially detrimental as it not only destroys habitat by displacing forbs and perennial grasses, but also increases the risk of wildfires by providing a highly flammable fuel source leading to larger, hotter, and more common fires. As mentioned earlier, sagebrush is necessary for forage and cover. Wyoming big sagebrush, the most common sagebrush found in the Grasslands, is easily destroyed by fire with reestablishment time frames in excess of 50 years⁶³. Depending on the extent and intensity of the fire, significant areas of habitat can be fragmented or rendered unsuitable either through direct habitat destruction or by making the burned area more prone to subsequent invasion by cheatgrass⁶⁴.

⁶¹ Connelly et al. (2009a)

⁶² Crawford et al. (2004)

⁶³ Lesica et al. (2007)

⁶⁴ Brooks (2004)

5.2.2 Brewer's Sparrow

Brewer's sparrow are often the most abundant bird species in appropriate sagebrush habitats. However, they have experienced significant decline throughout their range during last 10 to 20 years⁶⁵. North American Breeding Bird Survey data for 1966 to 1996 indicates significant and strong survey-wide declines averaging 3.7 percent per year (n = 397 survey routes.) Significant declines are evident in California, Colorado, Montana, Nevada, Oregon and Wyoming with the steepest significant decline evident in Idaho (6.0 percent average per year, n = 39.) These negative trends appear to be consistent throughout the 30-year survey period. Only Utah shows an apparently stable population. Christmas Bird Count data for the U.S. for the period 1959 to 1988 indicates a stable survey-wide trend (0.2 percent annual increase, n = 116 survey circles) and a significantly positive trend in Texas (6.7 percent average annual increase, n = 33.)

The Brewer's sparrow is considered a sensitive species by Region 2 of the USFS and the Wyoming State Office of the Bureau of Land Management. The WGFD (2010) identifies the Brewer's sparrow on its list of species of greatest conservation need as a Native Species of Special Concern and states that populations are stable but vulnerable to impacts from increased industrialization in preferred habitat. In depth information regarding the background and status of the Brewer's sparrow can be found in two recent documents: a conservation assessment prepared by Holmes and Johnson (2005) and a species assessment prepared by Hansley and Beauvais (2004).

5.2.2.1 Brewer's Sparrow Natural History

Brewer's sparrows are small, slim sparrows approximately 5 to 6 inches (12.5 to 15 cm) in length with long, notched tails. Their coloring is subtle with a brown crown, tan/brown back and rump, brown wings, and undersides that are dull white with grayish flanks. Juveniles are similar to the adults but duller in color. Breeding begins in mid-April in the south to May or early June in the north. Clutch size is typically 3 to 4. Reproductive success has been correlated with climatic variation and clutch size, with success increasing in wetter years⁶⁶.

Nests are low (from essentially ground level to about 39 inches above the ground) in sagebrush (preferred) or other shrubs and occasionally cactus. Nests are often higher in taller sagebrush⁶⁷. In southeastern Idaho, nests were found between 8 to 20 inches (20 to 50 cm) above ground in the most dense portion of the shrub and placement may increase in height with progression of season⁶⁸. Reynolds (1981) reported average nest shrub height of 25 inches (65 cm), average nest height of 10 inches (25 cm), and average nest to crown distance of 14 inches (36 cm). Similar values were reported by Rich (1980): 26 inch (66 cm) average shrub height, 11 inch (28 cm) average nest height, and 15 inch (38 cm) average height of cover above nest. In California, nests are sometimes found in vineyards. Brewer's sparrows most often perch in live sagebrush shrubs that are taller and denser than neighboring shrubs⁶⁹.

⁶⁵ Rotenberry et al. (1999)

⁶⁶ Rotenberry and Wiens (1989, 1991)

⁶⁷ Rich (1980)

⁶⁸ Petersen and Best (1985)

⁶⁹ Castrale (1983)

Rotenberry et al. (1999) noted that Brewer's sparrows select shrublands with a shrub canopy height less than 59 inches (150 cm) for breeding habitat. That work noted that shrubs specifically chosen for nesting sites were less than 39 inches (100 cm) in height and had the characteristic of being mostly or entirely alive. Walker (2004) has indicated the species shows a preference for nesting habitat that contains areas of dense sagebrush comprising 25 to 40 percent of ground cover. In Montana, Brewer's sparrows were observed utilizing habitat with as little as 13% ground cover from shrubs⁷⁰. Knick and Rotenberry (1995) observed that habitat selection by Brewer's sparrow in Idaho was negatively correlated to Russian thistle coverage, among other factors. That same study indicated habitat preference for larger shrub patches and relatively low proportion of edge between shrubland and grasslands.

5.2.2.2 Brewer's Sparrow Distribution

Brewer's sparrows winter from the southwest through Baja and Central Mexico⁷¹ often in large, mixed flocks. The northernmost populations move farthest south with southern populations being non-migratory in some areas of the southwestern United States⁷².

Brewer's sparrows can be abundant in sagebrush habitat and will breed in high densities (Great Basin and Pacific slopes), but densities may vary greatly from year to year⁷³. In southeastern Oregon, reported density averaged 0.8 individuals per acre (200 per sq km) but ranged from 0.1 to 2.1 per acre (29 to 533 per sq km)⁷⁴. Dobler et al. (1996) reported densities of 0.2 to 0.3 individuals per acre (50 to 80 per sq km) in eastern Washington. In the Great Basin, density usually ranged from 0.6 to 1.2 per acre (150 to 300 per sq km) but sometimes exceeded 2 per acre (500 per sq km)⁷⁵. Medin (1990) reported breeding density of 0.03 to 0.04 individuals per acre (0.08 to 0.10 per hectare) in shadscale habitat in eastern Nevada. Breeding territory usually averages from 1.5 to 3.1 acres (0.6 to 1.25 ha) and will contract as densities of breeding birds increase⁷⁶. Mean territory sizes reported by Rotenberry et al. (1999) varied from 0.2 to 5.8 acres (0.1 to 2.36 ha).

5.2.2.3 Factors Affecting Brewer's Sparrow

The potential loss or fragmentation of sagebrush habitat is viewed as the principal threat to Brewer's sparrow based on conservation actions recommended by the Wyoming Game and Fish Department as well as regional and national observations by the USFS on several national forests in Colorado⁷⁷ and the Audubon Society Watchlist. The Watchlist also identifies the invasion of exotic plants, especially cheatgrass, as contributing to the decline of sagebrush habitat important to Brewer's sparrow. Walker (2004) has also noted that identification and control of nonnative plants, particularly cheatgrass, as a key recommendation for reducing threats to Brewer's sparrow habitat relative to direct impacts of cheatgrass colonization and indirect effects of increased wildfire fuel and sagebrush impacts. The

⁷⁰ Bock and Bock (1987)

⁷¹ Rotenberry et al. (1999)

⁷² Small (1974), Rotenberry et al. (1999)

⁷³ Rotenberry et al. (1999)

⁷⁴ Rotenberry and Wiens (1980), Wiens and Rotenberry (1981)

⁷⁵ Rotenberry and Wiens (1989)

⁷⁶ Wiens et al. (1985)

⁷⁷ Vasquez (2005)

increasing frequency and intensity of range fires, in association with invasion by exotic annuals such as cheatgrass, pose a significant threat to Brewer's sparrow habitat. Additionally, uncontrolled burns or wildfires can destroy sagebrush and sagebrush habitat. Rotenberry et al (1999) noted that predation by ground squirrels, loggerhead shrikes, ravens and magpies, among others, can represent a negative factor in the breeding success of Brewer's sparrows.

5.2.3 Sage Sparrow

Sage sparrows are a species of concern in the West due to population decline in some regions and the degradation and loss of breeding and wintering habitats. While still common throughout much of the sagebrush country, they are vulnerable to loss and fragmentation of sagebrush habitat and may require large patches for breeding. Sage sparrows can likely persist wherever large areas of sagebrush and other preferred native shrubland exist for breeding and the integrity of native vegetation is maintained. They are likely to return to areas where sagebrush and other native vegetation have been restored.

According to the North American Breeding Bird Survey, sage sparrows showed a significant decline of 4.8 percent average per year from 1966 to 1979 (n = 73) but a significant increase of 2.0 percent average per year from 1980 to 1996 (n = 154)⁷⁸. However, generally low sample sizes make trend estimates unreliable for most states and physiographic regions⁷⁹. The largest numbers of sage sparrows occurred in Idaho, west-central Nevada, northeastern Utah, and southwest Wyoming. Christmas Bird Count data shows a significant decline of 2.1 percent average per year (n = 160 survey circles) survey-wide for the period from 1959 to 1988. The highest average birds per 100 party hours of Christmas Bird Counts from 1959 to 1988 occurred in California (3.30), Arizona (5.21), and New Mexico (11.23)⁸⁰.

The sage sparrow is considered a sensitive species by Region 2 of the USFS and the Wyoming State Office of the Bureau of Land Management. The WGFD (2010) identifies the sage sparrow on its list of species of greatest conservation need as a Native Species of Special Concern and states that populations are stable but vulnerable to impacts from increased industrialization in preferred habitat. In depth information regarding the background and status of the sage sparrow can be found in two recent documents: a conservation assessment prepared by Holmes and Johnson (2005) and a species assessment prepared by Hansley and Beauvais (2004).

5.2.3.1 Sage Sparrow Natural History

Sage sparrows are small songbirds approximately 5 to 6 inches (12 to 15 cm) in length with a gray-brown head; back is buffy brown with dusky streaks; underparts are white, with a central dark spot and dusky streaks on the sides. Juveniles are duller and more heavily streaked. Clutch size usually is 3 to 4, sometimes five and incubation lasts about 13 days. Individual females produce one to three broods annually and reproductive success is greater in wetter years⁸¹. Breeding territory size usually averages about 3.7 to 7.4 acres (1.5 to 3.0 ha) but varies with plants community composition and structure,

⁷⁸ Sauer et al. (1997)

⁷⁹ ibid

⁸⁰ Sauer et al. (1996)

⁸¹ Rotenberry and Wiens (1991)

increasing with horizontal patchiness⁸². In the Great Basin, sage sparrow density is usually 0.2 to 0.8 individual per acre (50 to 200 per sq km)⁸³.

Habitat structure (vertical structure, shrub density, and habitat patchiness) is important to habitat selection⁸⁴. The Audubon Watchlist site notes that the sage sparrows breed in large patches of brush, principally sagebrush, with a minimum requirement of about 320 acres of continuous habitat. Sage sparrow habitat is positively correlated with big sagebrush, shrub cover, bare ground, above-average shrub height, and horizontal patchiness; and negatively correlated with grass cover⁸⁵. Sage sparrows prefer semi-open habitats with shrubs 39 to 78 inches (100 to 200 cm) tall⁸⁶. Nests are found on the ground or in a shrub, up to about 39 inches (100 cm) above ground level⁸⁷. The New Mexico Partners in Flight indicates that prime nesting sites are sagebrush plants with more than 75 percent live material. In the Great Basin, sage sparrows usually nest in living sagebrush—avoiding the southwestern side of the plant—where cover is sparse but shrubs are clumped⁸⁸. Nest placement may be related to density of vegetative cover over the nest, as nests are found higher in taller shrubs⁸⁹. Sage sparrows feed on insects, spiders and seeds (especially in the winter) and will run along the ground stopping to pick up food.

5.2.3.2 Sage Sparrow Distribution

Sage sparrows are found from sea level to 6500 feet (2000 m)⁹⁰ and are strongly associated with sagebrush for breeding. They can also be found in salt-bush brushland, shadscale, antelope brush, rabbitbrush, black greasewood (Colorado), mesquite, and chaparral⁹¹.

Sage sparrows form flocks of 25 to 50 individuals in the winter. Northern breeding populations are long-distance migrants, arriving in the northern part of the breeding range in February to March and vacating most or all of their breeding range for winter. Migrations are more localized in the southwestern part of the range. Populations from the foothills of the Coast Ranges and the western slope of the Sierra Nevada in California are essentially sedentary⁹². Populations in the San Joaquin Valley and northern Mojave Desert are migratory. They migrate uphill in late spring after breeding and in late summer and fall they descend and spread southward and eastward to wintering grounds⁹³.

