

**Appendix C:
Ecological Risk Assessment Haxtun Wind Project Logan and Phillips
Counties, Colorado**



ECOLOGICAL RISK ASSESSMENT

Haxtun Wind Project

Logan and Phillips Counties, Colorado

June 25, 2010



Prepared For:

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1.0 INTRODUCTION

1.1 Report Background and Purpose

Westwood Professional Services began assisting the U. S. Department of Energy (DOE) and NECO Wind, LLC with a federal Environmental Assessment (EA) for the proposed 30-MW Haxtun Wind Project in April 2010 by initiating coordination with the U.S. Fish and Wildlife Service (USFWS) under the Fish and Wildlife Coordination Act of 1934 (as amended) and the Endangered Species Act of 1973 (as amended). The Haxtun Wind Project was previously known as the NECO Wind Project. The DOE has awarded NECO Wind, LLC with a grant pursuant to the American Recovery and Reinvestment Act (ARRA) and determined that an EA is required under DOE National Environmental Policy Act (NEPA) regulations. After Westwood obtained USFWS input regarding threatened and endangered species and other natural resource concerns associated with the project area (**Appendix A**), it became apparent that an overall site characterization and ecological risk assessment would be valuable for further agency coordination.

The purpose of this assessment is to:

1. characterize the natural resources within the project footprint of the 30-MW Haxtun Wind Project,
2. summarize desktop and field investigations been performed to date, and
3. provide recommendations regarding whether additional field surveys and other natural resource related activities may be warranted.

1.2 Study Area and Project Description

The Haxtun Wind Project area covers approximately 11.6 square miles (7,437 acres) of agricultural and grassland in western Phillips and eastern Logan Counties, northeastern Colorado (**Exhibit 1**). The northernmost project area boundary abuts the south edge of the City of Haxtun. The project area has been reduced from an initial project area of 60.6 square miles.

The 30-MW Haxtun Wind Project will consist of 20 proposed 1.5-MW turbines and the project design includes four alternative turbine locations in case one or more of the 20 preferred locations are deemed infeasible for any reason. The northeastern part of the project area includes land for a transmission line to link to the Haxtun Wind Project to the interconnection point at the Western Area Power Administration (WAPA) Haxtun substation. **Exhibit 2** depicts the preliminary project layout, including alternative turbine and substation locations and alternative alignments for roads, crane paths, collector cables and the interconnection transmission line.

2.0 LAND COVER AND VEGETATION

2.1 Methods

Cover types within the 7,437-acre Haxtun Wind Project area were evaluated in the field on May 27, 2010 and mapped on aerial photographs at a scale of 1 inch = 1,000 feet. No detailed vegetation species lists were prepared but, where grasslands were observed, they were characterized as either native plant communities or introduced, non-native species. Westwood also obtained and reviewed land cover mapping for the project area was obtained from the U.S. Geological Survey National Land Cover Database (USGS 2000).

2.2 Results

2.2.1 Cover Types

Based on the mapping described above, 81% of the 7,437-acre project area consists of cultivated cropland. The predominant cultivated crop is dry land winter wheat. Six and one-half quarter sections are under irrigation with center pivots and most such areas are planted to corn.

Non-native grasslands cover approximately 16% of the project area. No native grasslands were observed within the project area. Most grasslands lie on steeper hillsides or ridge tops within crop fields. A small portion of the mapped grassland encompasses wildlife shrub plantings. Grassland areas within the Haxtun project area average 53.68 acres in size and the largest contiguous grassland area (currently used as pasture) covers about 962.99 acres. Most grasslands are grazed or hayed and all appear to be planted to introduced forage species such as smooth brome (*Bromus inermis*) and timothy (*Phleum pratense*). Many of the grasslands are heavily invaded by cheatgrass (*Bromus tectorum*). **Table 2.1** summarizes and **Exhibit 3** depicts the cover types within the Haxtun Wind Project area. Representative project area photographs are included in **Appendix B**.

Table 2.1: Cover Types in Haxtun Project Area

| Land Cover | Acres | Percent |
|----------------------|-------|---------|
| Cropland | 6,036 | 81.16 |
| Non-Native Grassland | 1,181 | 15.88 |
| Developed | 143 | 1.92 |
| Private Road | 5 | 0.07 |
| Intermittent Stream | 58 | 0.78 |
| Pond | 2 | 0.02 |
| Woodland | 12 | 0.17 |
| Totals | 7,437 | 100.00 |

2.2.2 Public Lands

The project area does not include any publicly owned or leased land. The nearest such land is a Colorado Division of Wildlife (CDOW) walk-in hunting area northwest

of the Haxtun project area. This area is about 3,540 feet (0.67 mile) northwest of the nearest proposed turbine location (including alternates) within the Haxtun project area.

2.3 Risk Assessment

The project is not expected to adversely affect native plant communities of high ecological integrity or sensitivity because no such plant communities are known to exist within the Haxtun project area. Seventeen of twenty (85 percent) of the proposed turbines and all four alternate turbine locations (100 percent) have been preliminarily sited in cultivated fields to minimize the fragmentation of the remaining non-native grassland remnants. As discussed under Section 3.2, no threatened or endangered plant species are known to occur in the project area.

3.0 WILDLIFE AND SENSITIVE SPECIES

3.1 Methods

Westwood consulted endangered and threatened species lists from the CDOW (2010) and USFWS (2010) to identify rare species known or likely to occur in the project area. To further determine whether avian and bat species of conservation priority or critical habitats are known to occur within the project area, Westwood requested comments from the USFWS and an environmental review from the Colorado Natural Heritage Program (CNHP). Additionally, Westwood consulted various other data on species distributions, occurrences, and habitat associations, with a particular focus on birds and bats. Finally, Westwood reviewed GIS mapping on the distribution of sensitive wildlife species, pertinent information on Greater Prairie-Chickens, Burrowing Owls, and Black-tailed Prairie Dogs, and recorded avian species and raptor nests observed during the May 26-27, 2010 field review.

3.2 Results

3.2.1 Endangered, Threatened, and Special Concern Species

The project area contains little suitable habitat and is outside the occupied range of nearly all listed species. Most listed species depend upon wetlands and native grasslands, which are generally lacking in the project area. Therefore, the project area is unlikely to support endangered, threatened, or special concern species except on an incidental or limited occurrence basis.

Endangered, threatened, and special concern species listed for the State of Colorado by the CDOW (2010, 2010a) and for the Logan and Phillips Counties by the USFWS (2010) include 19 birds, 13 mammals, 10 reptiles, seven amphibians, two mollusks, and one plant. A review of rare species distributions, habitat associations, and project area characteristics indicates that that none of these species have a high potential to occur in the project area. Based on a desktop review and observations made during

the May 26-27, 2010 field review, four listed species have a moderate potential to occur in the project area, including one bird, two mammals and one reptile (Table 3.1). The text that follows the table provides discussion of specific listed species that could occur in or be affected by activities within Phillips or Logan counties.

Table 3.1: Endangered, Threatened, and Special Concern Species ¹

| Common Name | Scientific Name | Status ² | Logan Co ³ (USFWS) | Colorado Range/Habitat | Potential to Occur in Project Area | Comments |
|-----------------------------------|---|---------------------|----------------------------------|-------------------------------|--|---|
| Birds | | | | | | |
| Burrowing Owl | <i>Athene cunicularia</i> | ST | | E | Low | Associated with Prairie Dog colonies |
| Ferruginous Hawk | <i>Buteo regalis</i> | SC | | Statewide | Moderate | Grasslands and dry shrublands |
| Gunnison Sage- Grouse | <i>Centrocercus minimus</i> | SC | | SW | Low/None | Outside of range |
| Greater Sage Grouse | <i>Centrocercus urophasianus</i> | SC | | NW | Low/None | Outside of range |
| Western Snowy Plover | <i>Charadrius alexandrinus</i> | SC | | Rivers in E | Low | Lack of habitat |
| Piping Plover | <i>Charadrius melodus circumcinctus</i> | FT, ST | Yes | E lakes, rivers | Low | Lack of habitat |
| Mountain Plover | <i>Charadrius montanus</i> | SC | | Nearly statewide, mostly E | Low | Lack of habitat |
| Western Yellow- Billed Cuckoo | <i>Coccyzus americanus</i> | SC | | NE, SE | Low | Lack of habitat |
| Southwestern Willow Flycatcher | <i>Empidonax traillii extimus</i> | FE, SE | | SW | Low | Outside of range |
| American Peregrine Falcon | <i>Falco peregrinus anatum</i> | SC | | From front range W | Low/None | Outside of range |
| Whooping Crane ⁴ | <i>Grus americana</i> | FE, SE | Yes | Infrequent migrant | Low | Outside of range |
| Greater Sandhill Crane | <i>Grus canadensis tabida</i> | SC | | Mostly statewide | Low | Lack of habitat |
| Bald Eagle | <i>Haliaeetus leucocephalus</i> | ST | | Statewide, near water | Low | Lack of habitat |
| Long-Billed Curlew | <i>Numenius americanus</i> | SC | | E | Low | Lack of habitat |
| Least Tern ⁴ | <i>Sterna antillarum</i> | FE, SE | Yes | SE | Low | Outside of range |
| Mexican Spotted Owl | <i>Strix occidentalis lucida</i> | FT, ST | No | S Rocky Mtns | Low | Outside of range |
| Lesser Prairie- Chicken | <i>Tympanuchus pallidicinctus</i> | ST | | SE | Low | Outside of range |
| Columbian Sharp- Tailed Grouse | <i>Tympanuchus phasianellus columbianus</i> | SC | | W | Low/None | Outside of range |
| Plains Sharp- tailed Grouse | <i>Tympanuchus phasianellus jamesii</i> | SE | | E and W | Low/None | Outside occupied range, lack of habitat |
| Mammals | | | | | | |
| Gray Wolf | <i>Canis lupus</i> | FE, SE | No | Extirpated | Low/None | Outside of range |
| Townsend's Big- Eared Bat | <i>Corynorhinus townsendii pallescens</i> | SC | | W 2/3 and SE corner | Low/None | Outside of range |
| Black-tailed Prairie Dog | <i>Cynomys ludovicianus</i> | SC | | E 1/2 | Low | Known in Logan, Likely in Phillips Co. |
| Wolverine | <i>Gulo gulo</i> | SE | | W 2/3; Uncertain | Low/None | Outside of range |

Table 3.1: Endangered, Threatened, and Special Concern Species ¹

| Common Name | Scientific Name | Status ² | Logan Co ³ (USFWS) | Colorado Range/Habitat | Potential to Occur in Project Area | Comments |
|-------------------------------------|--|---------------------|----------------------------------|------------------------------|--|---|
| River Otter | <i>Lontra canadensis</i> | ST | | Riparian habitats | Low/None | Lack of habitat; Needs with semi- permanent water |
| Lynx | <i>Lynx canadensis</i> | FT, SE | No | Central mountains | Low/None | Outside of range |
| Black-footed Ferret | <i>Mustela nigripes</i> | FE, SE | No | NW | Low/None | Outside of range |
| Botta's Pocket Gopher | <i>Thomomy bottae rubidus</i> | SC | | S 1/2 | Low/None | Outside of range |
| Northern Pocket Gopher | <i>Thomomys talpoides macrotis</i> | SC | | Nearly statewide | Moderate | Known in Logan, Not in Phillips Co. |
| Grizzly Bear | <i>Ursus arctos</i> | FT, SE | No | W 3/5; Likely Extirpated | Low/None | Outside of range |
| Kit Fox | <i>Vulpes macrotis</i> | SE | | W edge | Low/None | Outside of range |
| Swift Fox | <i>Vulpes velox</i> | SC | | E 1/2 | Moderate | Limited grassland habitat |
| Preble's Meadow Jumping Mouse | <i>Zapus hudsonius preblei</i> | FT, ST | No | Foothills and front range | Low/None | Outside of range |
| Reptiles | | | | | | |
| Triploid Checked Whiptail | <i>Cnemidophorus neotesselatus</i> | SC | | SE | Low/None | Outside of range |
| Midget Faded Rattlesnake | <i>Crotalus viridis concolor</i> | SC | | W | Low/None | Outside of range |
| Longnose Leopard Lizard | <i>Gambelia wislizenii</i> | SC | | W/SW | Low/None | Outside of range |
| Yellow Mud Turtle | <i>Kinosternon flavescens</i> | SC | | E | Low | Limited habitat |
| Common King Snake | <i>Lampropeltis getula</i> | SC | | SE and SW | Low/None | Outside of range |
| Texas Blind Snake | <i>Leptotyphlops dulcis</i> | SC | | SE | Low/None | Outside of range |
| Texas Horned Lizard | <i>Phrynosoma cornutum</i> | SC | | SE | Low/None | Outside of range |
| Roundtail Horned Lizard | <i>Phrynosoma modestum</i> | SC | | SE (Otero Co.) | Low/None | Outside of range |
| Massasauga | <i>Sistrurus catenatus</i> | SC | | SE | Low/None | Outside of range |
| Common Garter Snake | <i>Thamnophis sirtalis</i> | SC | | NE | Moderate | Limited habitat |
| Amphibians | | | | | | |
| Northern Cricket Frog | <i>Acris crepitans</i> | SC | | NE | Low (extirpated?) | Lack of habitat |
| Boreal Toad | <i>Bufo boreas boreas</i> | SE | | Rocky Mtns | Low/None | Outside of range |
| Great Plains Narrowmouth Toad | <i>Gastrophryne olivacea</i> | SC | | SE | Low/None | Outside of range |
| Plains Leopard Frog | <i>Rana blairi</i> | SC | | Certain rivers | Low/None | Outside of range |
| Northern Leopard Frog | <i>Rana pipiens</i> | SC | | Nearly statewide | Low | Limited habitat |
| Wood Frog | <i>Rana sylvatica</i> | SC | | Mtns, certain rivers | Low/None | Outside of range |
| Couch's Spadefoot | <i>Scaphiopus couchii</i> | SC | | SE | Low/None | Outside of range |
| Fish | | | | | | |
| Mountain Sucker | <i>Catostomus playtrhynchus</i> | SC | | Smaller rivers, Streams | Low/None | Lack of habitat |

Table 3.1: Endangered, Threatened, and Special Concern Species ¹

| Common Name | Scientific Name | Status ² | Logan Co ³ (USFWS) | Colorado Range/Habitat | Potential to Occur in Project Area | Comments |
|---|--|---------------------|----------------------------------|---------------------------|--|------------------|
| Rio Grande Sucker | <i>Catostomus plebeius</i> | SE | | Rio Grande Basin | Low/None | Lack of habitat |
| Lake Chub | <i>Couesius plumbeus</i> | SE | | Cold lakes and Rivers | Low/None | Lack of habitat |
| Arkansas Darter | <i>Etheostoma cragini</i> | ST | | Streams, creeks | Low/None | Lack of habitat |
| Iowa Darter | <i>Etheostoma exile</i> | SC | | Cool streams | Low/None | Lack of habitat |
| Plains Orangethroat Darter | <i>Etheostoma spectabile</i> | SC | | Small streams | Low/None | Lack of habitat |
| Humpback Chub | <i>Gila cypha</i> | FE, ST | | Rivers | Low/None | Lack of habitat |
| Bonytail | <i>Gila elegans</i> | FE, SE | | Rivers | Low/None | Lack of habitat |
| Rio Grande Chub | <i>Gila pandora</i> | SC | | Streams | Low/None | Lack of habitat |
| Colorado Roundtail Chub | <i>Gila robusta</i> | SC | | Larger, slow rivers | Low/None | Lack of habitat |
| Brassy Minnow | <i>Hybognathus hankinsoni</i> | ST | | Rivers | Low/None | Lack of habitat |
| Plains Minnow | <i>Hybognathus placitus</i> | SE | | Streams | Low/None | Lack of habitat |
| Common Shiner | <i>Luxilus cornutus</i> | ST | | Streams | Low/None | Lack of habitat |
| Stonecat | <i>Noturus flavus</i> | SC | | Streams, rivers | Low/None | Lack of habitat |
| Colorado River Cutthroat Trout | <i>Oncorhynchus clarki pleuriticus</i> | SC | | Streams | Low/None | Lack of habitat |
| Greenback Cutthroat Trout | <i>Oncorhynchus clarki stomias</i> | FT, ST | No | Streams, Lakes | Low/None | Lack of habitat |
| Rio Grande Cutthroat Trout | <i>Oncorhynchus clarki virginalis</i> | SC | | Streams | Low/None | Lack of habitat |
| Suckermouth Minnow | <i>Phenacobius mirabilis</i> | SE | | Warm prairie streams | Low/None | Lack of habitat |
| Northern Redbelly Dace | <i>Phoxinus eos</i> | SE | | Clear streams | Low/None | Lack of habitat |
| Southern Redbelly Dace | <i>Phoxinus erythrogaster</i> | SE | | Clear streams | Low/None | Lack of habitat |
| Flathead Chub | <i>Platygobio gracilis</i> | SC | | Turbid streams, rivers | Low/None | Lack of habitat |
| Colorado Pikeminnow | <i>Ptychocheilus lucius</i> | FE, ST | No | Rivers | Low/None | Lack of habitat |
| Pallid Sturgeon ⁴ | <i>Scaphirhynchus albus</i> | FE | Yes | Large silty rivers | Low/None | Lack of habitat |
| Razorback Sucker | <i>Xyrauchen texanus</i> | FE, SE | No | Rivers and Reservoirs | Low/None | Lack of habitat |
| Mollusks | | | | | | |
| Rocky Mountain Capshell | <i>Acroloxus coloradensis</i> | SC | | Mtn. lakes and ponds | Low/None | Outside of range |
| Cylindrical Papershell | <i>Anodontooides ferussacianus</i> | SC | | Lakes, quite streams | Low | Lack of habitat |
| Plants | | | | | | |
| Western Prairie Fringed Orchid ⁴ | <i>Platanthera praeclara</i> | FT | Yes | None | Low/None | Outside of range |

¹ Information adapted from CDOW (2010) and USFWS (2010).

² FE = Federally Endangered; FT = Federally Threatened; SE = State Endangered; ST = State Threatened; SC = State Special Concern (not a statutory category).

³ The Logan County List refers to the USFWS (2010) list of threatened, endangered, candidate, and proposed species by county.

⁴ According to the USFWS (2010), water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other states.

Colorado Natural Heritage Program

Westwood obtained an environmental review from the CNHP at Colorado State University (**Appendix C**). This review focused on a 103-square-mile study area that encompassed the much smaller 11.6-square-mile Haxtun Project area and indicated that the Haxtun Wind Project is proposed in one of the least ecologically diverse parts of Colorado. The environmental review coordinator remarked that the reviews typically result in identification of several rare species or community reports, but that this search yielded very little information as there were no tracked records in the search area provided to CNHP.

CNHP indicated that no known Potential Conservation Areas (PCAs) occur within the Haxtun Project area and that no known elements (a biodiversity unit of conservation attention) are known to exist within two miles of the 103 square-mile study area. PCAs are areas of geographic focus for conservation of at-risk species. Elements are biodiversity units of conservation attention that may be rare species, ecological communities, animal assemblages, or complexes. CNHP indicated that the nearest tracked element is an occurrence record for a Greater Prairie-chicken that was observed over 4 miles south of the southeast corner of the 103 square-mile study area. This record location is approximately 8.78 miles from the southeast corner of the Haxtun Project area. This distance is consistent with CDOW mapping of Greater Prairie-chicken habitat (see Section 3.2.2).

South Platte Drainage Basin

The USFWS has indicated that water withdrawals that occur within the South Platte River drainage basin are subject to review under Section 7 of the Endangered Species Act due the potential for impacts to listed species that rely on the Platte River downstream (see Appendix A). The Platte River has incurred drainage impacts due to agricultural withdrawals that have reduced habitat values for listed species such as the Whooping Crane, Least Tern and Pallid Sturgeon. The Haxtun Project is not expected to affect these species or related resources of the South Platte River Drainage because the project area lies entirely within the Republican River drainage basin and outside of the South Platte River drainage (**Exhibit 4**). Accordingly, potential water withdrawals associated with the construction or operation of the Haxtun Wind Project is not expected to trigger Section 7 consultation with the USFWS.

Listed Bird Species

The Plains Sharp-tailed Grouse (*Tympanuchus phasianellus jamesii*), Bald Eagle (*Haliaeetus leucocephalus*), Burrowing Owl (*Athene cunicularia*) and Ferruginous Hawk (*Buteo regalis*) are state-endangered, threatened, threatened, special concern species, respectively. Nesting habitat for Prairie Sharp-tailed Grouse is structurally diverse, with a mixture of grasses, shrubs, and forbs representing high-quality nesting habitat. For wintering habitat, Prairie Sharp-tailed Grouse require deciduous trees and shrubs for feeding, roosting, and escape cover. Common tree and shrub species used by Prairie Sharp-tailed Grouse include quaking aspen (*Populus tremuloides*),

cherry (*Prunus* spp.), serviceberry (*Amelanchier* spp.), snowberry, sagebrush (*Artemisia* spp.), hawthorn (*Crataegus* spp.), willow (*Salix* spp.), and birch (*Betula* spp.) (Connelly et al., 1998). Like prairie-chickens, sharp-tailed grouse mate communally in leks. The nearest Plains Sharp-tailed Grouse range and the nearest lek mapped by CNHP and CDOW are 3.4 and 8.5 miles from the Haxtun project site, respectively (**Exhibit 5**). The Haxtun Wind project area does not contain suitable habitat for this species.