5.2.3.3 Factors Affecting Sage Sparrow

As is true for most sagebrush obligates, the potential loss or fragmentation of sagebrush habitat is viewed as the principal threat. The Wyoming Game and Fish Department (2005) identified habitat

⁸² Wiens et al. (1985)

⁸³ Rotenberry and Wiens (1989)

⁸⁴ Martin and Carlson (1998)

⁸⁵ Rotenberry and Wiens (1980), Wiens and Rotenberry (1981), Larson and Bock (1984)

⁸⁶ Martin and Carlson (1998)

⁸⁷ Terres (1980)

⁸⁸ Petersen and Best (1985)

⁸⁹ Rich (1980)

⁹⁰ Rising (1996)

⁹¹ Green and Smith (1981), Martin and Carlson (1998), Paige and Ritter (1998), Reynolds (1981)

⁹² Johnson and Marten (1992)

⁹³ *ibid*

fragmentation as a significant threat for sage sparrow. Braun et al (1976) identified a principal threat as habitat loss due to shrub clearing. The Audubon Watchlist website notes that when cheatgrass alters the landscape, sage sparrows abandon traditional breeding sites. The increasing frequency and intensity of range fires, in association with invasion by exotic annuals such as cheatgrass, pose a significant threat to sage sparrow habitat. Additionally, uncontrolled burns or wildfires can destroy sagebrush and sagebrush habitat.

5.2.4 Sage Thrasher

Sage thrashers appear to be stable or increasing throughout much of their range. However, they remain vulnerable where sagebrush habitats are severely degraded or converted to annual grasslands or to other land uses. There is a high probability of sustaining sage thrashers wherever native sagebrush habitats are maintained with high shrub vigor, tall shrubs, horizontal shrub patchiness, and an open understory of bare ground and native bunchgrasses and forbs.

North American Breeding Bird Survey data shows a nonsignificant survey-wide increase from 1966 to 1996 averaging 0.5 percent per year (n = 268 survey routes). Increasing trends were observed in all areas except Idaho (1.0 average nonsignificant decline per year, n = 29) and the Intermountain grassland physiographic region (4.0 average decline per year, n = 26). An even larger significant decline was shown in the Intermountain grassland from 1980 to 1996 (8.8 average per year, n = 22.) Centers of summer abundance occur in the Great Basin, especially in Nevada and southeastern Oregon, and in the Wyoming Basin⁹⁴. The Christmas Bird Count data is stable survey-wide from 1959 to 1988 (n = 161 survey circles), but indicates a significant decline in Texas (2.8 average per year, n = 59) and a significant increase in New Mexico (2.4 average per year, n = 19). Winter abundances are highest in west Texas and southeastern New Mexico⁹⁵.

The sage thrasher is considered a sensitive species by the Wyoming State Office of the Bureau of Land Management. The WGFD (2010) identifies the sage sparrow on its list of species of greatest conservation need as a Native Species of Special Concern and states that populations are stable but vulnerable to impacts from increased industrialization in preferred habitat. In depth information regarding the background and status of the sage sparrow can be found in a species assessment prepared by Buseck et al. (2004).

5.2.4.1 Sage Thrasher Natural History

The sage thrasher is a medium-sized songbird, approximately 8 to 9 inches (20 to 23 cm) in body length with a wingspan of 13 inches (32 cm). Males and females have a brownish gray back with indistinct streaking—especially on the crown, a whitish underside with dark streaking, outer tail feathers tipped white, and wings with thin white wingbars. Clutch size ranges from 1 to 7 but is typically 4 to 5 with incubation averaging 15 days. Individual females produce one to two broods per season. In Oregon, reproductive parameters were not associated with climatic variation⁹⁶. Males are readily detectable during courtship as they sing loudly and conspicuously from the tops of shrubs, and will perform song

⁹⁴ Sauer et al. (1997)

⁹⁵ Sauer et al. (1996)

⁹⁶ Rotenberry and Wiens (1989)

flights low over shrubs. Otherwise, sage thrashers are relatively shy and will drop to the ground when approached. Singing drops off after eggs are laid⁹⁷.

Nests are usually within 39 inches (100 cm) of the ground in the fork of shrubs (almost always sagebrush) although nests are sometimes found on the ground⁹⁸. In southeastern Idaho, sage thrashers nested in clumps of tall big sagebrush with dense foliage overhead. Nests were generally 20 inches (50 cm) below the shrub crown and tended to be on the southeast side of the shrub⁹⁹. Reynolds (1981) recorded mean nest shrub height of 35 inches (89 cm), mean nest height of 7 inches (18 cm), and mean distance between nest and shrub crown of 23 inches (58 cm). For nests placed in shrubs (n = 114 nests), Rich (1980) observed mean nest shrub height of 33 inches (83 cm), mean nest height of 9 inches (23 cm), and mean distance between nest and shrub crown of 24 inches (60 cm). The distance between the nest and the shrub crown is nearly always 23 inches (59 cm) whether the nest is placed on the ground or within the shrub, presumably for optimum shading and shelter¹⁰⁰.

The New Mexico Partners in Flight website notes that areas of sagebrush grassland with dense stands of sagebrush present that are 27 inches (70 cm) or greater in height represents important habitat for the sage thrasher. Cannings (2000) has outlined that sagebrush stands with shrub cover greater than 15 percent, general shrub heights ranging from 12 to 24 inches (30 to 61 cm), with larger individual shrubs more than 40 inches (100 cm) in height providing preferred nesting sites represents important sage thrasher habitat. Similarly, Accounts and Measures for Managing Identified Wildlife (2004) for British Columbia indicates that management areas for sage thrashers should be comprised of 25 to 250 acres (10 to 100 ha) of contiguous shrub-steppe habitat or 500 acres (200 ha) of discontinuous habitat. Those management areas should include a low amount of bare ground (10 to 20 percent), a moderate coverage of shrubs (10 to 30 percent) and contain clumps of multiple large sagebrush plants that exceed 40 inches (100 cm) in height. Castrale (1982) has identified the presence/absence of individual tall sagebrush plants as the most important breeding habitat quality and use factor for sage thrashers.

5.2.4.2 Sage Thrasher Distribution

The sage thrashers range in the United States is Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, New Mexico, Nevada, Oregon, South Dakota, Texas, Utah, Washington and Wyoming. Sage thrashers are positively correlated with the presence of Brewer's sparrow, probably due to similarities in habitat relations¹⁰¹, but do not exhibit the steep and widespread declines evident for Brewer's sparrow¹⁰².

5.2.4.3 Factors Affecting Sage Thrasher

Loss or fragmentation of sagebrush habitat is the principal threat to sage thrasher habitat. The Wyoming Game and Fish Department (2005) identified habitat fragmentation as a significant threat for sage thrasher. The New Mexico Partners in Flight website notes that habitat loss due to shrub clearing is

⁹⁷ Ryser (1985)

⁹⁸ Harrison (1978), Reynolds (1981), Rich(1980)

⁹⁹ Petersen and Best (1991)

¹⁰⁰ Reynolds (1981), Rich (1980)

¹⁰¹ Wiens and Rotenberry (1981)

¹⁰² Sauer et al. (1997)

a principal threat. Paige et al. (1999) have indicated that monotypic stands of cheatgrass comprising the sagebrush understory can interfere with sage thrasher feeding. Several authors have noted that cheatgrass invasions can convert sage thrasher breeding habitats into annual grasslands that are suboptimal at best for thrashers. Wiens and Rotenberry (1981) and Reynolds et al (1999) indicated that in general the abundance of breeding sage thrashers is positively correlated with sagebrush cover and negatively correlated with annual grass cover. Buseck, Keinath and McGee (2004) noted that for Wyoming the invasion of nonnative grasses and forbs is most likely the largest threat to sagebrush steppe habitats and the biggest threat facing sage thrasher populations through reduction or elimination of vital breeding habitat. Although parasitism has been viewed as a threat, several authors, including Rich and Rothstein (1985) have noted that sage thrashers reject cowbirds eggs relatively quickly and are not significantly vulnerable to parasitism. Reynolds (1979) noted that predation by snakes and loggerhead shrikes can be a negative factor in the breeding success of sage thrashers.

5.3 Threats, Conservation Measures, Benefits and Monitoring

For ease of reference, sagebrush obligate threats and associated conservation measures for each of the five threat factor areas—Factor A: The present or threatened destruction, modification, or curtailment of habitat or range; Factor B: Overutilization for commercial, recreational, scientific, or education purposes; Factor C: Disease and predation; Factor D: Inadequacy of existing regulatory mechanisms; and Factor E: Other natural or manmade factors affecting the species' continued existence—have been tabulated below. The factor and sub-factor threat areas are presented vertically in the two left columns. Individual sub-factor threats (if any) are presented horizontally in bold type. Specific conservation measures addressing each threat and the identification key are given in two boxes arranged horizontally below the individual sub-factor threats; page numbers are given below the identification key (e.g., A1a refers to A1 Sagebrush Obligate Conservation Measure A on page 3 in the sagebrush conservation measures). A listing ranked by point value and a detailed presentation of threats associated with each of the five factors, conservation measures and benefits, and required monitoring is given in Appendix E.

TABLE WILL BE REVISED IN FINAL - PLEASE USE SEPARATE INDEX UNTIL THEN

Factor A: Present or Threatened Destruction,	Agricultural Use	Conversion to Agricultural Use	
		A1a page 3	Conduct baseline monitoring and design treatments to bring go-back lands to desired condition and encourage sagebrush-grassland species
		Cutting and Baling or Other Field Activities	
		A2a page 4	Minimize impact for those areas where haying is still occurring by delaying the initiation of cutting and baling activities until 7/31
		A2b page 4	Minimize impact for those areas where haying use is still occurring by utilizing harvest techniques designed to reduce mortality
	Urbanizatio	Subdividing Native Habitats	
	A3a page 5	Commit to preserving the land configuration to benefit sagebrush obligates (no additional fragmentation or alteration of land use, e.g., subdivisions, etc.)	

Factor A: Present or Threatened Destruction, Modification, or Curtailment of		A3b page 5	Allow native grasses, forbs, and shrubs to remain on at least 60 percent of rural homesite acreage to provide connectivity and forage
	Infrastructure	Roads	
		A4a page 6	Close, prepare seedbed, and reseed roads with a native seed mix within 3 miles of sage-grouse lek sites or 1-1/4 mile of suitable passerine habitat
		A4b page 7	Document existing improved and two-track roads and commit to no new roads to be developed within 6/10 mile of suitable sagebrush obligate habitat
		A4c page 7	Implement annual chemical dust control measures for high-use unpaved roadways within suitable sagebrush obligate habitat
		A4d page 8	Establish formal commitments to close improved and two-track roads in suitable sage-grouse habitat from 3/1 - 6/15
		A4e page 8	Establish formal commitments to close improved and two-track roads in suitable passerine habitat from 3/15 - 7/31
	Infrastructure (continued)	Detrimental Facility Siting Due to Lack of Information	
		A5a page 9	Collect information (sighting and pellet count) necessary to maintain and update sagebrush obligate habitat maps and report to the Association for dissemination
		A5b page 9	Conduct sage-grouse collaring studies, genetic testing, or other studies necessary to maintain and update sage-grouse life cycle information and habitat use maps
		High-profile Facilities	
		A6a page 10	Avoid siting facilities within 6/10 mile of sage-grouse leks or other suitable sage-grouse habitats
		A6b page 10	Commit to sage-grouse BMP: bury power lines, marking guy wires, siting facilities to limit raptor use
Fences			
A7a page 11		Selectively remove fences near sage-grouse leks and in suitable sage-grouse habitat to decrease fragmentation	
A7b page 12		Remove unused fences and mark remaining fences to reduce risk of collision by sage-grouse	
A7c page 12		Commit to siting new fences 6/10 mile outside of sage-grouse leks or other suitable sage-grouse habitat using proven methods to limit raptor use	
Windmills			

Factor A: Present or Threatened Destruction, Modification, or Curtailment of	Habitat Conversion	A8a page 12	Retrofit existing windmill pump system and remove windmill towers within 1/4 mile of known sage-grouse lek sites and occupied habitat	
		Human Disturbance		
		A9a page 13	Avoid new surface occupancy within 6/10 mile of leks and disturbance within 6/10 mile of leks from 3/1 - 5/15 between 6 pm and 8 am	
		A9b page 13	Establish site-specific plans for restricting surface disturbance activities from 3/1 - 6/15 within a 3 mile nesting zone around known occupied sage-grouse leks	
		A9c page 14	Limit noise levels to > 10 dBA above ambient measured with a handheld device at the perimeter of known occupied sage-grouse leks from 3/1 - 5/15 from 6 pm to 8 am	
	Habitat Conversion	Habitat Fragmentation		
		A10a page 14	Obtain or donate conservation easements with a minimum 10 year term for intact habitat to be managed specifically for sagebrush obligates	
		A10b page 14	Obtain or provide acreage for use as a grass bank with a minimum 10 year term	
	Habitat Conversion	Habitat Fragmentation (continued)		
		A10c page 16	Protect, enhance or restore sage-grouse habitat linkages between 320 acre minimum blocks of suitable sage-grouse habitat	
		Habitat Fragmentation: Brewer's Sparrow		
		A11a page 16	Map and protect sagebrush stands that contain areas of dense shrubs with 25-40% shrub cover, general shrub heights of 5' or less and significant live shrubs less than 3'	
		A11b page 17	Delineate and protect sagebrush stands or other shrub stands with known Brewer's sparrow nesting activity	
A11c page 17		Identify and enhance suboptimal sagebrush stands to create stands with general shrub heights in the 1.5-5' range and numerous robust plants less than 3'		
A11d page 18		Delineate areas of Russian thistle dominance within or adjacent to active Brewer's sparrow habitat; treat the Russian thistle and replace with sagebrush cover		
Habitat Fragmentation: Sage Sparrow				
A12a page 19		Map and protect sagebrush stands that contain vigorous sagebrush plants with the majority ranging from 2 to 6 feet in height		
A12b page 20		Delineate and protect sagebrush stands or other shrub stands with known sage sparrow breeding activity		
A12c page 20	Identify and enhance suboptimal sagebrush stands to create vigorous stands with heights in the 2 to 6 feet range			