Bald Eagles and Ospreys (*Pandion haliaetus*) (not state-listed) utilize rivers and larger water bodies and for foraging and adjacent wooded areas for nesting and roosting. CNHP and CDOW mapping indicates that Bald Eagle and Osprey habitat in all seasons is concentrated along the South Platte River about 15 miles northwest of the Haxtun Wind project site (**Exhibit 6**). The Haxtun Wind project site does not encompass any water bodies that would offer suitable habitat for these species.

Burrowing Owls and Ferruginous Hawks are both associated with grasslands, but neither species was observed during the May 26-27 field review. The Ferruginous Hawk also inhabits dry shrublands and the Burrowing Owl is often associated with Prairie Dog colonies, but may use other types of rodent burrows (e.g., ground squirrels). The only burrows with surface openings observed during the May 26-27, 2010 field review were badger burrows. Grasslands cover only about 16% of the project area (see Section 2.2.1) and no Prairie Dogs Colonies were observed during the May 27 field review (see Mammals discussion below).

Three endangered and threatened avian species listed by the USFWS have very limited potential to occur in the project area. The Piping Plover (federal/state threatened), Whooping Crane (federal/state endangered), and Least Tern (federal/state endangered) are all listed by the USFWS as potentially occurring in Logan County, but none of these species are listed for Phillips County.

The Piping Plover uses sandy lakeshores and riverbeds and may occur along the South Platte River, which is located 16 miles northwest of the project area. However, because the project area contains parts of only two intermittent streams and no suitable Piping Plover habitat, this species is not expected to occur in the project area.

Similarly, the Whooping Crane and Least Tern are species that are associated with the South Platte River and require more wetland habitat than exists in the project area and therefore both are unlikely to occur in the project area. Although the northeastern corner of Colorado is approximately 28 miles west of the 200-mile-wide Whooping Crane migration corridor, Whooping Cranes are occasionally observed in Colorado during migration. Of the 1,060 Whooping Crane observations recorded between 1943 and 1999 by Austin and Richert (2001), only five occurred in Colorado. None of these five were located in Logan or Phillips Counties.

Mammals

The Black-tailed Prairie Dog and Northern Pocket Gopher are known to occur in Logan County and are considered likely to occur and unknown to occur in Phillips County, respectively (CDOW 2010a). No Prairie Dog colonies were observed in the project area during the May 26-27, 2010 field review. Prairie Dogs appear to be absent within the Haxtun Project area, most likely due to the predominance of annual agricultural crops and the small amount of the non-native grassland that remains. Aerial photography for some parts of the Haxtun Project area showed signatures of burrowing but upon inspection in the field these were found to be ant mounds. The Conservation Plan for Grassland Species in Colorado (CDOW 2003) suggests there is at least one Prairie Dog colony near the project location, but field observations did not corroborate this. The Swift Fox has been documented to occur throughout eastern Colorado (CDOW 2010a), but there is relatively little grassland habitat suitable for Swift Fox in the project area.

Plants

The Western Prairie Fringed Orchid (*Platanthera praeclara*) is a federally listed threatened plant that could occur in Logan County. However, the nearest Preferred habitat for this species is unplowed, calcareous prairies and sedge meadows. Plants have also been observed in earlier successional communities such as borrow pits, old fields, and roadside ditches. The major historical cause of the species' decline has been the conversion of prairie and sedge meadow habitat to agricultural use. The *Platanthera praeclara* (Western Prairie Fringed Orchid) Recovery Plan (USFWS 1996) indicates that no post-1970 populations of Western Prairie Fringed Orchids have been reported in Colorado and that the nearest such population was reported in Cherry County, Nebraska. The Haxtun Wind project area encompasses no unplowed native prairies or sedge meadows and, thus, lacks potential habitat for Western Prairie Fringed Orchids.

Other Listed Species

Listed species include reptiles, one amphibian and one fish species that are either listed by the USFWS for Logan County or are considered to have potential to occur in the project area (see Table 3.1). However, all of these species are associated with aquatic or semi-aquatic habitat that lie in unaffected parts of Haxtun Wind project area or are associated with downstream parts of the South Platte River system.

3.2.2 Other Species of Wind Energy Concern

Bird List

During the field review on May 26-27, 2010, a list was maintained of all bird species observed incidental to the raptor nest search activities. This was not a quantitative breeding bird survey but provides a good overview of the bird species using the project area and surrounding area. Bird species observed within the project area and the surrounding area are summarized in **Table 3.2**. Raptor and raptor nest observations are discussed in more detail in the following section.

Table 3.2: Birds Observed in Project Area on May 26-27, 2010

| Common Name | Scientific Name | Remarks |
|----------------------|--------------------------------|---|
| Red-winged blackbird | <i>Agelaius phoeniceus</i> | Observed several |
| Great-horned owl | <i>Bubo virginianus</i> | Observed 2: 1 at old farmstead; 1 perched along intermittent stream (well outside project area) |
| Swainson's hawk | <i>Buteo swainsoni</i> | Observed 3: 1 on nest and 2 flying over unoccupied nest (all outside project area) |
| Lark bunting | <i>Calamospiza melanocorys</i> | Common |
| Killdeer | <i>Charadrius vociferus</i> | Common |
| Northern harrier | <i>Circus cyaneus</i> | Two males observed hunting, one within and one outside the project area |
| American crow | <i>Corvus brachyrhynchos</i> | One observed |
| Horned lark | <i>Eremophila alpestris</i> | Common |
| Barn swallow | <i>Hirundo rustica</i> | Observed several |
| Brown-headed cowbird | <i>Molothrus ater</i> | Observed several |
| Ring-necked pheasant | <i>Phasianus colchicus</i> | Common |
| Black-billed magpie | <i>Pica hudsonia</i> | Observed 1 near unoccupied stick nest (well outside project area) |
| Common grackle | <i>Quiscalus quiscula</i> | Common |
| Western meadowlark | <i>Sturnella neglecta</i> | Common |
| European starling | <i>Sturnus vulgaris</i> | Observed several |
| American robin | <i>Turdus migratorius</i> | One observed |
| Western kingbird | <i>Tyrannus verticalis</i> | Observed several |
| Mourning dove | <i>Zenaida macroura</i> | Common |

Greater Prairie Chickens (*Tympanuchus cupido*)

The greater prairie chicken is an upland game species that is hunted in Colorado and is not listed by the state as threatened, endangered or special concern. As discussed above, CNHP and CDOW mapping does not indicate any recent records of greater prairie chicken or lek observations within the Haxtun Project area. The nearest Greater Prairie-chicken range and the nearest lek mapped by CNHP and CDOW are 4.5 and 5.5 miles from the Haxtun project site, respectively (**Exhibit 7**). The Haxtun Project area does not appear to encompass potentially suitable habitat for greater prairie chickens. As mentioned above, 81 and 16 percent of the Haxtun Project area consists of cultivated cropland and non-native grassland, respectively. total of eight individual grassland fragments were mapped within the Haxtun Project area with an average size of about 54 acres. The largest contiguous grassland area is approximately 963 acres in size. None of the grasslands observed in the area consisted of native prairie and no sand sage was observed.

Schroeder and Braun (1992) studied prairie chicken movements and habitat use from 1986-1988 in a 74,379 acre study area in Yuma County, Colorado (one county south of the Haxtun Project area). Based on the findings presented in this study, prairie chickens predominantly utilize native prairie grassland communities, particularly those with a sand sagebrush component. During this study, a minimum of 79.4, 75.7, 83.2 and 85.3 percent of observations of adult male, yearling male, adult female and yearling female prairie chickens occurred in native grassland or native grassland/sand sage mixtures. The remaining observations were in cropland, disturbed areas or

short-mid grass grasslands. The short-mid grass habitat type included the non-native grassland component of the study area. Nesting sites and lek locations were similarly focused on native grassland habitat types. Eighty-two of 83 nest sites (98.8 percent) and 54 of 65 leks (83.1 percent) were found on native grassland habitat types.

Based on the results reported by Schroeder and Braun (1992), the Haxtun Wind Project area lacks suitable prairie chicken habitat due to the lack of native grassland plant communities and the predominance of row crop agriculture. Appendix B provides comparative photographs of the Haxtun Project area versus known greater prairie-chicken habitat approximately six miles north of Fleming in Logan County, Colorado. As described above under cover types, grasslands within the Haxtun Project area are highly fragmented, of small size and consisting primarily of non-native species. This conclusion is corroborated by the lack of reported prairie chicken observations within or in close proximity to the Haxtun Project area.

Based on the lack of recent prairie-chicken records and the absence of suitable habitat, the potential for greater prairie-chickens to be present in the Haxtun Project area and potentially affected by wind power development appears to be negligible.

Raptors and Raptor Nests

Public roads throughout the entire project area and adjacent sections were driven and any raptors and/or possible raptor nests that observed were mapped and documented. All areas with trees were examined from public roads with binoculars or a spotting scope, depending on distance. All stick nests observed and raptors observed on or near such nests were documented. Other raptors that were not engaged in nesting behavior were also documented. No stick nests were observed within the project area but one probable Swainson's hawk nest was observed just outside the area along an intermittent stream in Section 9, Township 8 North, Range 48 West. The nest was not occupied but two Swainson's hawks were observed soaring overhead. This nest is about 3,236 feet (0.61 mile) from the nearest proposed turbine location. One male harrier was observed hunting within the project area but no nest-related behavior or female harriers were observed. Raptors and known or possible raptor nests are summarized in **Table 3.3**. Raptor nest locations (including those observed outside the Haxtun Wind Project area) are being reported to the CDOW for inclusion in the Division's raptor nest database.

Table 3.3: Raptors and Possible Raptor Nest Locations Observed on May 27, 2010

| Common Name | Location | Distance to Nearest Turbine Location | Remarks |
|------------------|---|--------------------------------------|---|
| Unidentified | SENE, Section 9 (just outside project area) | 3,236 feet | Probable Swainson's hawk nest along drainage – unattended but two Swainson's hawks were soaring over location |
| Northern harrier | NWSW, Section 3 | 4,840 feet ¹ | Male observed hunting |

¹ Bird was flying so distance is approximate.

Bats

Twenty-one species of bats are known to occur in Colorado according to CDOW (2010b) and Bat Conservation International (BCI 2010). **Table 3.4** lists the bat species in the state, their range, general habitat, and roost habitat requirements. Only five of the 21 species have a moderate potential to occur in the project area, and none of the 21 species have high potential to occur in the project area. The species with moderate potential to occur in the project area are relatively common and include the Big Brown Bat, Silver-haired Bat, Red Bat, Hoary Bat, and the Western Small-footed Myotis. The Big Brown Bat is often associated in with humans and development and has been documented in Logan County, but not in Phillips County. The Silver-haired Bat, Red Bat, and Hoary Bat are solitary tree-roosting species that account for a high proportion of the bat fatalities associated with wind projects (see Section 3.3). The Silver-haired Bat and Red Bat are often associated with woodland habitat such as riparian corridors, but the Hoary Bat has been known to use any habitat with trees. The Western Small-footed Myotis is considered widespread and common.