Factor A: Present or Threatened Destruction, Modification, or Curtailment of		A12d page 21	Through plantings and/or acceptable husbandry practices, establish in-fill or peripheral areas of vigorous sagebrush with the majority ranging from 2 to 6 feet in height	
		Habitat Fragmentation: Sage Thrasher		
		A13a page 22	Map and protect sagebrush stands that have shrub cover > 15%, shrub heights 12-24" with significant clumps of larger sagebrush plants > 40"	
		A13b page 23	Delineate and protect sagebrush stands or other shrub stands with known sage thrasher breeding activity	
		A13c page 23	Identify and enhance suboptimal sagebrush stands to create stands with general shrub heights 12-24" with significant clumps of sagebrush plants > 40"	
	Fire	Destruction of habitat by wildfires		
		A14a page 24	Commit to suppressing all wildfires in suitable sagebrush obligate habitat areas occurring within the area covered by the CI	
		A14b page 24	Spray suitable occupied sagebrush obligate habitat burned by wildfires approved herbicide and, if necessary, reseed with a native grass and sagebrush mix	
	Fire (cont)	Destruction of habitat by prescribed fires		
		A15a page 26	Commit to not conducting any prescribed fires within 6 miles of occupied sage-grouse leks and within 1 1/4 miles of known passerine habitat	
		A15b page 26	Use site-specific designs approved by the Association for prescribed burns occurring outside of core areas within 6 miles of known leks or areas used by sagebrush obligates	
	Invasive Plants	Invasive Species		
		A16a1 page 27	Treat annual bromes with approved herbicide within a contiguous block area of at least 160 acres or 10% of landholdings if area is less than 1,000 acres	
A16a2 page 28		In addition to treating annual bromes with herbicide as above, prepare and reseed the area with a native sagebrush obligate focused seed		
A16b page 29		Treat all stands of salt cedar and/or Russian olive within drainage areas, addressing regrowth as necessary		
A16c page 29		Remove pine or juniper (cedar) trees or non-sagebrush shrubs in appropriate areas within 1/4 mile of documented sagebrush obligate habitat		
A16d page 30		Apply mechanical, chemical, or herbivore control methods for invasive plants (other than annual bromes) over a managed area of at least 160 acres		
A16e page 30		Control invasive or noxious weeds across rural homesite acreages through chemical or herbivore treatments to protect forage, nest sites, and migration stop-over habitat		

Factor A: Present or Threatened Destruction, Modification, or Curtailment of		Weed Infestation of Disturbed or Reclaimed Areas	
		A17a page 31	Seed disturbed and reclaimed areas with native seed mix comprised of species present in the adjacent vegetative communities
		A17b page 32	Develop and field test seed mixes comprised of native species suited to specific ecosites that provide competition against invasive species
	Livestock and Wildlife Grazing	Inappropriate Grazing Management	
		A18a page 32	Develop and follow an Association approved grazing management plan which provides high structure on a minimum of 5% of enrolled acres
		A18b page 33	Sponsor an Association approved grazing management plan which provides high structure for a minimum of 5% of sponsor's enrolled acres
		A18c page 33	Develop and follow an Association approved, CI-wide, grazing management plan incorporating objectives for sagebrush obligate habitat and drought mitigation
		A18d page 34	Place attractants (salt, mineral, supplements, fly rubs, etc.) in upland locations which minimize impacts to sagebrush obligate habitat
	Livestock and Wildlife Grazing (cont)	Inappropriate Grazing Management (continued)	
		A18e page 34	Place attractants (salt, mineral, supplements, fly rubs, etc.) at least 1/4 mile away from riparian habitats, springs, seeps, or green areas
		A18f page 34	Manage wildlife numbers and associated habitat conditions in important sagebrush obligate habitat through the use of controlled public hunting access
		Reduction in Nesting Screening Cover	
		A19a page 35	Manage for > 6" residual vegetative height from 4/1 - 6/15 in sage-grouse nesting habitat areas
		Decreased Understory Due to Dense Sagebrush Canopy	
A20a page 36		For brood-rearing areas, utilize chemical or mechanical treatments or focused winter feeding sites in a collective 40 acres of dense (> 35% sagebrush canopy cover with adequate understory)	
A20b page 36		Seed desirable native forb and cool-season grass species in a collective 80 acres of sagebrush stands in suitable sage-grouse habitat areas	
Energy	High Density Oil and Gas Facilities		
	A21a page 37	Limit surface disturbance to 5% or less of suitable sagebrush obligate habitat per 640 acres by reducing drill site area and density	
	Increased Fragmentation and Loss of Suitable Habitat		

		A22a page 38	Commit to multi-well pads or new well pad areas in sagebrush habitat that average less than 80% of average pre-Agreement pad size
		A22b page 38	Commit to utilizing drill pad mats on all level sites in suitable sagebrush habitat
		Poor Quality Reclamation	
		A23a page 39	Operator: Commit to separating topsoil from other soil materials when constructing pipelines or well pad locations, replacing, and seeding with appropriate native seed mix
		A23b page 39	Landowner: Commit to negotiating surface damage agreements that require operators to separate topsoil, replacing the topsoil, and seeding with a native seed mix
		Poor Erosion Protection and/or Controls at Facilities	
		A24a page 40	Commit to appropriate wind and water erosion control of sites, locations, roads, and pipelines
			intentionally blank
		Weed Infestation of Disturbed or Reclaimed Areas	
		A25a page 41	Landowner: Commit to negotiating surface damage agreements that require oil and gas operators to conduct invasive weed control, reclaim with native seed mix
Factor A: Present or Threatened Destruction, Modification, or Curtailment of	Energy Development: Mining	Coal Mine Facility Establishment in Pit Advance Area	
		A26a page 41	Avoid new surface occupancy or new surface disturbance activities within 6/10 mile of known occupied sage-grouse lek sites from 3/1 - 5/15 between 6 pm to 8 am
		A26b page 42	Consider nesting habitat within 3 mile of lek; avoid surface disturbance within 6/10 mile of nests from 3/1 - 5/15 between 6 pm to 8 am
		Herbivore Foraging on Seedling Sagebrush Plants in Reclaimed Areas	
		A27a page 43	Protect re-established early seral sagebrush habitat from overuse by wildlife for the term of the CI or CP
		Lack of Sagebrush / Forb Mosaic in Mine Reclamation	
		A28a page 43	Increase and sustain the extent of sagebrush and forb mosaic re-establishment on mined land reclamation above the minimum required acreage in the permit-to-mine
		Use of Non-native Plant Species in Mine Reclamation	
A29a page 44	Substitute native sagebrush grassland seed mix in lieu of re-establishing the post-mine improved pasture acreage allowed by the approved permit-to-mine		

Energy Development: Wind	Disturbance From Wind Turbines Situated Near Leaks and Other Suitable Habitat	
	A30a page 45	Operator: Site wind turbine facilities > 6/10 mile away from sage-grouse leks and suitable sagebrush obligate habitat
	A30b page 45	Landowner: Establish surface use agreement with the Association requiring wind turbine facilities be sited > 6/10 mile from leks and identified sagebrush obligate habitat
	Noise From Wind Turbines	
	A31a page 46	Operator: Commit to install turbines producing noise levels < 10 dBA of ambient measured at the perimeter of sage-grouse leks or suitable sagebrush obligate habitat
	A31b page 46	Landowner: Establish surface use agreement with the Association requiring any wind developer to install only turbines producing noise levels < 10 dBA above ambient
	Power Lines	
	A32a page 47	Operator: Site distribution and transmission lines > 6/10 mile away from sage-grouse leks and suitable sagebrush obligate habitat
	A32b page 48	Landowner: Establish use agreement with the Association requiring distribution and transmission lines > 6/10 mile from leks and suitable sagebrush obligate habitat
Factor B	No threats were identified for this factor	
Factor C: Disease and Predation	West Nile Virus	
	C1a page 48	Control mosquito larvae in > 75% of surface water within 5 mile radius of sage-grouse leks or a 3 mile radius of identified sagebrush obligate habitat
	C1b page 49	Control mosquito larvae in stock water tanks with larvicide or completely drain tanks that aren't in use from May to September to discourage mosquito breeding
	C1c page 49	Chemically control mosquito larvae in new and used tire storage areas or in junk yards. For any tire recyclers utilized, arrange for application of mosquito larvae controls
	C2a page 50	Control adult mosquitoes through installation of bat houses in appropriate areas utilizing designs that avoid establishment of a raptor perch site
	C2b page 50	Discourage mosquito overwintering and breeding by managing containers and woodpiles (cover, chemically treat, etc.)
	Predation	
	C3a page 51	Remove or routinely burn as permitted existing dumps, landfills, or garbage piles within 4.3 miles of occupied sage-grouse leks or suitable sagebrush obligate habitat

		C3b page 52	Utilize waste disposal options which do not serve as attractants for predators, particularly for areas < 4.3 miles of occupied leks or suitable sagebrush obligate habitat
		C3c page 52	Remove existing brush piles and downed trees within 3 miles of occupied sage-grouse leks and suitable passerine habitat
		C3d page 52	Remove standing dead trees within 1/4 mile of occupied sage-grouse leks
		C3e page 53	Provide surface or aerial access to APHIS Wildlife Services for control of red fox, skunks, and badgers within 3 miles of occupied sage-grouse leks
		C3f page 53	Develop and disseminate public education material on appropriate sage-grouse predator control benefits and methods
Factor D	Local Land Use	On- and Off-road Use of Suitable Habitat	
		D1a page 54	Establish surface use agreement with the Association to prevent recreational vehicle use of lands for specified periods in important sage-grouse habitat
		D1b page 54	Move livestock on horseback or on foot and restrict the use of recreational vehicles and dogs for trailing and herding in suitable sage-grouse habitat from 3/1 - 7/31
Factor D	Local Land Use	Human Disturbance in Near-lek Areas off CI Holder's Property	
		D2a page 55	Minimize human disturbance in a 3 mile nesting buffer zone around occupied sage-grouse lek sites from 3/1 - 6/15 in nesting buffer zones <u>outside the CI area</u>
		Recreational Lek Observations	
		D3a page 55	Manage sage-grouse lek viewing impacts through establishment of lek viewing protocols for lands within the CI area
		Split Estate	
		D4a page 56	Establish a cooperative management plan between surface owner and mineral rights owner that maintains or enhances sagebrush obligate habitats
Factor E: Other Natural or		Lack of Green Vegetation and Insects from 5/15 to 9/15	
		E1a page 57	Develop additional, suitable, quality water sources to facilitate soil saturation while avoiding standing water issues in ephemeral draws in brood-rearing habitat
		E1b page 57	Install and maintain effective snow fences to deposit snow in or adjacent to ephemeral draws to increase soil saturation within documented brood-rearing areas
		E1c page 58	Install and maintain water detention structures in ephemeral draws to increase soil saturation in brood-rearing areas with mosquito control commitment as necessary

Factor E: (continued)		E1d page 58	For alluvial wells, commit to a reduction in historic water use rate in order to increase soil saturation		
		E1e page 59	In addition to developing green areas in ephemeral draws utilizing a-d above, interseed native forbs in ephemeral draw bottoms or documented snow collection areas		
		Damage to Existing Green Areas			
		E2a page 60	Reduce sedimentation by stabilizing head cuts on ephemeral draws in suitable sagebrush obligate habitat		
		E2b page 60	Protect green areas associated with springs and seeps in suitable sagebrush obligate habitat by establishing appropriate herbivore barriers		
		Lack of Suitable Water Availability			
		E3a page 61	Establish guzzlers or other ground level watering points in suitable sagebrush obligate habitat and protect from trampling using wildlife friendly fencing or other measures		
		E3b page 61	Install and maintain Association approved escape ramps and livestock barriers in all stock tanks		
		E3c page 62	Remove previously approved but poorly designed escape ramps and livestock barriers and install and maintain Association approved escape ramps and livestock barriers		
		Insecticides	Insecticide Use		
			E4a page 62	Commit to not use carbofuran insecticides on the enrolled acres	
			E4b page 63	Commit to utilizing the Reduced Area & Application Treatments (RAATs) approach for all insecticide spraying on enrolled acres	
		Education	Lack of Education		
			E5a page 63	Work cooperatively with community naturalists, conservation districts, and others to develop and fund two media spots describing items of interest for sagebrush obligates	
	E5b page 64		Work cooperatively with conservation districts to sponsor Small Acreage Workshops or "welcome packets" focusing on sagebrush obligate habit		
E5c page 64	Commit to develop and present sagebrush obligate related information in classrooms, meetings, etc.				
E5d page 64	Develop/sponsor programs on sagebrush obligate habitat including impacts of fragmentation and benefits of weed control				
	E5e page 65	Sponsor/host outreach activities dealing with sagebrush obligate habitat for educators and their classes and the interested public			

6 SHORTGRASS SPECIES ASSEMBLAGE

As noted for the sagebrush obligate assemblage, an ecosystem assessment of the designated planning landscape was needed to ensure the most current knowledge of existing conditions across the landscape was available before needed conservation measures were determined. Data for the Thunder Basin Grasslands assessment was collected in 2003 through 2005, and the final report was published in 2008 by the Ecosystem Management Research Institute. This assessment has been supplemented and modified by additional wildlife and vegetation data collected by the Association in 2006 through 2010.

6.1 Status, Existing Conditions, and Factors Affecting the Species

Shortgrass prairie habitats are becoming increasingly degraded and fragmented due to the impacts of multiple threats including urbanization, infrastructure (roads, power lines, etc.), wildfire and the change in wildfire frequency, incursion of invasive plants, and nonrenewable and renewable energy development. Many of these threat factors could be exacerbated by effects of climate change, which may influence long-term habitat trends.

Endemic bird species of the Great Plains require grazing regimes that encompass a broad continuum from light utilization (mixed grass/shrub environments) to heavy utilization (short grass/bare ground environments) as the following diagram from Knopf indicates.



It is the intent of the Association to provide for this heterogeneity on a regional level while supporting local homogeneity in specific sites across the coverage area.

6.1.1 Black-tailed Prairie Dog

The black-tailed prairie dog became a candidate for listing in 2000. In August 2004, the FWS determined the black-tailed prairie dog was no longer warranted candidate status. However, the black-tailed prairie dog is classified as a sensitive species by both Region 2 of the U.S. Forest Service and the Wyoming State Office of the Bureau of Land Management and is still considered rare throughout its range. The Wyoming Game and Fish Department (2010) identifies the black-tailed prairie dog on its list of Species of Greatest Conservation Need because populations have declined and its habitat is vulnerable. However, there is no identified ongoing significant habitat loss in Wyoming. The black-tailed prairie dog is designated as vulnerable by the Committee on the Status of Endangered Wildlife in Canada and threatened by the Lista de las Especies Amerzadas, the official threatened and endangered species list of the Mexican Government. In-depth information regarding the background and status of the black-tailed prairie dog is presented in the FWS's finding for the resubmitted petition to list the black-tailed prairie dog as threatened¹⁰³ and the subsequent 90-day finding¹⁰⁴. Information provided below is primarily from the petition and the FWS's finding.

6.1.1.1 Black-tailed Prairie Dog Natural History

The black-tailed prairie dog is one of five species of prairie dog, all of which occur only in North America. It is a small rodent that exhibits a colonial lifestyle, living in burrow systems within generally large, dense colonies. This lifestyle may represent the most complex social organization of all rodents and likely offers an effective defense mechanism against predators and increases reproductive success, though facilitating the transmission of disease.

Black-tailed prairie dogs are associated with grasslands and shrub-grasslands and, in Wyoming, appear most abundant on shortgrass prairies. Towns, or colonies, are loosely defined as aggregations of prairie dogs, while colonies are further organized into "coteries" made up of 2 to 40 members¹⁰⁵. Coterie members defend their group territory against intrusion by members of adjacent coteries. Biggins et al. (1993) define prairie dog complexes as prairie dog colonies within a 4.3 mile (7.0 km) radius of other prairie dog colonies. Typical dispersal between established colonies is 3 miles (4.8 km) or less. Black-tailed prairie dog densities vary depending upon season, region, and climatic conditions, but typically range from 2 to 18 individuals per acre (0.8 to 7.2 individuals per hectare).

Black-tailed prairie dogs are active above ground year round. Prairie dogs consume both grasses and forbs, and a majority of their diet may include plant species having value as livestock forage, such as western wheatgrass (*Pascopyrum smithii*), blue grama (*Bouteloua gracilis*), and needle-and-thread (*Hesperostipa comata*). Utilization of vegetation by prairie dogs in newly established colonies has been estimated at 18 to 37 percent. Most utilization affects grasses and can reach as high as 80 percent by mid-August. In some cases utilization may approach 100 percent.

¹⁰³ 69 FR 51217, August 18, 2004

¹⁰⁴ 73 FR 73211-73219, December 2, 2008

¹⁰⁵ Hoogland (2006)

A female may produce up to 20 offspring during its lifetime, producing a single litter of 4 to 5 pups per year over a lifetime of 3 to 4 years. While not prolific in comparison to many other rodents, the species is capable of rapid population increases subsequent to substantial reductions.

Black-tailed prairie dogs are very sensitive to plague, and mortality frequently reaches 100 percent¹⁰⁶. Two patterns of die-offs are typically described for black-tailed prairie dogs: 1) a rapid and nearly 100 percent die-off with incomplete recovery, such as has occurred at the Rocky Mountain Arsenal and the Comanche National Grassland in Colorado¹⁰⁷; and 2), a partial die-off resulting in smaller, but stable, populations and smaller, more dispersed colonies, such as has occurred at the Cimmaron National Grassland¹⁰⁸. Several researchers have suggested that the response of black-tailed prairie dogs to plague may vary based on population density or degree of colony isolation¹⁰⁹.

Some studies have documented the development of antibodies in black-tailed prairie dogs surviving a plague epizootic. In one Colorado site, over 50 percent of survivors developed antibodies¹¹⁰. Recent laboratory research indicates that, at low levels of exposure, a small percentage of black-tailed prairie dogs show some immune response and consequently some resistance to plague, indicating that a plague vaccine may be developed in the future¹¹¹. Preliminary work has demonstrated significantly higher antibody titers and survival rates in vaccinated black-tailed prairie dogs that were challenged with the plague bacterium¹¹². Oral vaccination may be effective for managing plague epizootics in free-ranging prairie dog populations by reducing mortality in exposed individuals¹¹³.

6.1.1.2 Black-tailed Prairie Dog Distribution

The historic range of the black-tailed prairie dog included portions of 11 states, Canada, and Mexico. Today, the range occurs from extreme south-central Canada to northeastern Mexico and from approximately the 98th meridian west to the Rocky Mountains. The species is currently present in 10 states (Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming), but has been extirpated from Arizona. Range contractions have occurred in the southwestern portion of the species' range in Arizona, western New Mexico, and western Texas; and in the eastern portion of the species' range in Kansas, Nebraska, Oklahoma, South Dakota and Texas. These range contractions are largely due to habitat loss through cropland development in the east¹¹⁴ and through conversion of grasslands to desert shrub lands in the southwest¹¹⁵.

The black-tailed prairie dog appears to be widely distributed throughout its historic range in Wyoming, generally in disconnected populations across the shortgrass prairie in the eastern half of the state. Luce (2003) estimated 125,000 acres (51,000 ha) of black-tailed prairie dog occupied habitat statewide in

¹⁰⁶ Barnes (1993)

¹⁰⁷ Cully and Williams (2001)

¹⁰⁸ *ibid*

¹⁰⁹ Cully (1989), Cully and Williams (2001), Lomolino et al. (2003)

¹¹⁰ Pauli (2005)

¹¹¹ Creekmore et al. (2002)

¹¹² Mencher et al. (2004)

¹¹³ *ibid*

¹¹⁴ Luce (2003)

¹¹⁵ Pidgeon et al. (2001)

2003. More recent estimates by the Wyoming Game and Fish Department indicate 213,174 acres (86,268 ha) of black-tailed prairie dog colonies are present in Wyoming. Of that, 102,725 acres (41,571 ha) are part of black-tailed prairie dog colonies classified as healthy (>50% active)¹¹⁶. Sylvatic plague, caused by a bacterium (*Yersinia pestis*), has resulted in notable declines in the State's largest identified complex at the Thunder Basin National Grassland. The Wyoming population was estimated at 229,607 acres (92,919 ha) in 2007¹¹⁷.

6.1.1.3 Factors Affecting Black-tailed Prairie Dog

Historically, as many as 100,000,000 acres (40,468,627 ha) of occupied black-tailed prairie dog habitat occurred across a landscape of approximately 400,000,000 acres (161,874,507 ha) of potential habitat, forming several large metapopulations in the United States. At present, there are an estimated 2,100,000 acres (849,841 ha)¹¹⁸ of occupied habitat in the United States. When the amount of current occupied habitat is contrasted with the amount of remaining rangeland it is evident that sufficient potential habitat still occurs in each of the 11 States within the historic range of the species to accommodate large expansions of black-tailed prairie dog populations.

Recreational shooting can reduce black-tailed prairie dog population densities at specific sites, and there is a possibility that extirpation may have occurred in isolated circumstances, but interest in recreational shooting is generally not high where populations are at low levels. Black-tailed prairie dog populations can recover following intensive recreational shooting¹¹⁹. Although recreational shooting has been implicated in affecting reproductive output in the short-term¹²⁰, there are no long-term studies that indicate that reproductive output will permanently reduce local populations.

Although plague is likely the most important factor adversely influencing black-tailed prairie dog population dynamics, recent information indicates populations are responsive, re-populating plague-impacted colonies. Cully and Williams (2001) indicate that 1) high exposure doses of plague bacilli may be necessary for disease contraction in some individuals, 2) limited immune response has been observed in some individuals, 3) a population dynamic may have developed in low-density, isolated populations that contributes to the persistence of these populations, and (4) the apparent ability of some sites to recover to pre-plague levels after a plague epizootic. The black-tailed prairie dog remains a relatively abundant species despite plague.

6.1.2 Mountain Plover

The mountain plover was proposed for listing as a threatened species in 1999. In September 2003, the FWS withdrew the proposal, because new information indicated that the threats to the species included in the proposed listing were not as significant as earlier believed. In June 2010 as part of a settlement agreement, the proposed December 2002 rule listing the mountain plover as threatened was reinstated. A final listing determination by the FWS is expected in May 2011. The mountain plover is classified as a sensitive species by Region 2 of the USFS and the Wyoming State Office of the Bureau of Land

¹¹⁶ WGFD (2006)

¹¹⁷ Van Pelt (2007)

¹¹⁸ Van Pelt (2007), Kempema (2007)

¹¹⁹ Reeve and Vosburgh (2006)

¹²⁰ Pauli and Buskirk (2007)

Management. The WGFD (2010) identifies the mountain plover on its list of species of greatest conservation need as a Native Species of Special Concern based on (1) unknown, but suspected stable, population status and trends, (2) habitat vulnerability, and (3) sensitivity to human disturbance. In depth information regarding the background and status of the mountain plover is presented in the FWS's withdrawal of the proposed rule to list the mountain plover as threatened¹²¹. The following is a summary of information provided primarily from the FWS's withdrawal.

6.1.2.1 Mountain Plover Natural History

The mountain plover is a small bird approximately 8 inches (20 cm) in body length, similar in size and appearance to a killdeer, but lacking the contrasting dark breastbelt common to most plovers including the killdeer. Individuals can live up to 8 years of age, but the mean life span is approximately 1.9 years¹²². Mountain plovers are insectivorous with beetles, grasshoppers, crickets, and ants as their principal food items.

The mountain plover is a migratory species of the shortgrass prairie and shrub-steppe eco-regions of the West. On the breeding range, the plover historically occurred on nearly denuded prairie dog colonies and in areas of major bison concentrations where vegetation was clipped short. Mountain plovers are usually associated with sites that are modified by grazing and digging mammals, even on the wintering grounds. Breeding adults, nests, and chicks have been observed on cultivated lands in several states including Wyoming. The majority of mountain plovers winter in California, where they are found mostly on cultivated fields.

Nests are usually placed in areas where vegetation is less than 4 inches (10 cm) tall and the amount of bare ground exceeds 30 percent. Knopf (1996) identified that in shortgrass prairie habitat, vegetation associated with the nest sites includes blue grama, buffalo grass (*Buchloe dactyloides*), and prickly pear cactus (*Opuntia spp.*). Topography is typically flat or gently rolling¹²³. In areas where mountain plovers are associated with prairie dog colonies, size of the colony is important. In Montana mountain plover densities were highest on colonies 15 to 124 acres (6 to 50 ha), while colonies less than 25 acres (10 ha) were considered marginal habitat¹²⁴. However in the Powder River Basin of Wyoming, Parrish et al. (1993) found that mountain plovers did not have a strong affinity to prairie dog towns with only 1 of 15 nests occurring on a town. In another Wyoming study, Plumb et al. (2005) found that black-tailed prairie dogs were present at 53 percent of the nesting sites across the State.