Five of the 21 species are listed among the species of greatest conservation need by the Colorado Division of Wildlife (CDOW 2006), but none of these species are likely to occur in the project area. The project area falls outside the known occupied range of all of these species. These five species include the Townsend's Big-eared Bat, the Spotted Bat, Arizona Myotis, Fringed Myotis, and Allen's Big-eared Bat. The Arizona Myotis was previously considered a subspecies of the Little Brown Bat. The Townsend's Big-eared Bat is a special concern species in Colorado and is the only Colorado bat species with listed conservation status.

The project area includes relatively little suitable roosting and foraging habitat for bats. Bat roosting habitat consists primarily of tree cavities, trees with loose bark, caves, mines, buildings, and rock crevices. The 11.5-square-mile project area includes no known caves, mines, or major rock outcrops. Woodlands cover less than 1% of the project area and the area includes only 11 building sites. Many bat species forage near water and the project area includes only two intermittent streams and two small ponds. The lack of standing water limits the availability of insects that depend on a water source. The lack of favorable habitats is expected to limit the potential abundance of resident bats in the project area.

Table 3.4: Bat Species Known to Occur in Colorado

| Common Name | Scientific Name | Colorado Range | General Habitat | Roosting Habitat | Potential to Occur in Project Area |
|--------------------------|--------------------------------|---------------------|---|--|------------------------------------|
| Pallid Bat | <i>Antrozous pallidus</i> | W and SE | Deserts and grasslands near rock outcrops | Rock crevices, shallow caves, overhangs, man-made structures | Low/None |
| Townsend's Big-eared Bat | <i>Corynorhinus townsendii</i> | W 2/3 and SE corner | Woodlands and forests | Caves, mines, tunnels, crevices, masonry structures | Low |

Table 3.4: Bat Species Known to Occur in Colorado

| Common Name | Scientific Name | Colorado Range | General Habitat | Roosting Habitat | Potential to Occur in Project Area |
|---|----------------------------------|-----------------------|---|---|---|
| Big Brown Bat | <i>Eptesicus fuscus</i> | Statewide | Often found in cities and towns | Buildings, barns, bridges, rock crevices | Moderate |
| Spotted Bat | <i>Euderma maculatum</i> | W edge | Woodland, shrub desert, cliffs, water | Cliff crevices | Low/None |
| Allen's Big-eared Bat | <i>Idionycteris phyllotis</i> | Potentially SW corner | Forests, riparian areas | Mines, boulder piles, lava beds, under loose tree bark | Low/None |
| Silver-haired Bat ² | <i>Lasionycteris noctivagans</i> | Statewide | Forests | Trees under bark, tree cavities, open buildings | Moderate/Low |
| Red Bat ² (Eastern Red Bat) | <i>Lasiurus borealis</i> | E 1/2 | Woodlands | Deciduous trees | Moderate |
| Hoary Bat ² | <i>Lasiurus cinereus</i> | Statewide | Any habitat with trees | Trees | Moderate |
| California Myotis | <i>Myotis californicus</i> | W edge | Desert woodland scrub | Beneath loose bark, crevices of old trees and rocks, mines, caves, buildings, beneath bridges | Low/None |
| Western Small-footed Myotis | <i>Myotis ciliolabrum</i> | Statewide | Rocky areas at lower elevations | Cliff-face crevices, beneath rocks on the ground, buildings, mines, under bark on trees | Moderate |
| Long-eared Myotis | <i>Myotis evotis</i> | W 2/3 | Coniferous forest | Tree cavities, behind loose bark), in sheds, cabins, caves, rock crevices, mines | Low/None |
| Little Brown Bat (Little Brown Myotis) | <i>Myotis lucifigus</i> | W 2/3 | Riparian woodlands, urban areas, woodlots, shelterbelts | Tree cavities, beneath tree bark, buildings, bridges, rock crevices | Low/None |
| Arizona Myotis | <i>Myotis occultus</i> | W 2/3 | Woodlands | Tree cavities, beneath tree bark, rock crevices | Low/None |
| Fringed Myotis | <i>Myotis thysanodes</i> | W 2/3 and SE corner | Coniferous forest and woodland at moderate elevations | Rock crevices, caves, mines, buildings and trees | Low/None |
| Northern Myotis | <i>Myotis occultus</i> | W 2/3 | Woodlands | Tree cavities, beneath tree bark, rock crevices | Low/None |
| Long-legged Myotis | <i>Myotis volans</i> | W 2/3 | Wooded areas of foothills, mountains, and plateaus | Buildings, mines, caves, rick fissures, beneath tree bark | Low/None |

Table 3.4: Bat Species Known to Occur in Colorado

| Common Name | Scientific Name | Colorado Range | General Habitat | Roosting Habitat | Potential to Occur in Project Area |
|---|-------------------------------|-------------------------------|--|--|------------------------------------|
| Yuma Myotis | <i>Myotis yumanensis</i> | W and S | Dry shrubby country with streams or other water | Caves, crevices, mines, tree cavities, abandoned buildings and other structures | Low/None |
| Big Free-tailed Bat | <i>Nyctinomops macrotis</i> | Mostly front range and W edge | Desert, arid grassland, rocky or canyon country | Rocky out-crops, rock crevices, canyons, cliffs, occasionally buildings | Low |
| Western Pipistrelle (Canyon Bat) | <i>Parastrellus hesperus</i> | W border | Arid canyons, dry shrublands and woodland near water | Dense vegetation, beneath rocky slabs, rock crevices; mines or caves for hibernacula | Low/None |
| Eastern Pipistrelle (Tri-colored Bat) | <i>Pipistrellus subflavus</i> | Only N-central | Open deciduous woodlands and edges near agriculture | Foliage, tree cavities, rock crevices | Low/None |
| Brazilian Free-tailed Bat (Mexican Free-tailed Bat) | <i>Tadarida brasiliensis</i> | S 2/3 | Wide variety from desert to woodland | Mostly caves and mines; sometimes bridges, buildings | Low/None |

3.3 Risk Assessment

3.3.1 Endangered, Threatened, and Special Concern Species

The project is not expected to adversely affect the rare mammals with potential to occur in the project area (Black-tailed Prairie Dog, Northern Pocket Gopher, and Swift Fox) because:

1. none of these species fly so there is no potential for direct mortality,
2. none of these species have been documented to occur in the project area,
3. potential habitat for these species in the project area is very limited, and
4. turbines have been sited in locations that provide little or no potentially suitable habitat for listed species.

Although the two listed reptiles and one listed amphibian could be associated with the two small stock ponds and intermittent streams within the project area, project construction and operation will have minimal to no effect on these habitats. The only anticipated impacts are temporary and associated with two underground cable crossings of intermittent streams. The listed fish and plant species would only be associated with downstream reaches of the South Platte River, which is entirely outside the drainage area of the project. Therefore, listed reptiles, amphibians, fish, and plants are not expected to be adversely affected by the Haxtun Wind Project.

3.3.2 Birds

The bird species observed within and around the Haxtun Project area are all common and most are ubiquitous throughout the project area. All of the observed species are adapted to agricultural activities and associated fragmented habitats. Accordingly, the small amount of additional habitat fragmentation associated with the three turbines and their access roads to be located on non-native grassland is not expected to have any meaningful impact on these species.

No raptor nests were observed within the Haxtun Wind Project area. The nearest possible raptor nest outside the area is 3,236 feet (0.61 mile) away from the nearest proposed turbine location (including alternates). This exceeds the most restrictive CDOW guidance on raptor nest setbacks, which recommends a 2,640 foot (0.5 mile) setback from ferruginous hawk nests. It is possible that a small number of raptors could incur direct mortality from collisions with turbine blades while hunting or migrating through the area. However, the project area does not contain any topographic features or habitat types that would concentrate or funnel raptor movements during such activities. Any potential for direct raptor mortality is expected to be low.

Regional average fatality rates at wind farms studied across the U.S., weighted by megawatts (MW) per project, ranged from 2.31 birds per MW per year in the Rocky Mountain Region to 3.50 birds per MW per year in the Upper Midwest (National Research Council 2007). Studies in the Pacific Northwest and the East had intermediate weighted average fatality rates, at 2.65 and 2.96 birds per MW per year, respectively. These averages compare favorably to an estimate from Altamont Pass of 8.1 fatalities per MW per year. With data accumulating to show relatively low direct mortality of birds outside of Altamont Pass, the focus of wind farm assessments has evolved to include review of potential habitat impacts (Schwartz 2004).

The rate of bird fatality due to turbine collisions at the Haxtun Wind Project is expected to be similar to bird fatality rates at the Foot Creek Rim Windpower Project in Carbon County, Wyoming. At Foot Creek Rim, where much of the research on turbine-bird interactions has been done in the Wyoming, fatality rates have averaged 1.5 birds per turbine per year (Young et al. 2003). Bird fatality estimates at the Klondike Phase I Wind Project in Sherman County, Oregon, which has land cover types similar to Foot Creek Rim, were 1.42 birds per turbine per year.

The rate of bird fatality due to turbine collisions at the Haxtun Wind Project is expected to be within the range of bird fatality reported in previous studies. Siting turbines in actively cropped areas may help reduce the potential for avian fatalities. Overall, bird fatality due to collisions with turbines at the Haxtun Wind Project are generally expected to fall between 1.25 and 3.5 birds per MW per year.

3.3.3 Bats

Some bat fatality is expected to result from collisions with turbines at the Haxtun Wind Project, but the bat fatality rate is expected to be relatively low because the

project area lacks important bat habitat. The overall average bat fatality rate for U.S. wind projects is 3.4 fatalities per turbine per year, or 4.6 per MW per year, with the highest rates of bat fatality occurring in the eastern U.S. at wind projects situated in wooded landscapes (Johnson 2004). Most wind projects in grassland and agricultural landscapes tend to have lower bat fatality rates, ranging from 0.74 to 2.32 bats per turbine per year (Erickson et al. 2002, Johnson 2004). More recent research suggests that more bat fatality is caused by barotrauma, a result of air pressure changes around turbine blades, than collision with turbines (Baerwald et al. 2008).

The bat fatality study nearest to the Haxtun Wind Project was conducted at the Foote Creek Rim Windpower Project in Carbon County, Wyoming. Bat fatality estimates at Foot Creek Rim over three years of post-construction monitoring (2000-2002) were 1.34 bats per turbine per year (Young et al. 2003). These data are well below fatality estimates in the east (Mountaineer, WV – 38 bats per turbine per year and Buffalo Mountain, TN – 20.8 bats per turbine per year) and Midwest (Top of Iowa, IA – 10.2 bats per turbine per year and Buffalo Ridge, MN – 2.2 bats per turbine per year) (Kunz et al. 2007). The landscape and bat fatality estimates at the Klondike Phase I in Sherman County, Oregon were relatively similar to Foote Creek Rim, at 1.2 bats per turbine per year (Kunz et al. 2007).