Mountain plovers leave their wintering grounds in Mexico and Southern California by mid-February or March and arrive on the breeding grounds in Wyoming in March. They lay their eggs in June, and their young are on their own by July of the same year. Fledging rates appear low with 0.26 chicks per nesting attempt to 1.4 chicks per successful nesting attempt¹²⁵. Of these, only 0.17 to 0.74 chicks per nesting attempt live to migrate from the breeding grounds due to predation¹²⁶. The adults usually begin leaving

¹²¹ 68 FR 53083: USFWS 2003

¹²² Dinsmore (2001)

¹²³ Parrish (1988)

¹²⁴ Dechant et al. (1998)

¹²⁵ Knopf (1996)

¹²⁶ *ibid*

for the wintering grounds in early August, arriving during mid-September to November. During migration, they can form flocks of hundreds of birds.

6.1.2.2 Mountain Plover Distribution

Mountain plovers nest in the Rocky Mountains and Great Plains States from Montana south to Nuevo Leon, Mexico. Most breed in Montana, Wyoming, and Colorado. In Wyoming, breeding mountain plovers are known or suspected across the State, with nesting documented in the Thunder Basin in most years during surveys conducted between 1992 and 2002. The Breeding Bird Survey did not detect a trend for the mountain plover in Wyoming during 1966 to 2002; however, these data are uncertain given weaknesses in the BBS in monitoring species that occur at low densities, such as the mountain plover¹²⁷. The majority of mountain plovers winter in California, although there are some reports of wintering birds in Arizona, Texas, and Mexico.

6.1.2.3 Factors Affecting Mountain Plover

Historically, the conversion of grassland to cropland likely contributed to the decline of the mountain plover. Livestock grazing occurs throughout the nesting habitat of the mountain plover and often favors uniform cover, unlike historical grazing regimes that provided a mosaic of grasses, forbs, and bare ground for the species. Although much of the natural habitat in the mountain plover's wintering range has been lost (largely in California), the habitat loss does not seem to have limited plover populations. Therefore, the FWS has found that habitat loss does not pose a significant threat to the mountain plover.

Predation influences the productivity of all ground-nesting birds, including the mountain plover. Mountain plover eggs and chicks are the most vulnerable to terrestrial and avian predation. Although nesting success may be affected locally in some years, it is not a persistent factor throughout the species' range.

Because mountain plovers congregate in large flocks on the wintering grounds, they may be more vulnerable to local catastrophic events there, although the likelihood of such an event is small. Control of grasshoppers and other pests on private lands may also pose a threat to the mountain plover. Additionally, mountain plovers may be exposed to pesticides and other chemicals while they occupy winter habitat in California. However, a review of exposure to various chemicals showed that concentrations were below thresholds that cause population-level effects.

6.1.3 Burrowing Owl

From 1994 until 1996 when the category was eliminated, the western burrowing owl was listed by the FWS as a category 2 candidate species, indicating that more information was necessary to determine whether the species status was declining, stable, or improving. Although the burrowing owl is a not candidate species at this time, the burrowing owl is considered a bird of conservation concern at the national level by the FWS¹²⁸ and is classified by Region 2 of the U.S. Forest Service and the Wyoming State Office of the Bureau of Land Management as a sensitive species and by several state wildlife agencies as a Species of Concern. The WGFD (2010) identifies the burrowing owl on its list of species of greatest conservation need as a Native Species of Special Concern based on 1) unknown population

¹²⁷ WGFD (2006)

¹²⁸ USFWS (2004b)

status and trends, 2) habitat vulnerability, and 3) sensitivity to human disturbance. In depth information regarding the background and status of the burrowing owl is presented in two recent documents: a status assessment and conservation plan prepared by Klute et al. (2003) and a conservation assessment prepared by McDonald et al. (2004).

6.1.3.1 Burrowing Owl Natural History

The burrowing owl is a small, ground-dwelling owl with long legs, a round head with an oval facial ruff, and no ear tufts¹²⁹. The species is semi-colonial and uses open, treeless areas for nesting. Because short vegetative structure is important in allowing for detection of predators, burrowing owls are commonly found in association with cattle, prairie dogs, and other grazers¹³⁰.

The species often nests in prairie dog burrows, as well as burrows dug by other animals such as badgers or foxes. Burrowing owls will use active and relatively inactive prairie dog colonies, but have been shown to experience lower rates of nest depredation and have higher rates of nesting success on larger, denser prairie dog colonies¹³¹. In northeastern Colorado, density of burrowing owls was correlated with active burrow density. In 26 of 27 colonies occupied by burrowing owls, at least 50 percent of the prairie dog burrows were active¹³². In southeastern Colorado, burrowing owls occupied prairie dog colonies with 43 percent active burrows¹³³. Habitat selection by burrowing owls was correlated with burrow length, high burrow density, low shrub cover, prairie dog activity, and closeness to water in the Thunder Basin¹³⁴.

Burrowing owls are opportunist feeders, consuming insects, small mammals (mice and voles), birds and other prey (Haug et al. 1993). Burrowing owls appear to prefer a vegetation mosaic with nesting habitat interspersed with taller vegetation for hunting¹³⁵.

Those burrowing owls that nest in Canada and the northern Great Plains typically leave their wintering grounds in March and April, arriving on the northern breeding grounds as late as May. Wyoming burrowing owls typically arrive on the breeding grounds in late April¹³⁶. Burrowing owls begin laying eggs in late March in the southern part of the range (northern Arizona and New Mexico), and mid-May in the north (southern Canada). In the Thunder Basin, nest initiation dates are typically between April 15 and June 1¹³⁷. They produce only one brood per season with 7 to 9 eggs in an average clutch and between 1.6 and 4.9 young fledged per nest attempt¹³⁸. In Wyoming, an average of three young fledge

¹²⁹ Haug et al. (1993)

¹³⁰ McDonald et al. (2004)

¹³¹ Dechant et al. (2001)

¹³² Klute et al. (2003)

¹³³ Dechant et al. (1999)

¹³⁴ Lantz (2005)

¹³⁵ McDonald et al. (2004)

¹³⁶ ibid

¹³⁷ Lantz (2005)

¹³⁸ Haug et al. (1993)

per nest¹³⁹. Northern birds leave for their wintering grounds by mid-October, while more southern birds remain year-round¹⁴⁰.

6.1.3.2 Burrowing Owl Distribution

The historical breeding range of the burrowing owl includes portions of southwestern Canada south through the non-forested portions of the western United States (as far east as western Minnesota) and into central Mexico. The breeding range has contracted primarily on the eastern and northern edges, particularly in Manitoba, North and South Dakota, Nebraska, Kansas, Oklahoma, and Texas. Burrowing owls generally winter from Mexico to El Salvador, but have been noted in lesser abundance in Arizona, California, Kansas, New Mexico, Oklahoma, Oregon, and Texas. Wyoming forms part of the core of the burrowing owl's breeding range, with owls widespread in grassland and shrub-steppe habitats and often associated with prairie dog colonies¹⁴¹. In Wyoming, burrowing owls are at highest concentrations in the south and east, although the species has been documented in all of the State's latilongs, with confirmed or probable breeding in 24 of the 28 latilongs¹⁴². However, the Thunder Basin National Grasslands had a relatively low percentage of black-tailed prairie dog colonies occupied by burrowing owls during surveys conducted during 1998, with only 16 percent occupied as compared to 55 percent occupied across all national grasslands included in the study¹⁴³. The Breeding Bird Survey detected significant declines of burrowing owls in Wyoming during 1966-2002; however, these data are uncertain given weaknesses in the BBS in monitoring species that occur at low densities, such as the burrowing owl¹⁴⁴.

6.1.3.3 Factors Affecting Burrowing Owl

Habitat loss and degradation is the single most important threat to persistence, mostly due to declines in prairie dog colonies and to land conversion for urban and agricultural uses¹⁴⁵. Elimination of burrowing rodents through control programs has also been identified as the primary factor in the recent and historical decline of burrowing owl populations¹⁴⁶.

Loss to predation in fragmented and/or urban landscapes where edge-loving and domestic predator densities are high has been identified as a threat to burrowing owls¹⁴⁷. Additionally, indirect effects of sylvatic plague on burrowing owls that use prairie dog colonies has the potential to significantly affect burrowing owls through loss of habitat and food sources.¹⁴⁸

Insecticides and rodenticides can directly kill or reduce the growth and reproductive rates of owls in agricultural areas¹⁴⁹. Incidental shooting of burrowing owls as a byproduct of recreational shooting of

¹³⁹ McDonald et al. (2004)

¹⁴⁰ Gillihan et al. (2001)

¹⁴¹ Beauvais (2000a)

¹⁴² WGFD (2006)

¹⁴³ Sidle et al. (2001)

¹⁴⁴ WGFD (2006)

¹⁴⁵ McDonald et al. (2004)

¹⁴⁶ Deschant et al. (2001), Klute et al. (2003), McDonald et al. (2004)

¹⁴⁷ Klute et al. (2003), McDonald et al. (2004)

¹⁴⁸ *ibid*

¹⁴⁹ Deschant et al. (2001), Klute et al. (2003), McDonald et al. (2004)

prairie dogs has been documented, although it is not likely a significant threat¹⁵⁰. Because burrowing owls do not appear to scavenge prairie dog carcasses, ingestion of lead fragments is not considered to be a threat to burrowing owls¹⁵¹. Collision with vehicles has been cited as a source of mortality, but the significance of this mortality is not known¹⁵².

6.1.4 Ferruginous Hawk

From 1982 until 1996 when the category was eliminated, the ferruginous hawk was listed by the FWS as a category 2 candidate species. The FWS was petitioned to list the ferruginous hawk in 1991 and found listing was not warranted in 1992¹⁵³. Although the ferruginous hawk is not a candidate species at this time, the ferruginous hawk is considered a bird of conservation concern at the national level by the FWS¹⁵⁴ and is classified as a sensitive species by Region 2 of the U.S. Forest Service and the Wyoming State Office of the Bureau of Land Management. The WGFD (2010) identifies the ferruginous hawk on its list of species of greatest conservation need as a Native Species of Special Concern based on 1) wide distribution, 2) unknown population status and trends, 3) ongoing significant loss of habitat, and 4) sensitivity to human disturbance.

6.1.4.1 Ferruginous Hawk Natural History

The ferruginous hawk is a large, broad-winged hawk that nests in flat or rolling terrain in pinyon-juniper, shrublands, and grasslands of the western United States, but rarely nests in forests. Landscapes with less than 50 percent coverage of cropland and hayland are used for nesting and foraging¹⁵⁵. Ferruginous hawks use a variety of nesting substrates, most commonly trees and large shrubs, followed by cliffs, utility structures, dirt outcrops, and relatively flat ground¹⁵⁶. Historically, ground nesting was common¹⁵⁷. They typically build large nests of sticks, twigs and debris and often reuse nests for many years¹⁵⁸. In northeastern Wyoming, ferruginous hawks are opportunistic nesters, often selecting nest sites away from golden eagle nests¹⁵⁹. Territory and nest site re-occupancy is common for ferruginous hawks and territories often contain multiple alternate nests¹⁶⁰.

Most breeding ferruginous hawks arrive in Wyoming in April and leave by September¹⁶¹. Ferruginous hawks are easily disturbed during the breeding season, particularly during the early stages of nesting, and sensitivity to disturbance may be heightened during years of low prey abundance¹⁶². Average annual clutch size of ferruginous hawks varies from 2 to 4 eggs, but can range from 1 to 8 depending upon prey abundance. The mean number of fledglings produced by a breeding pair each year ranges

¹⁵⁰ McDonald et al. (2004)

¹⁵¹ Klute et al. (2003), McDonald et al. (2004)

¹⁵² Klute et al. (2003)

¹⁵³ 57 FR 37507

¹⁵⁴ USFWS (2004b)

¹⁵⁵ Dechant et al. (1999)

¹⁵⁶ Olendorff (1993), Bechard and Schmutz (1995), Dechant (2001)

¹⁵⁷ CEC (2005b)

¹⁵⁸ Bechard and Schmutz (1995)

¹⁵⁹ Phillips and Beske (1990)

¹⁶⁰ Dechant et al. (1999)

¹⁶¹ Beauvais (2000b)

¹⁶² Dechant et al. (1999)

from 1.3 to 3.2¹⁶³. Young typically leave the nest at 38 to 50 days of age, but remain dependent upon the parents for several weeks after fledging¹⁶⁴.

Ferruginous hawks eat primarily mammals, including rabbits, ground squirrels, prairie dogs, and pocket gophers. Generally, to the east of the Continental Divide the primary prey is prairie dogs and other ground squirrels¹⁶⁵. In southern Wyoming, MacLaren et al. (1988) found ferruginous hawks had the most diverse diet when compared to prairie falcons, golden eagles, and red tailed hawks. Ferruginous hawks took 37 percent ground squirrels, 22 percent prairie dogs, and 20 percent leporids. However, leporids actually contributed 48 percent of the biomass consumed as compared to 22 percent from prairie dogs and 16 percent from ground squirrels. Although ferruginous hawks may shift to other prey when their principal prey species declines, productivity is affected by densities of major prey species¹⁶⁶.

6.1.4.2 Ferruginous Hawk Distribution

The ferruginous hawk breeding habitat includes western North America from southern Canada between the Great Plains and Rocky Mountains south to northern Arizona and New Mexico. Nesting generally occurs as far east as western South Dakota and western Nebraska and as far west as the Great Basin and Columbia River Basin regions. Wintering range includes primarily grassland and shrub-steppe habitats in northern California through portions of the southwest into northern Texas, New Mexico, Arizona, and portions of Colorado¹⁶⁷. In Wyoming, the ferruginous hawk is found statewide excluding the mountainous areas. It has been documented in all of the State's 28 latilongs, with confirmed or probable breeding in 25 of them¹⁶⁸. The Breeding Bird Survey did not detect a trend for the ferruginous hawk in Wyoming during 1966-2002; however, these data are uncertain given weaknesses in the BBS in monitoring species that occur at low densities, such as the ferruginous hawk¹⁶⁹.

6.1.4.3 Factors Affecting Ferruginous Hawk

Population declines have been attributed to loss of habitat to cultivation, urbanization, grazing, control of small mammals, mining, and fire management, with cultivation the most significant¹⁷⁰. Several of the habitat effects are related to prey availability. For example, cultivation leads to replacement of short grasses by taller crops that conceal prey items more effectively. Additionally, nest tree availability is adversely affected by cultivation and some grazing regimes. Olendorff (1993) asserted that grazing with improper stocking levels could also lead to adverse effects to prey items. However in the Thunder Basin, grazing benefits ferruginous hawks by reducing vegetative cover and making prey more visible¹⁷¹.

There is no evidence that overutilization is a factor affecting the species. Eggs were once valuable to collectors, but most collecting occurred during the early 1900s, was not likely a key factor in declines,

¹⁶³ Bechard and Schmutz (1995)

¹⁶⁴ *ibid*

¹⁶⁵ *ibid*

¹⁶⁶ Olendorff (1993)

¹⁶⁷ Bechard and Schmutz (1995)

¹⁶⁸ WGFD (2006)

¹⁶⁹ *ibid*

¹⁷⁰ Olendorff (1993), Bechard and Schmutz (1995), Dechant et al. (1999)

¹⁷¹ Kantrud and Kologiski (1983), Konrad and Gilmer (1986) as cited in USFS (2001)

and no longer appears to be a threat¹⁷². Collection for use in falconry is not a threat as ferruginous hawks are rarely used in falconry¹⁷³.

There is no indication that disease is a factor affecting this species. There are few documented instances of nest predation, although ground predators such as coyotes and badgers may pose a threat to ground-nesting ferruginous hawks¹⁷⁴.

Poisoning and control of prey items (including prairie dogs) can produce local food shortages leading to interruptions in breeding, decreased productivity, and increased susceptibility of breeding ferruginous hawks to human disturbance¹⁷⁵. Poisoning, with rodenticides such as zinc phosphide, is used to control rodent populations with minimal impacts to secondary consumers¹⁷⁶. However, there is considerable risk of secondary poisoning to non-target avian and mammalian predators and scavengers from the recently approved use of anticoagulant rodenticides such as Rozol™ and Kaput™ for prairie dog control. Bechard and Schmutz (1995) and Olendorff (1993) report reduced productivity of nests near active oil and gas wells, although Dechant et al. (1999) cites a study from Montana that reported no negative impacts on productivity as a result of petroleum development. Collisions with power lines and electrocutions result in occasional mortality of ferruginous hawks, but do not appear to pose a significant threat to the population¹⁷⁷.

A recent study of lead shot retention in recreationally shot prairie dogs in the Thunder Basin found that 87 percent of prairie dogs shot with soft point (expanding) bullets contained detectable amounts of bullet fragments¹⁷⁸. Although the estimates were variable, on average 228 mg of the lead bullet core remained in the carcass. Seventy-three percent of the lead fragments in the carcasses were small, each weighing less than 25 mg, which have potentially important implications for lead assimilation in secondary consumers, such as ferruginous hawks.

Predator-prey interactions often result in predators expending the least amount of effort for the maximum amount of forage (e.g., large prey such as lagomorph versus small prey such as prairie dogs). Olendorff (1993) reported that while the frequency of consumption of prairie dogs and ground squirrels is over 44 percent, the actual biomass consumed by ferruginous hawks is greater than 65 percent lagomorph. Considering the diversity and availability of prey items in this area, the large areas the hawks cover in their home ranges, the actual risk from lead ingestion and poisoning is likely minimal.

6.2 Threats, Conservation Measures, Benefits, and Monitoring

For ease of reference, shortgrass species threats and associated conservation measures for each of the five factor areas have been tabulated below. The factor and sub-factor threat areas are presented vertically in the two left columns. Individual sub-factor threats (if any) are presented horizontally in bold type. Specific conservation measures addressing each threat and the identification key are given in two

¹⁷² Bechard and Schmutz (1995)

¹⁷³ CEC (2005c)

¹⁷⁴ Bechard and Schmutz (1995)

¹⁷⁵ Olendorff (1993)

¹⁷⁶ Andelt (2006)

¹⁷⁷ Olendorff (1993), Bechard and Schmutz (1995)

¹⁷⁸ Pauli and Buskirk (2007)

boxes arranged horizontally below the individual sub-factor threats. A listing ranked by point value and a detailed presentation of threats associated with each of the five factors, conservation measures and benefits, and required monitoring is given in Appendix F.

TABLE WILL BE REVISED IN FINAL - PLEASE USE SEPARATE INDEX UNTIL THEN

Factor A: Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range	Agricultural Use	Conversion to Agricultural Use	
		A1a page 4	Conduct baseline monitoring to determine existing conditions, identify, and protect areas meeting or trending toward suitable black-tailed prairie dog habitat
		A1b page 5	Commit to no additional conversion of shortgrass prairie to cropland on all enrolled lands
		Colony Expansion into Active Crop Lands	
		A2a page 5	Establish and maintain tall grass or crop stubble to serve as a barrier between active prairie dog colonies and crop lands
		Cutting and Baling or Other Field Activities	
	A3a page 6	Commit to foregoing active agricultural field use between 4/10 and 7/10 in areas adjacent to mountain plover habitat	
	Urbanization	Urbanization: Subdividing Native Habitats	
		A4a page 7	Commit to preserving the land configuration to benefit shortgrass species (no additional fragmentation or alteration of land use, e.g., subdivisions)
	Infrastructure	Roads	
		A5a page 7	Close, prepare seedbed, and reseed roads with native shortgrass seed mix within 1 mile of suitable shortgrass species habitat
		A5b page 8	Document existing improved and two-track roads and commit to no new roads to be developed within 1/4 mile of suitable shortgrass species habitat
		A5c page 8	Implement annual chemical dust control measures for high-use unpaved roadways within suitable shortgrass species habitat
		A5d page 9	Place speed restrictions on roads within 1/4 mile of active prairie dog colonies during the early juvenile emergence and bird breeding and nesting seasons (4/10 - 7/10)
		A5e page 9	Establish formal commitments to close improved and two-track within 1/4 mile of active prairie dog colonies from 4/10 - 7/10
		Detrimental Facility Siting Due to Lack of Information	
A6a page 10		Collect information necessary to maintain and update shortgrass species habitat maps and report to the Association at least annually	

Factor A: Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range (continued)	Infrastructure (cont)	Detrimental Facility Siting Due to Lack of Information (continued)	
		A6b page 10	Conduct prairie dog density surveys or other studies necessary to maintain and update shortgrass species life cycle information and habitat use maps
		Human Disturbance	
		A7a page 11	Establish a 1/4 mile radius zone of avoided or limited human activity and noise levels at facilities and infrastructure sites in occupied shortgrass species habitat from 4/10 - 7/10
		A7b page 11	Schedule topsoil stripping activities during the non-breeding or nesting season (7/10 - 4/10) on and within 1/4 mile of topsoil stripping areas prior to commencing activities
		A7c page 12	Establish site-specific plans for restricting surface disturbance activities from 4/10 - 7/10 within 1/4 mile of all occupied mountain plover habitat
		A7d page 12	Avoid new surface occupancy and surface disturbance activities within 1/2 mile of known active ferruginous hawk nests from 3/15 - 7/15
	Habitat Conversion	Habitat Fragmentation	
		A8a page 13	Obtain or donate conservation easements with a minimum 10 year term for intact habitat to be managed specifically for shortgrass species
		A8b page 13	Establish buffer zones protecting prairie dogs and associated habitat, extending 75 feet from a prairie dog town periphery, to allow active prairie dog town expansion
		A8e page 14	Seed disturbed and reclaimed areas with native shortgrass seed mix, birdsfoot sage, etc.; seeding must occur within 1 year of site reclamation
		Habitat Destruction	
		A9a page 15	Map and protect active prairie dog colonies
		A9b page 15	Light, ground disturbing activities that enhance native vegetation while maintaining rangeland health can induce the rebuilding or building of prairie dog burrows
		A9c page 16	Develop shortgrass species habitat by establishing artificial burrows to facilitate new colonization or expansion of existing burrowing mammal colonies
A9d page 16		Successfully relocate prairie dogs onto appropriate rangeland or reclaimed disturbed land sites	
A9e page 17	Enhance or maintain active mountain plover habitat areas keeping vegetation below 3" utilizing prescribed burns approved by the Association followed by continuous grazing		
A9f page 18	Construct and install artificial nest burrows where natural burrows are scarce		

Factor A: Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range (continued)	Habitat Conversion (cont)	Habitat Destruction (continued)	
		A9g page 18	Build or enhance flat-topped rock outcrops that are located > 1.5 miles from human activity and on slopes ranging from 10 - 70%
		A9h page 18	Protect small hills and ridges < 30' higher than the surrounding topography and > 1.5 miles from human activity; enhance grassland habitats within 5 miles of these areas
		A9i page 19	Protect active or potential ferruginous hawk nesting trees (lone or peripheral) within 5 miles of active prairie dog colonies
	Invasive Plants	Invasive Species	
		A10a1 page 20	Treat annual bromes with approved herbicide within a contiguous 160 acres of mountain plover habitat to maximize treatment effectiveness
		A10a2 page 20	In addition to treating annual bromes with herbicide as above, prepare and reseed the area with native seed mix comprised of shortgrass species
	Livestock/Wildlife Grazing	Inappropriate Grazing Management	
		A11a page 21	Develop and follow an approved grazing management plan to establish or enhance shortgrass species habitat on 1 - 5% of enrolled acres while protecting rangeland health
		A11b page 22	Develop and follow an approved grazing management plan that selectively focuses grazing intensity within 5 miles of known active ferruginous hawk nests
		A11c page 22	Utilize attractants (salt, mineral, supplements, fly rubs, etc.) to develop and/or maintain shortgrass species habitat
	Energy: O&G	High Density Oil and Gas Facilities	
		A8d page 14	Limit surface disturbance to 5% or less of suitable shortgrass species habitat per 640 acres by reducing drill site area and density
		Increased Fragmentation and Loss of Suitable Habitat	
	Energy: Wind	A8c page 14	Commit to multi-well pads or new well pad areas in shortgrass species habitat that average < 80% of average pre-Agreement pad size
		Disturbance From Wind Turbines Situated Near Leks and Other Suitable Habitat	
		A12a page 23	Operators: Site wind turbine facilities > 1/4 mile away from suitable shortgrass species habitat and 5 miles away from active ferruginous hawk nests
		A12b page 23	Landowners: Establish agreement with TBGPEA requiring wind turbine facilities > 1/4 mile from shortgrass species habitat and 5 miles from active ferruginous hawk nests