Bat fatality at previously developed wind farms has been associated primarily with dispersing and migrating bats. At wind farms in West Virginia, Tennessee, Iowa, Wyoming, and Minnesota in various land cover types (i.e., forested, agricultural, shrub/scrub) over 90% of the reported bat collision fatality occurred between mid-July and mid-September (Erickson et al. 2002). The seasonal peak in bat fatality coincides with the dispersal and migration period.

Bat fatality at previously developed wind farms has typically involved solitary, tree-roosting species such as Silver-haired, Hoary, and Red Bats (Erickson et al. 2002, Johnson 2004). Hoary Bats have accounted for nearly half of all fatalities at wind farms (Johnson 2004). Although all three of these species have the potential to occur at the Haxtun Wind Project, the potential for high bat fatality rates at Haxtun is relatively low given the scarcity of available roosting habitat. Given the results of studies in comparable landscapes, bat fatality at Haxtun Wind Project would be expected to be in the range of 0.74 to 2.32 bats per turbine per year.

4.0 WETLANDS AND STREAMS

4.1 Methods

Prior to initiating field work, National Wetland Inventory (NWI) and National Hydrography Dataset (NHD) mapping was obtained for the project area (**Exhibits 8 and 9**). All areas mapped as wetlands, ponds or streams were subsequently observed in the field during the May 26-27, 2010 field review. The water resources that were observed in the field were mapped on 1" = 1000' scale aerial photographs and digitized for inclusion in the project GIS.

4.2 Results

With the exception of two small farm impoundments, no visible depressional wetlands were observed within the project area. Some areas mapped as intermittently flooded wetlands on the NWI were located in cultivated crop fields and were indistinguishable from the surrounding uplands. It is possible that some such areas may represent playas that hold water for a short period in the spring but then are farmed through after they dry up in the early summer. However, the preliminary project layout avoids impacts to such mapped areas.

The Haxtun Project area encompasses several intermittent streams and drainages that appear on NWI and/or NHD mapping. Where the streams exhibited a visible ordinary high water mark (OHWM), they were mapped as part of cover type mapping (see Exhibit 2). The upstream ends of some highly intermittent drainage ways lacked ordinary high water marks (OHWMs) or any visible evidence of confined overland flow. Most such areas are within crop fields and cultivated through. These areas can be discerned by comparing the cover type mapping depicted in Exhibit 2 versus NWI and NHD mapping shown in Exhibits 8 and 9. We anticipate that these headwaters drainages that lack OHWMs and evidence of confined overland flow might not be considered waters of the United States by the U. S. Army Corps of Engineers (USACE).

Regardless of potential jurisdiction, the preliminary layout depicted in Exhibit 1 avoids impacts to mapped water features to the maximum extent possible. No turbine locations (including alternates) or permanent access roads will cross areas mapped as wetlands or streams. Some underground collector cable routes will cross intermittent drainages. In cases where the USACE exercises jurisdiction over such crossings, we anticipate they will be eligible for coverage by nationwide permit (NWP) 12 for utility line activities. None of the crane paths shown on the preliminary project layout would cross an intermittent stream. If any such crossings ultimately prove necessary as the project design is finalized, they would be one time crossings during construction. If such a crossing was found necessary, it is possible that a culvert and small temporary fill could be required to accommodate crane movements. If any such crane crossings would involve streams under USACE jurisdiction, these would represent short-term temporary impacts that should be covered by NWP 14 for linear transportation projects.

Temporary impacts associated with the bedding of underground cables or crane crossings would be mitigated through rectification, as all affected areas would be restored to their preconstruction contours and conditions. When the access road system is design, existing drainage areas and patterns will be delineated and preserved through the appropriate placement of culverts. In this manner, indirect impacts from drainage area changes will be avoided.

The preliminary project layout has been submitted to the Denver Regulatory Office of the USACE Omaha District with a request for confirmation that the underground cable crossings of NHD-mapped intermittent streams would be covered by NWP 12.

4.3 Risk Assessment

The Haxtun Wind project will have minimal potential for adverse effects to wetlands and streams. No permanent filling impacts would result from the proposed layout (including alternatives) and existing drainage patterns will be preserved through appropriate access road design. The only anticipated impacts to water resources are temporary impacts to intermittent streams associated with the bedding of collector cables. These areas will be restored to pre-construction conditions. A NWP confirmation request is currently in process with the Denver Regulatory Office of the Omaha District USACE and it is expected that NWP coverage will be confirmed.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on the above-described desktop assessment and the field reiew performed on May 26-27, 2010 and are framed in the context of the Tier 2 Questions from the Wind Turbine Guidelines Advisory Committee (WTGAC) Recommendations to the Secretary of the Interior. These guidelines can be used in structured decision making to determine whether field surveys are warranted to assess potential effects of a wind energy project on wildlife resources (WTGAC 2010). As indicated by the USFWS (2010c):

“The Service is aware of industry embracing the Recommendations developed by the Wind Turbine Guidelines Advisory Committee. It is very encouraging to have industry coming to us voluntarily as they plan future wind-energy projects. We recognize that the Committee's Recommendations to the Secretary are, at this point, just recommendations. Despite the fact the Service cannot advocate for the use of the Recommendations for wind-energy development at this point in time, we recognize that the Recommendations represent a new and comprehensive effort to address the wildlife impacts of wind-energy development. It is of course expected that a wind-energy developer would want to consider using the Recommendations in its assessment of a wind project on the potential impacts to wildlife.

The WTGAC recommendations outline a sequence of five tiers of activities and studies ranging from pre-construction coordination and studies to post-construction monitoring and mitigation. This report supplies the information required for Tiers 1 and 2. The determination as to whether Tier 3 field studies should proceed after completion of Tier 2 site Characterization depends on the answers to six questions (WTGAC 2010). Those questions and the answers with respect to the Haxtun Wind Project are listed below:

5.1 Rare Species/Critical Habitats

Question 1: Are there known species of concern present on the project site, or is habitat (including designated critical habitat) present for these species?

Response 1: No. The CNHP environmental review indicated that the project is proposed in one of the least ecologically diverse areas of Colorado. No state or federally designated critical habitat is mapped or was observed within the project area.

5.2 Sensitive Landscapes

Question 2: Does the landscape contain areas where development is precluded by law or designated as sensitive according to scientifically credible information? Examples of designated areas include, but are not limited to: ‘areas of scientific importance’; ‘areas of significant value’; federally-designated critical habitat; high-priority conservation areas for non-governmental organizations; or other local, state, regional, federal, tribal, or international categorization.

Response 2: No. No part of the project area has been assigned a designation that would preclude or limit wind power development. Nearly the entire project area is under active agricultural use and no state or federally designated critical habitat exists within the project area.

5.3 Sensitive Plant Communities

Question 3: Are there plant communities of concern present or likely to be present at the site(s)?

Response 3: No. Nearly the entire project area is under active agricultural use and no native plant communities were observed.

5.4 Wildlife Congregation Areas

Question 4: Are there known critical areas of wildlife congregation, including, but not limited to, maternity roosts, hibernacula, staging areas, winter ranges, nesting sites, migration stopovers or corridors, leks, or other areas of seasonal importance?

Response 4: No wildlife congregation areas are mapped within the Haxtun Wind Project area and no such areas were observed in the field on May 26-27, 2010. No Prairie Sharp-tailed Grouse or Greater Prairie-chicken leks or bat maternity roosts or hibernacula are known to exist within the project area.

5.5 Habitat Fragmentation

Question 5: Using the best available scientific information, has the relevant federal, state, tribal and/or local agency independently demonstrated the potential presence of a population of a species of habitat fragmentation concern? If not, the developer need not assess impacts of the proposed project on habitat fragmentation.

Response 5: Habitat fragmentation is very extensive within and around the Haxtun Wind Project area. No species of habitat fragmentation concern are thought to be potentially present.

5.6 Resident Species and Related Risks

Question 6: Which species of birds and bats, especially those known to be at risk by wind energy facilities, are likely to use the proposed site based on an assessment of site attributes?

Response 6: The Haxtun Wind Project area supports relatively common species of birds and may support relatively common species of bats. The project could result in relatively low collision-caused mortality to common raptors, songbirds and bats. These species are discussed in previous sections of this document.

5.7 Recommendations Regarding Pre-Construction Field Surveys

Based on the above application of the WTGAC Recommendations, additional wildlife-related desktop or field surveys or studies do not appear to be warranted. The information provided in this assessment is expected to be sufficient for the dual purposes of: (1) assessing the potential for adverse effects on natural resources from the Haxtun Wind Project and (2) informing the design process as the preliminary project layout is finalized.

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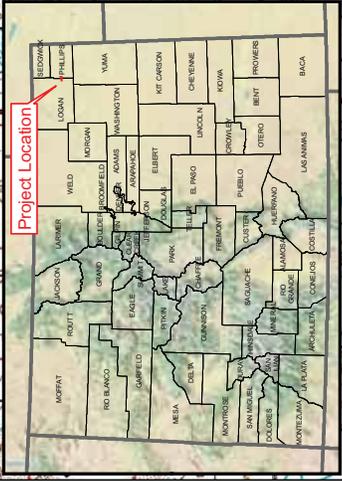
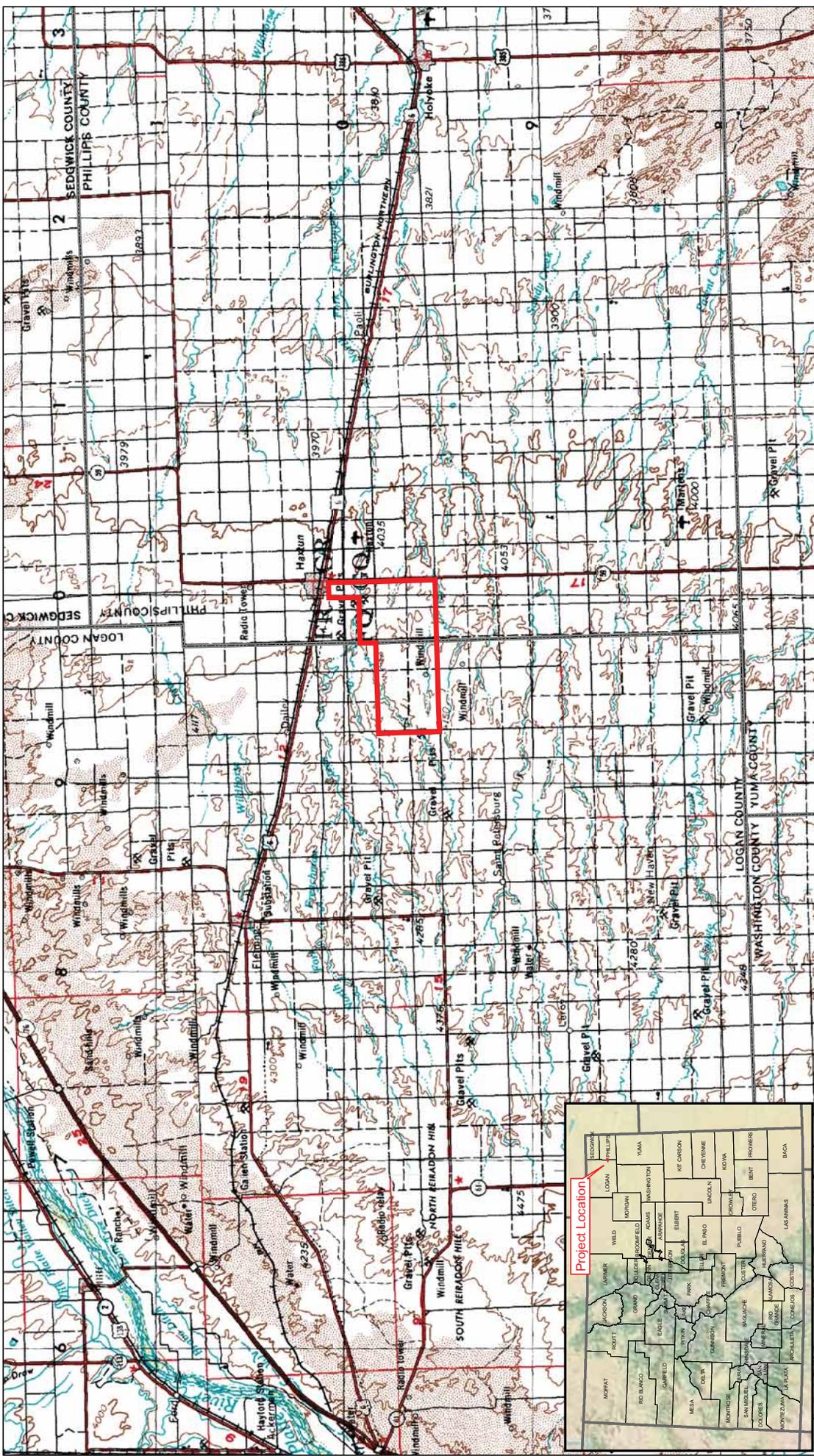
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http://www.usgsquads.com/prod_NLCD.htm
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http://www.west-inc.com/reports/fcr_final_mortality.pdf.

Exhibits

Haxtun Wind Project

Logan and Phillips Counties, Colorado

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Map Source: Westwood (2010) - 50M Scale 1:50,000 (Data from USGS, 2003) State Boundary from USGS (2010) County Boundary from Colorado Division of Local Government (2003) State Boundary from ESRI and Esri, Inc. North America, Inc. (2008); ESRI WMS Server US National Parks, World Physical Map (accessed 2010).

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 Eden Prairie, MN 55344
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 FAX 952-937-5822
 TOLL FREE 1-888-937-5150
 www.westwoodps.com



Legend

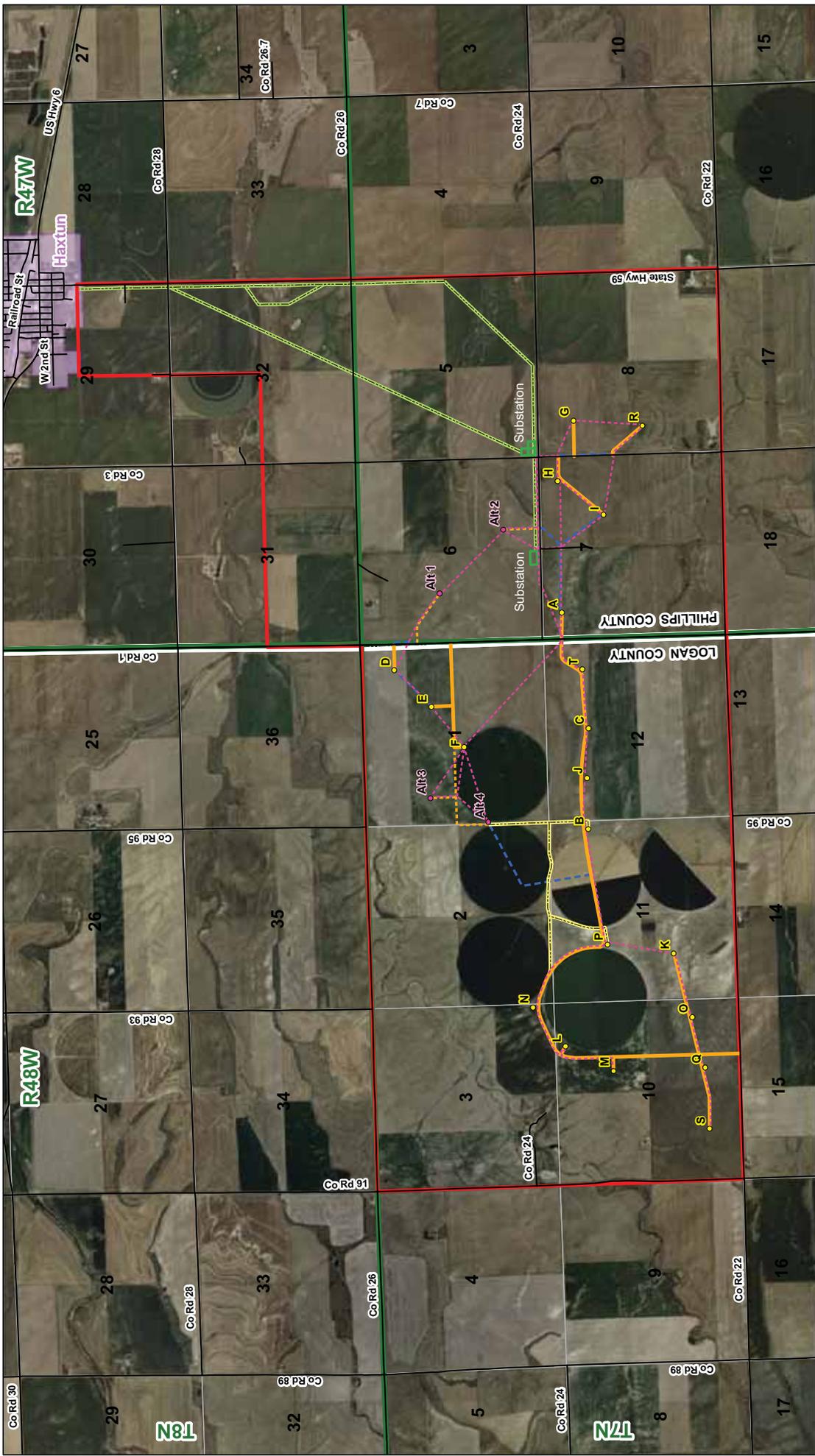
- Project Boundary
- County Boundary



Haxtun Wind Project

Logan and Phillips Counties, CO

Project Location
 EXHIBIT 1



Legend

- Project Boundary
- Roads
- Alternative Turbine
- Turbine
- Access Road Alternatives
- Access Road
- Other Access Road Option
- Cable Alternatives
- Substation Alternatives
- T-Line Alternatives
- Crane Path Alternatives
- County Boundary
- City
- Township/Range
- Section

N Miles
0 0.5

Project layout is preliminary.