Factor A: (cont)	Power Lines	
	A13a page 24	Operator: Site distribution and transmission lines > 1/4 mile from suitable shortgrass species habitat and 5 miles from active ferruginous hawk nests
	A13b page 24	Landowner: Establish use agreement with TBGPE requiring placement of power lines > 1/4 mile from shortgrass species habitat and 5 miles from active ferruginous hawk nests
Factor B	Overutilization from Recreational Shooting	
	B01a page 25	Manage any recreational shooting of black-tailed prairie dogs to maintain burrow densities of 10 active burrows per acre with > 2 active burrows for 5 inactive burrows
	B01b page 25	Commit to no shooting of black-tailed prairie dogs within the CI area
Factor C: Disease and Predation	Plague	
	C1a page 26	Commit not to poison remaining prairie dogs while the population is at a low level following a plague event
	C1b page 27	Through management and protection, encourage a mixture of large and small prairie dog colonies with some > 1.75 miles from the next colony
	Predation	
	C2a page 28	Remove or routinely burn as permitted existing dumps, landfills, or garbage piles within 4.3 miles of prairie dog colonies or suitable shortgrass species habitat
	C2b page 28	Utilize waste disposal options which do not serve as attractants for predators, particularly for areas < 4.3 miles of active colonies or suitable shortgrass species habitat
	C2c page 28	Provide surface or aerial access to APHIS Wildlife Services for control of red fox, skunk, and badger within 3 miles of prairie dog colonies or suitable shortgrass species habitat
	C2d page 29	Remove existing brush piles and downed trees within 3 miles of active prairie dog colonies or suitable shortgrass species habitat
	C2e page 29	Eliminate riparian brush and thickets that could be utilized for loggerhead shrike nesting sites within 1/4 mile of occupied mountain plover habitat
	Factor D	On- and Off-road Use of Suitable Habitat
D1a page 30		Establish use agreement with the Association to prevent recreational vehicle use of lands from 4/10 - 7/10 for important shortgrass species habitat
Split Estate		
D2a page 30		Establish a voluntary cooperative management plan between surface owner and mineral rights owner that maintains or enhances shortgrass species habitats

Factor E: Other Natural or Manmade Factors Affecting the Species	Control of Prey / Food Sources	
	Prey / Food Sources	
	E1a page 31	Commit to not poisoning prairie dogs on the entire CI acreage. A buffer of up to 1/4 mile around sites of concern can be excluded from poisoning
	E2a page 32	If it is necessary to control lagomorph or rodent populations, commit to controls that lower the peaks of cyclic highs and that are not actively employed during cyclic lows
	E2b page 32	For any prairie dog control poisoning, commit to use only zinc phosphide and not to use anticoagulant rodenticides such as Rozol™ or Kaput™
	E2c page 32	Use only non-toxic and nonexpanding bullets for any prairie dog hunting conducted on the enrolled acres
	Insecticide Use	
	Insecticides	
	E3a page 33	Commit to restricting large-scale insecticide application to lands outside of a 1/4 mile radius around active prairie dog colonies
	E3b page 33	Commit to not use carbofuran insecticides on the enrolled acres
	E3c page 34	Commit to utilizing the RAATs approach and restricting grasshopper control to lands outside of a 1/4 mile radius around active prairie dog colonies
	Lack of Education	
	Education	
	E4a page 35	Work cooperatively with community naturalists, conservation districts, and others to develop and fund two media spots describing items of interest for shortgrass species
	E4b page 35	Work cooperatively with conservation districts to sponsor Small Acreage Workshops or "welcome packets" focusing on shortgrass species habitat
	E4c page 35	Commit to develop and present shortgrass species related information in classrooms, meetings, etc.
	E4d page 36	Develop/sponsor programs on shortgrass species habitat including impacts of fragmentation and benefits of weed control
E4e page 36	Sponsor/host outreach activities dealing with shortgrass species habitat for educators and their classes and the interested public	

7 RELATIONSHIP OF THE AGREEMENT TO THE FIVE THREAT FACTORS

Implementation of this Agreement is intended to reduce threats to the covered species under each of the five threat factors which will be considered in any future listing decision by the FWS. The conservation measures identified in this Agreement are expected to benefit the covered species by maintaining, enhancing, and restoring covered species' populations and their habitats as well as reducing the threats of direct mortality. Since non-federal landowners control lands that are important

habitats for the covered species, conservation of these species will be enhanced by encouraging the implementation of conservation measures by the participating members in a landscape scale setting.

All Association members participating in this Agreement will implement conservation measures specifically identified as addressing habitat fragmentation and destruction on their enrolled acreage. Along with decreasing fragmentation, these conservation measures will help maintain resiliency and increase heterogeneity. Through the implementation of the point system discussed above, participating CI and CP holders will choose additional conservation measures which will contribute to this ecosystem based approach. The suite of available conservation measures is designed to reduce or prevent habitat fragmentation, maintain or enhance habitat, and reduce or prevent direct mortality. Should all necessary landowners within the five county area participate and provide conservation measures as outlined in this Agreement, a substantial conservation benefit would be realized for the covered species. The Agreement is expected to result in a larger number and more widely distributed populations of each of the covered species. As required by the CCAA standard, if the Agreement were implemented on all other necessary properties within the species' range, the FWS believes that the need to list the covered species would likely be precluded for the threats addressed in the Agreement and for the area that it covers.

8 INCIDENTAL TAKE

Specific authorization of incidental take is provided as part of the Enhancement of Survival (EOS) permit issued by the FWS. Should any of the covered species become listed under the ESA, authorization for incidental take under the EOS is limited to the covered activities of the participating landowners as set forth in the Agreement and individual CIs or CI/CPs. Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is further defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2) of the ESA, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA, provided that such taking is in compliance with the terms and conditions of the incidental take statement. This statement will be provided in the Section 7 conference opinion on the proposed issuance of a section 10(a)(1)(A) Enhancement of Survival Permit for the covered species and activities to the Association and proposed implementation of the companion Candidate Conservation Agreement.

Habitat loss and fragmentation have been identified as the primary causes of declines for the covered species. Therefore, the protection of existing habitat as well as the restoration of degraded habitat is

crucial to the continued existence of the covered species. The conservation measures identified in this Agreement are expected to maintain and enhance habitat on enrolled lands and limit adverse impacts to the covered species.

8.1 Level of Take

The Association anticipates that the incidental take of the covered species will be difficult to predict and detect for the following reasons: 1) the uncertainty of population numbers of the covered species, 2) the likelihood of finding a dead or impaired specimen, and 3) because losses may be masked by seasonal fluctuations in environmental conditions and natural fluctuations in population numbers. Therefore, it is not possible to provide precise numbers of covered species that might be subject to incidental take as a result of this Agreement.

Due to the landscape scale of this Agreement, the Association cannot quantify the enrolled acres and the conservation commitment in the CCAA/CCA at this time. However, the activities and the conservation commitment on each enrolled property will be documented in each participating member's CI or CI/CP. Thus, at the time a covered species becomes listed, the number of enrolled acres, the type and intensity of covered activities, and the conservation commitment of each participating member will be known, allowing for a more accurate determination of level of incidental take.

8.2 Type of Take

Incidental take could occur as a result of many activities under agricultural use of the land (farm and ranch operations), recreation, oil and gas production, and surface/in-situ mining. The implementation of the Agreement is intended to avoid and minimize the sources of incidental take from these activities and reduce the threats to the covered species. Incidental take could occur as a result of grazing, brush removal, or other management practices that modify suitable habitat to an extent that successful reproductive and recruitment activities by the covered species are impaired or eliminated (e.g., fragmentation, conversion or loss of existing habitat through inappropriate siting of roads, fences, pipelines, energy facilities, and subdivisions; inappropriate reclamation; inadequate control of invasive species and of wildfire in sagebrush habitat; inappropriate livestock grazing and wildlife management; etc.). Incidental take could also occur through direct mortality (e.g., stock tanks with no wildlife escape ramps; collisions with barbed-wire fences and power lines; machinery operations associated with haying, topsoil stripping, drilling, blasting, etc.; collisions with vehicles (both on- and off-road); trampling of nests by livestock; etc.).

8.3 Impact of Take

The conservation measures included in this Agreement address potential sources of mortality, injury, and other forms of take through loss or degradation of habitat. Most of the offsite cooperative conservation measures implemented by extractive industries will provide long-term benefits in addition to those provided by habitat reclamation associated with the extractive process, essentially resulting in a doubling of conserved habitat. Conservation benefits for the covered species under this Agreement will thus accrue well beyond the duration of the conservation period. This should result in reduced impacts and incidental take of these species. Thus, incidental take by participating members and the resulting effects to the covered species are expected to be sporadic in nature and minimal when considered across both the landscape and temporal scales of the Agreement.

8.4 Notification of Take

Other than the notification provided in Section 15 for the rescue of covered species, no requirement is made in this Agreement for a participating member to notify the Association or FWS prior to any expected incidental take of the covered species. For purposes of this Agreement, the FWS does not believe that such a notification requirement is practicable or appropriate.

9 ASSURANCES PROVIDED FOR NON-FEDERAL PROPERTY

The FWS provides assurances through a section 10(a)(1)(A) permit that neither additional conservation measures nor additional land, water, or resource use restrictions, beyond those voluntarily agreed to and described in the individual CIs, will be required as long as CI holders are in full compliance should any of the covered species become listed in the future. These assurances will be authorized with the issuance of an Enhancement of Survival permit under section 10(a)(1)(A) of the ESA. The FWS provides CI holders the ESA regulatory assurances found at 50 CFR §§ 17.22(d)(5), 17.32(d)(5). Covered activities are described in Section 4.3.

10 ASSURANCES PROVIDED TO NON-FEDERAL PROPERTY OWNERS IN CASE OF CHANGED OR UNFORESEEN CIRCUMSTANCES

The assurances listed below apply to CI holders with an Enhancement of Survival permit associated with this Agreement where the CCAA is being properly implemented.

10.1 Changed Circumstances Provided for in the Agreement

Impacts affecting single or limited numbers of CIs will be handled on a case by case basis by the Association to determine the management practices to be applied. Any modification of conservation measures will occur through consultation and mutual agreement between the Association and the affected participating member(s). However, if one or more circumstances occur that effectively eliminates a substantial amount of habitat (to the extent that the ability to maintain the required assemblage point minimum of 33 percent is not possible within the time frame of the Agreement) the Association will notify the FWS within 30 days of that determination. Within 90 days of notification, the Association and the FWS will meet and evaluate the conservation measures, the monitoring data, and identify potential actions which could be employed to address the change in circumstances. Adaptive management approaches will be applied to make adjustments as necessary.

If conservation measures are planned to change in the future to accommodate changing member needs, the CI will describe what measures will occur in each period (e.g., 5 points from conservation measure A22 from 2011 - 2014 to be replaced by 5 points from conservation measure A24 from 2015 - 2021.)

Mineral Ownership. In some instances the mineral ownership of lands in the coverage area differs from the surface ownership of the same parcel(s). There exists the potential that the surface owner has a CI under the CCAA, but the mineral owner does not. In those cases mineral development activities may occur on enrolled lands but outside the control of the surface owner holding the CI on those lands and contrary to the CI conservation measures applied to those lands.

Wildfire. Wildfire impacts affecting single or limited numbers of CIs will be handled on a case by case basis with the individual member(s) to determine the management practices to be applied. If one or more wildfires destroy or effectively eliminate a substantial amount of sage-grouse habitat within the coverage area, to the extent that the ability to meet suitable habitat conditions are not possible within the time frame of the Agreement, the Association will notify the FWS within 30 days of that determination. Within 90 days of notification, the parties will meet and evaluate the conservation measures and identify potential actions which could be employed to address the change in circumstances on a given enrolled property. The parties will meet with the participating member(s) and develop habitat restoration plans (including activities such as seeding and invasive weed control) to be implemented on an agreed upon schedule. Adaptive management approaches will be applied to make adjustments as necessary.

Drought. Variation in precipitation amount is not an uncommon event within the coverage area. Annual monitoring and conservation measures applicable to the enrolled lands are expected to detect year to year variations in precipitation amounts and the effect on vegetation. However, prolonged or deep droughts in important habitat areas in the coverage area may create conditions that reduce seasonally available habitat beyond normal annual variation and cause changed circumstances on the landscape. Prolonged periods are defined here as three years or more. In this event, the Association will notify the FWS within 30 days of that determination. Within 90 days of notification, the parties will meet and evaluate the drought conditions and, if opportunities exist, employ changes to the conservation measures to address local conditions.

Disease Including West Nile Virus and Sylvatic Plague. The occurrence and effects of West Nile virus are largely unpredictable and outside the scope of control of FWS, the Association, or participating members. West Nile virus is thought to result in near 100 percent mortality in sage-grouse. West Nile virus can cause population level declines, which can result in circumstances that are substantially different than those currently anticipated. If West Nile virus is detected in sage-grouse in the enrolled lands in the future, the Association will notify the FWS within 10 days and within 30 days the Parties will meet to evaluate the situation and whether there are additional conservation measures that could be taken to ameliorate effects to the covered bird species, either by participating members, the Association, or by the FWS itself.

Sylvatic plague outbreaks are also unpredictable and outside the scope of control of FWS, the Association, or participating members. If a die-off is detected, the Association will notify the FWS of the possibility. The parties will then meet within 30 days to evaluate the situation and to consider whether there are additional conservation measures that could be taken to ameliorate effects to the prairie dog, either by participating members, the Association, or by the FWS itself. The parties recognize that this will apply to significant outbreaks as opposed to relatively small occurrences of the plague.