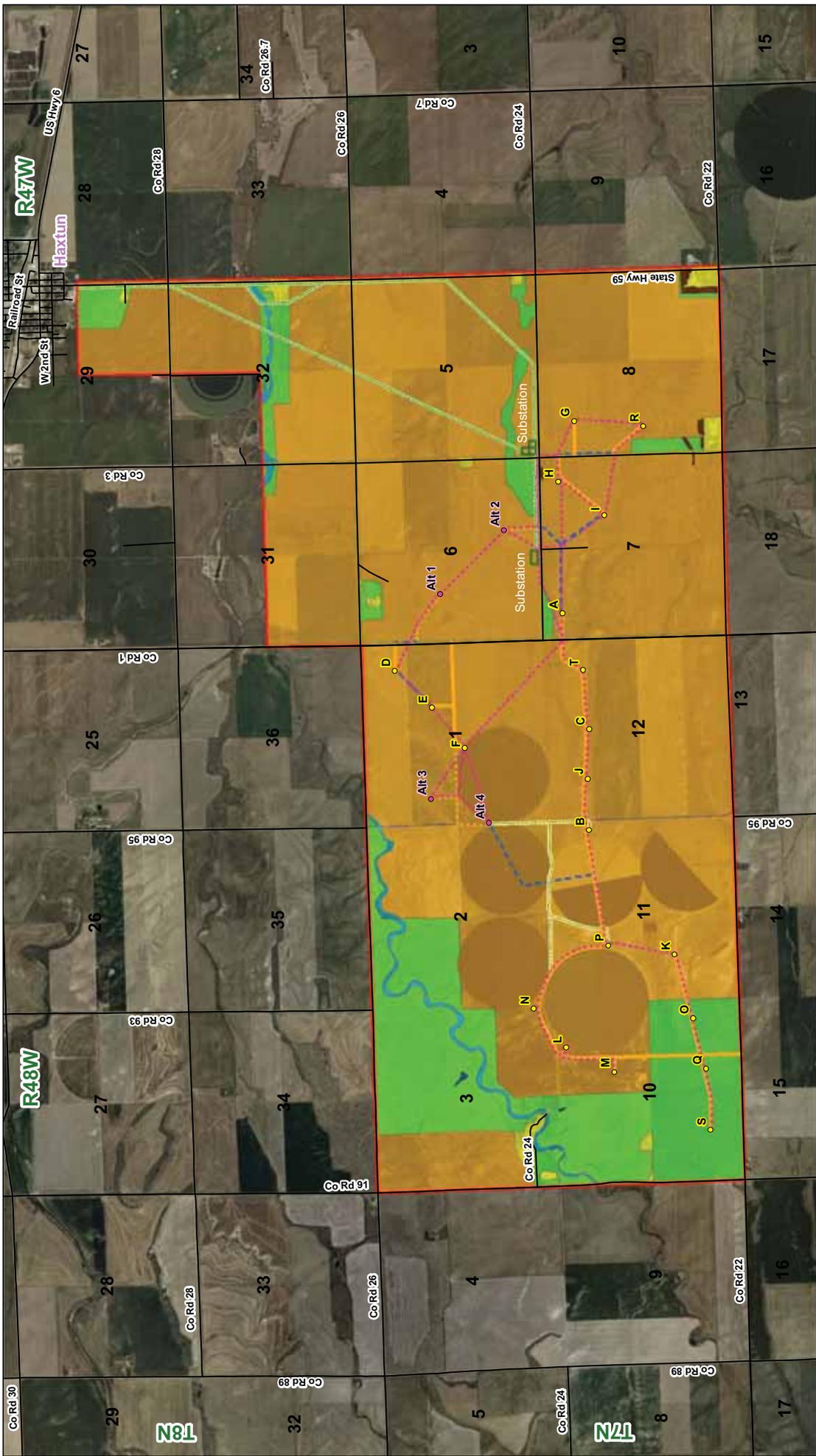
Haxtun Wind Project

Logan and Phillips Counties, CO

Preliminary Project Layout
EXHIBIT 2

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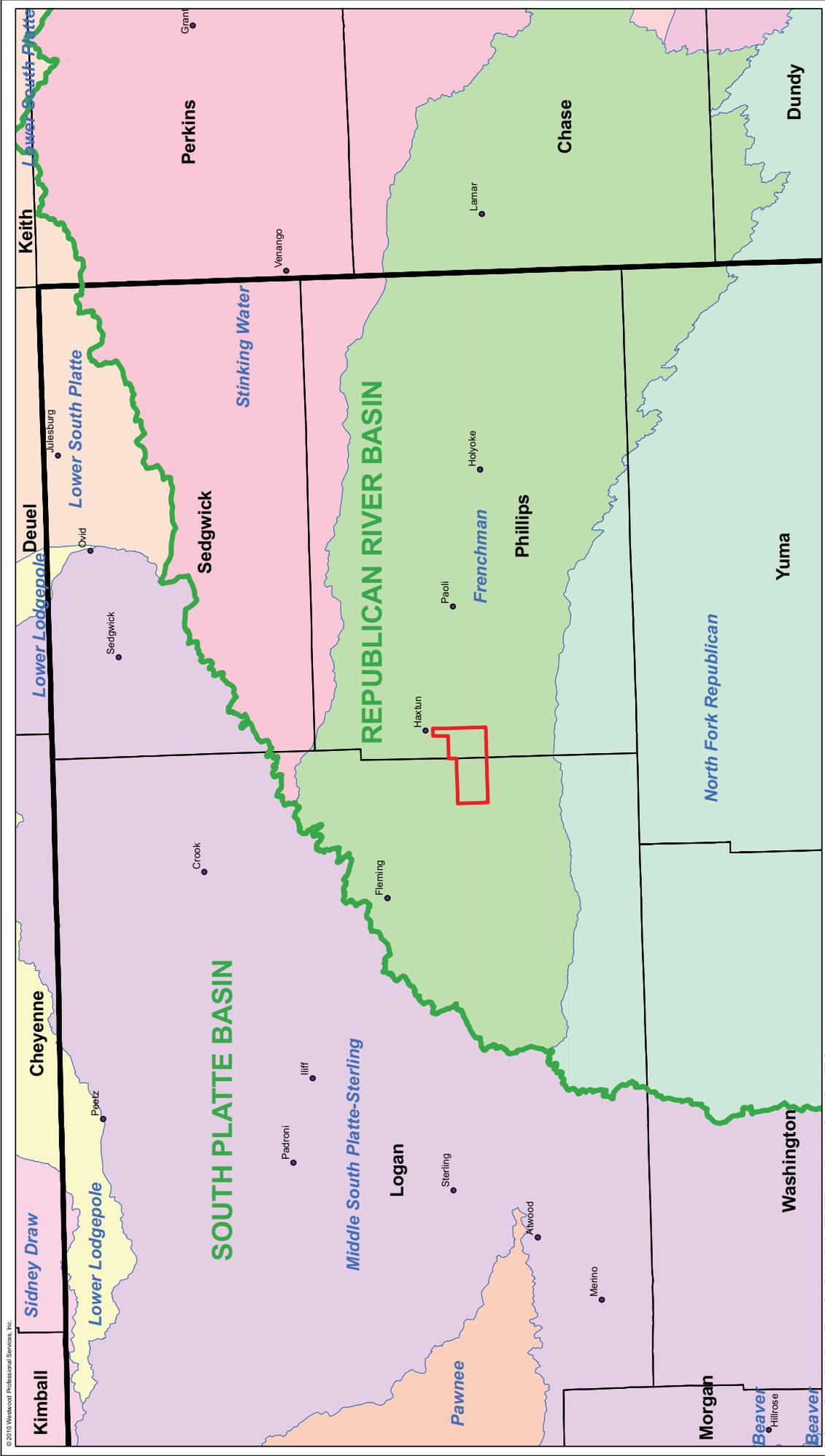
- Project Boundary
- Roads
- Alternative Turbine
- Turbine
- Access Road Alternatives
- Access Road
- Other Access Road Option
- Cable Alternatives
- Substation Alternatives
- T-Line Alternatives
- Crane Path Alternatives
- Land Cover
- Cropland
- Non-Native Grassland
- Developed
- Intermittent Stream
- Woodland
- Private Road
- Pond

Haxtun Wind Project
Logan and Phillips Counties, CO

Project Area Land Cover

Project layout is preliminary.

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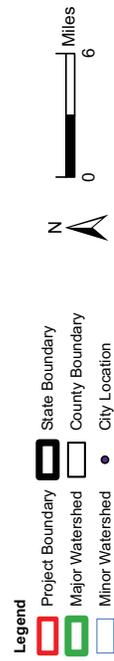


Haxtun Wind Project

Logan and Phillips Counties, CO

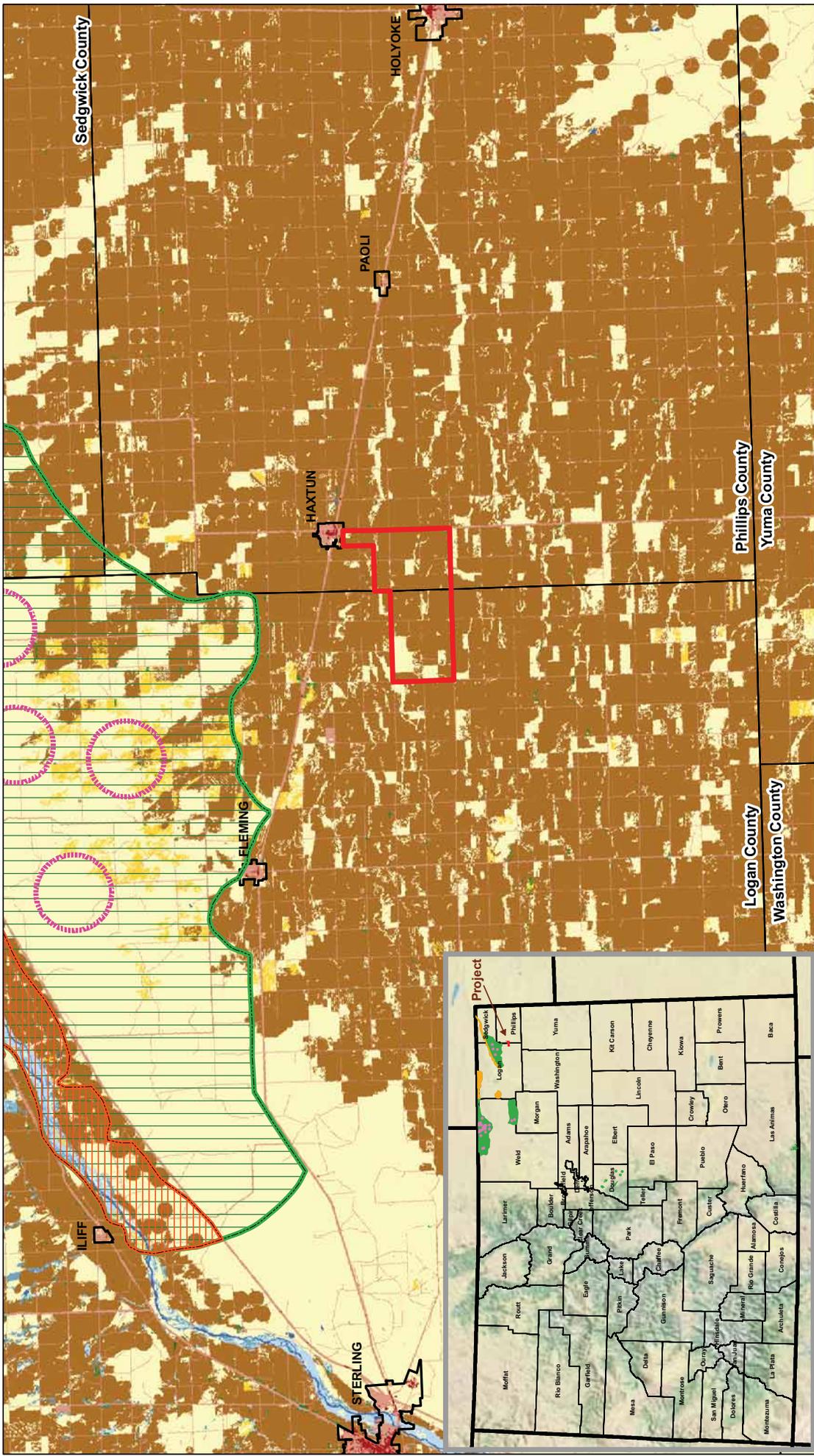
Major and Minor Watershed Boundaries

EXHIBIT 4



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Data Source(s): Westwood (2010) Watershed Boundary Data - Hydrologic Unit from US DANNRS - National Cartography & Geospatial Center (1997 - Present);
 Data Source(s): Westwood (2010) Watershed Boundary Data - Hydrologic Unit from US DANNRS - National Cartography & Geospatial Center (1997 - Present);
 Data Source(s): Westwood (2010) Watershed Boundary Data - Hydrologic Unit from US DANNRS - National Cartography & Geospatial Center (1997 - Present);



Haxtun Wind Project

Logan and Phillips Counties, CO
Plains Sharp-tail Grouse Range
and Land Cover

EXHIBIT 5

Legend

- Barren Land
- Project Boundary
- Grouse Production Area
- Grouse Winter Range
- Grouse Overall Range
- Cultivated Crops
- Deciduous Forest
- Developed, High-Medium Intensity
- Developed, Low-Intensity/Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Open Water
- Shrub/Scrub
- Woody Wetlands