Climate Change. Scientists predict that climate change will result in changes to temperatures and precipitation patterns in the coverage area (e.g., Brown et al. 2004, pp. 382-383; Neilson et al. 2005, p. 150; Chambers and Pellant 2008, p. 31; Global Climate Change Impacts in the United States 2009, p. 83). These effects are predicted to result in increased wildfire and invasive species interactions, and conditions that are suitable for West Nile virus transmission in sage-grouse populations (Baker, in press, p. 24; Miller et al., in press, p. 48, Walker and Naugle, in press, p. 12). Although the current climate

models are not available at a small scale (such as the lands covered by this Agreement) and their application and conclusions remain the subject of intense scientific debate, it is prudent to consider the potential impacts of climate change over the period of this Agreement. However, because the primary concerns under climate change are related to drought and fire, we believe appropriate actions to address changed circumstances associated with climate change impacts are sufficiently considered above.

Adaptive management principles will be built into all site-specific plans, for which the above changed circumstances may be applicable. Such changes require the agreement of all affected parties.

10.2 Changed Circumstances not Provided for in the CCAA

If additional conservation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the Agreement's operating conservation program, the FWS will not require any conservation and mitigation measures in addition to those provided for in the Agreement without the consent of the CI holders, provided the Agreement is being properly implemented.

10.3 Unforeseen Circumstances

In negotiating unforeseen circumstances, the FWS will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed upon for the species covered by the Agreement without the consent of the CI holders.

The FWS will have the burden of demonstrating that unforeseen circumstances exist, using the best scientific and commercial data available that directly apply to the land covered by the Agreement. These findings must be clearly documented and based upon reliable technical information regarding the status and habitat requirements of the affected species. The FWS will consider, but not be limited to, the following factors:

1. Size of the current range of the affected species;
2. Percentage of range adversely affected by the Agreement;
3. Percentage of range conserved by the Agreement;
4. Ecological significance of that portion of the range affected by the Agreement;
5. Level of knowledge about the affected species and the degree of specificity of the species' conservation program under the Agreement; and
6. Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

The CI holder may include possible replacement conservation measures in case changes for unforeseen circumstances need to be made in the future.

11 PROVISIONS FOR ADAPTIVE MANAGEMENT

An adaptive, outcome-based approach¹⁷⁹ will be used for allowing management flexibility, recognizing that conservation measures may need to be updated based on research results (see Appendix C for more information). Such an adaptive approach explicitly recognizes that multiple factors (e.g., environmental conditions, biological processes, etc.) affect covered species populations. Furthermore, the consequences of prescriptive conservation measures cannot be predicted with certainty, and therefore the Agreement provides a framework for making objective decisions in the face of that uncertainty. Thus, adaptive management relies on an iterative cycle of monitoring, assessment, and decision making to clarify the relationships among the conservation measures and response of habitat and ultimately, abundance of the covered species.

The Association will continue to work with the WGFD, USFS, and the BLM in the development and implementation of appropriate adaptive actions. Monitoring of the study plots to determine habitat responses to the various treatment methods will continue. These monitoring results will be evaluated and used to define appropriate site-specific practices and to refine techniques during the Agreement period. In addition, the Association will review reports and results from other regional projects involving covered species monitoring and/or habitat treatment to determine potential applicability to the coverage area. Appropriate adjustments will be considered and proposed to the Agreement signatory parties when these reviews note applicable refinements. This does not obligate the Association to commit additional land, water, or financial compensation or place additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed upon for the species covered by the Agreement.

12 MONITORING PROVISIONS

The Association, in conjunction with participating members and qualified consultants, will be responsible for monitoring as specified in each conservation measure. There are two components in the monitoring program: 1) compliance monitoring, which will include annual self-reporting by the participating member and compliance evaluations conducted by the Association, and 2) biological monitoring, which will include a baseline assessment by the participating member and the Association, and periodic habitat / wildlife monitoring conducted by the Association, qualified consultants, and participating member(s) that have been trained in appropriate monitoring protocols. Nothing in this Agreement supersedes existing access procedures and protocols required for industrial safety.

In addition to the monitoring associated with each conservation measure, the Association, in conjunction with participating members and qualified consultants, will gather the following information and store data in a database maintained by the Association:

- 1) Weekly and annual rainfall at 12 locations across the coverage area
- 2) Yearly monitoring of the sage-grouse leks assigned by the WGFD including currently identified and any new leks discovered during the term of the Agreement
- 3) Determination of areal extent of black-tailed prairie dog colonies using GPS and GIS systems every other year for term of Agreement to monitor expansion / contraction

¹⁷⁹ Walters (1986)

13 COMPLIANCE MONITORING

The Association, in conjunction with participating members and qualified consultants, will be responsible for annual compliance monitoring and reporting specified herein related to implementation of the Agreement and fulfillment of its provisions, including implementation of agreed-upon conservation measures, and take authorized by the permit. The FWS, after reasonable prior notice to the Association, may enter the enrolled non-federal lands accompanied by an Association representative to ascertain compliance with the Agreement. For this Agreement, reasonable prior notice will be considered notice given at least two weeks in advance of a visit.

14 BIOLOGICAL MONITORING

The FWS acknowledges that it is unlikely that a direct cause and effect relationship can be established for each threat and its corresponding conservation measures. This creates a problem in evaluating the effectiveness of each conservation measure; however, the literature supports that if the conservation measures are followed, then it should reduce or remove the threat.

Appropriate monitoring is identified in each conservation measure and may include monitoring such vegetation parameters as height, canopy cover, production, and species diversity or direct monitoring of such parameters as covered species numbers, locations, and extent of occupied habitat.

15 RESCUE OF COVERED SPECIES

Prior to Listing of a Covered Species The Association agrees to provide the FWS with an opportunity to rescue populations of the covered species on lands with CCAA coverage prior to actions that would cause losses to occur. Notification that covered species are available for rescue will be provided to the FWS at least 30 days in advance of the action. In no case will failure of the FWS to rescue identified covered species populations within the allotted time frame require participating members to delay any action(s) which could cause population losses to occur.

After Listing of a Covered Species The Association agrees to provide the FWS with an opportunity to rescue individuals of the covered species before any authorized take occurs on lands with CCAA coverage. Notification that a take will occur must be provided to the FWS at least 30 days in advance of the action. Or if take will be on an ongoing basis, the notification can include this language “Because take of this species is on an ongoing basis, notification can be done annually at least 2 weeks prior to effort.”

16 DURATION OF AGREEMENT AND PERMIT

This Agreement, including any commitments related to funding under FWS programs, will be in effect for 30 years following its approval and signing by the participating parties. The section 10(a)(1)(A) permit authorizing take of the species will have a term of 30 years from the effective date of the permit. The permit and CCAA/CCA may be extended beyond the specified terms through amendment, upon agreement of the signing parties.

17 MODIFICATIONS

After approval of the CCAA, the FWS may not impose any new requirements or conditions on, or modify any existing requirements or conditions applicable to, a landowner or successor in interest to the landowner, to compensate for changes in the conditions or circumstances of any species or ecosystem, natural community, or habitat covered by the CCAA except as stipulated in 50 CFR 17.22(d)(5) and 17.32(d)(5).

18 MODIFICATION OF THE AGREEMENT

Any party may propose modifications or amendments to this Agreement, as provided in 50 CFR 13.23, by providing written notice to, and obtaining the written concurrence of, all other parties. Such notice shall include a statement of the proposed modification, the reason for it, and its expected results. The parties will use their best efforts to respond to proposed modifications within 60 days of receipt of such notice. Proposed modifications will become effective upon the receipt of all other parties' written concurrence.

19 AMENDMENT OF THE PERMIT

The permit may be amended to accommodate changed circumstances in accordance with all applicable legal requirements, including but not limited to the ESA, the National Environmental Policy Act (NEPA), and the FWS's permit regulations at 50 CFR 13 and 50 CFR 17. The party proposing the amendment shall provide a statement describing the proposed amendment and the reasons for it.

20 TERMINATION OF THE CCAA

As provided for in Part 8 of the FWS's CCAA Policy (FR 64:32726), the Association may terminate implementation of the CCAA's voluntary management actions prior to the CCAA's expiration date, for good cause, even if the expected benefits have not been realized. If the Association is unable to continue implementation of the plans and stipulations of the CCAA, whether due to catastrophic destruction of the species population numbers or habitat or due to unforeseen hardship, the Association would relinquish the permit to the FWS. The Association may terminate the CCAA for good cause with 60 days prior written notice to the FWS, and the FWS is provided an opportunity to relocate affected species within 30 days of that notice. The Association may also terminate the CCAA at any time for any other reason, but termination for reasons other than uncontrollable circumstances such as those associated with a force majeure event shall extinguish the Association's authority to take species (if listed) or occupied habitat under the permit.

Since the participating members do not own all the subsurface mineral rights underlying the Agreement area, there is a potential for the development of those mineral rights to occur without the consent of the surface land owner. This is a possible threat to the conditions of the Agreement, and the FWS must consider potential activities that may occur on the surface property owned by the members of the Association, but outside their control. If development of these subsurface minerals occurs, the FWS will review those actions related to the development and will work with other agencies having jurisdiction to ensure that they are compatible with the conditions of the Agreement.

21 PERMIT SUSPENSION OR REVOCATION

The FWS may suspend or revoke the permit for cause in accordance with the laws and regulations in force at the time of such suspension or revocation. Upon finding there is a basis to terminate for cause, FWS must notify and provide the Association the opportunity to correct the situation. The FWS also, as a last resort, may revoke the permit only if continuation of permitted activities would likely result in jeopardy to covered species (50 CFR 13.28(a)). Prior to revocation, the FWS must work with the Association to exercise all possible measures to remedy the situation.

22 REMEDIES

Each party shall have all remedies otherwise available to enforce the terms of the Agreement and the permit, except that no party shall be liable in damages for any breach of this Agreement, any performance or failure to perform an obligation under this Agreement or any other cause of action arising from this Agreement. No party shall be liable in damages for any breach of this Agreement, any performance or failure to perform an obligation under this Agreement, or any other cause of action from this Agreement.

23 DISPUTE RESOLUTION

The parties agree to work together in good faith to resolve any disputes, using dispute resolution procedures agreed upon by the parties.

24 SUCCESSION AND TRANSFER

This Agreement shall be binding on and shall inure to the benefit of the parties and their respective successors and transferees, in accordance with applicable regulations (50 CFR 13.24 and 13.25). The rights and obligations under the CCA shall run with the lease, license, permit, contract or other instrument with a federal agency covering the enrolled property and are transferable to future qualified assignees where allowed by the original instrument. The rights and obligations under the CCAA shall run with the ownership of the enrolled property and are transferable to subsequent non-federal landowners pursuant to 50 CFR 13.25. Coverage under the Enhancement of Survival permit issued to the Association will also be extended to the new owner(s). As a party to the original CI and permit, the new owner(s) will have the same rights and obligations with respect to the enrolled property as the original owner. The new owner(s) also will have the option of receiving CCAA assurances by signing a new CI. The Association shall notify the FWS of any transfer of ownership, and will work with the FWS to attempt to contact the new owner, explain the baseline responsibilities applicable to the property, and seek to interest the new owner in signing the existing CI or a new one to benefit covered species on the property. Assignment or transfer of the permit shall be governed by FWS regulations in force at the time.

25 AVAILABILITY OF FUNDS

Implementation of this Agreement is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. Nothing in this Agreement will be construed by the Participating Agencies to require the obligation, appropriation, or expenditure of any funds from the U.S. Treasury. The Association acknowledges that the FWS will not be required under this Agreement to expend any federal agency's appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

26 NO THIRD-PARTY BENEFICIARIES

This Agreement does not create any new right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone not a party to this Agreement to maintain a suit for personal injuries or damages pursuant to the provisions of this Agreement. The duties, obligations, and responsibilities of the parties to this Agreement with respect to third parties shall remain as imposed under existing law.

27 NOTICES AND REPORTS

Any notice or reports, including monitoring and annual reports, required by this Agreement shall be delivered to the person listed below as appropriate:

Thunder Basin Grasslands Prairie Ecosystem Association
1031 Steinle Rd
Douglas, WY 82633

Field Supervisor, Wyoming Field Office
U.S. Fish and Wildlife Service
5353 Yellowstone Road, Suite 308
Cheyenne, WY 82009

BLM

USFS

IN WITNESS WHEREOF, THE PARTIES HERETO have, as of the last signature date below, executed this Agreement to be in effect as of the date that the last signatory signs this agreement.

Chairman
Thunder Basin Grasslands Prairie Ecosystem Association

Date

Field Supervisor
US Fish and Wildlife Service

Date

Field Supervisor
Bureau of Land Management

Date

Field Supervisor
US Forest Service

Date

Field Supervisor
Office of Surface Mining

Date