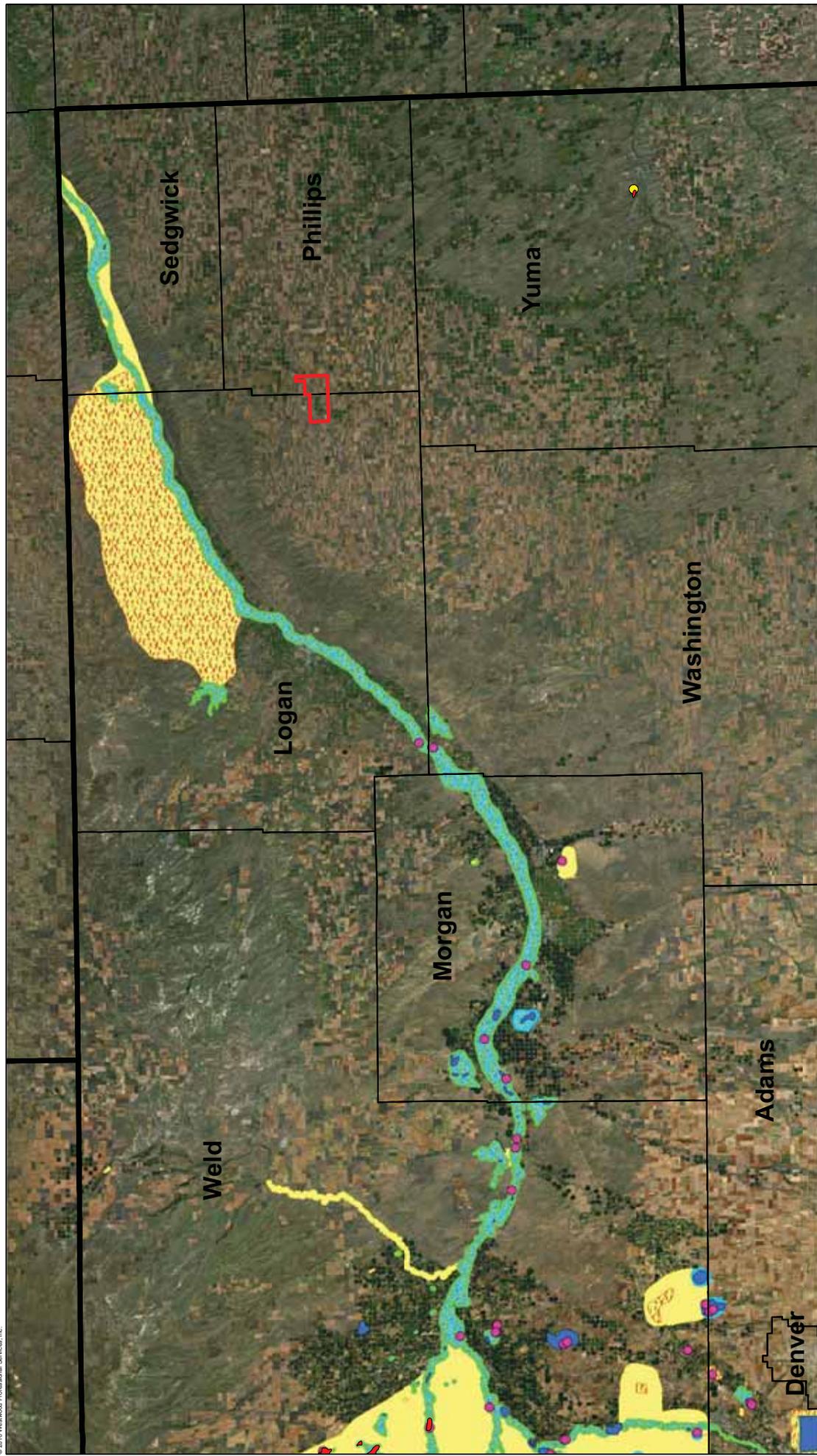
Scale

0 1 2 3 Miles

North Arrow

Data Sources: Westwood (2010), SRSR (2010), Colorado Department of Wildlife (2009), USGS (2010) National Land Cover Dataset (2009), SRSR (2010) National Land Cover Dataset (2009).

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Wildlife datasets are for Colorado.

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- Legend**
-  Project Boundary
 -  State Boundary
 -  County Boundary
 -  Osprey Foraging Area
 -  Osprey Nest Sites
 -  Bald Eagle Nest Sites
 -  Bald Eagle Communal Roosts
 -  Bald Eagle Roost Sites
 -  Bald Eagle Winter Concentration
 -  Bald Eagle Summer Forage
 -  Bald Eagle Winter Forage
 -  Bald Eagle Winter Range



 0 10 Miles

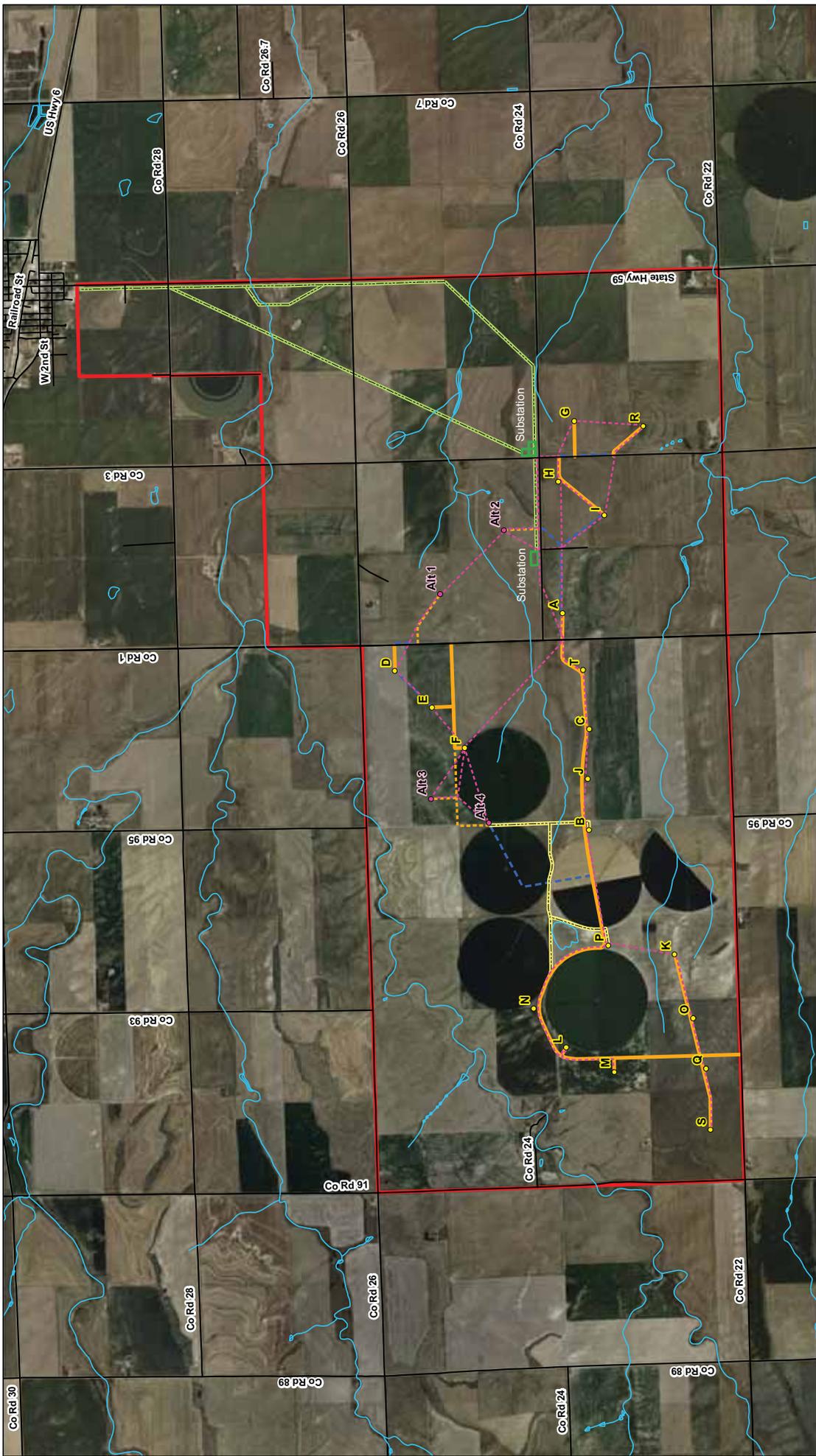
Haxtun Wind Project

 Logan and Phillips Counties, CO

Bald Eagle and Osprey Range

 EXHIBIT 6





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Appendix A

USFWS Comment Letter

Haxtun Wind Project
Logan and Phillips Counties, Colorado

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Colorado Field Office
P.O. Box 25486, DFC (65412)
Denver, Colorado 80225-0486

IN REPLY REFER TO:
ES/CO: T&E/Species list
TAILS: 65412-2010-SL-0402

MAY 13 2010

Mr. Ronald Peterson
Westwood Professional Services
7699 Anagram Drive
Eden Prairie, Minnesota 55344

Dear Mr. Peterson:

The U.S. Fish and Wildlife Service (Service) received your April 20, 2010, letter and project location map regarding the U.S. Department of Energy's (DOE) American Recovery and Reinvestment Act funding of **NECO Wind, LLC's proposed NECO Wind Energy Project in Logan and Phillips Counties, Colorado**. These comments have been prepared under the provisions of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et. seq.), the Bald and Golden Eagle Protection Act of 1940 (BGEPA), as amended (16 U.S.C. 668 et. seq.), the Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. 703 et. seq.), and the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4327).

For your convenience, we have enclosed a list of Colorado's threatened and endangered species, as well as the counties in which they are known to occur. We do not have site specific information available to us. If questions regarding the presence of an endangered species, the extent of its habitat, or the effects of a particular action need to be resolved, the Service recommends that a knowledgeable consultant conduct habitat assessments, trapping studies, or provide recommendations regarding options under the ESA. Due to staffing constraints, the Colorado Field Office cannot provide you with these services.

Since 1978, the Service has consistently taken the position in its section 7 consultations that Federal agency actions resulting in existing or new water depletions to the Platte River system may affect the endangered whooping crane (*Grus americana*), endangered interior least tern (*Sterna antillarum*), threatened piping plover (*Charadrius melodus*), endangered pallid sturgeon (*Scaphirhynchus albus*), threatened western prairie fringed orchid (*Platanthera praeclara*), and designated critical habitat for the whooping crane in the central Platte River in Nebraska. Project elements that could be associated with depletions to the Platte River system include, but are not limited to, ponds (detention/recreation/irrigation storage), lakes (recreation/irrigation storage/municipal storage/power generation), reservoirs (recreation/irrigation storage/municipal storage/power generation), pipelines, wells, diversion structures, water/wastewater treatment facilities, **and water use for wind energy development**.

If DOE and the applicant determine that there are depletions associated with the project, DOE should request initiation of formal section 7 consultation in a letter to my office. A request for initiation of formal section 7 consultation on water-related projects associated with depletions to the central Platte

River should include a complete project description including water-related project elements, origin of water associated with the proposed project, and the nature and estimated amount of water use under build-out conditions. Completion of the consultation will be based on the date of receipt of the information required to conduct the consultation.

The Service supports the development of wind power as an alternative energy source. However, if not appropriately designed and sited, turbines and wind farms can have negative impacts on wildlife and their habitats. On July 10, 2003, we released *Interim Guidance on Avoiding and Minimizing Impacts to Wildlife from Wind Turbines* (Guidance) (<http://www.fws.gov/habitatconservation/wind.html>). These voluntary siting guidelines are intended to assist developers in avoiding and minimizing impacts from wind turbines to wildlife and their habitats. They are based on the best information available and were developed by a team of Federal, State, university, and wind energy industry biologists.

Two years of pre-construction surveys to identify and avoid/minimize any potential wildlife impacts followed by 1-3 years of post-construction surveys/monitoring are highly recommended at all developed sites. Pre- and post-development studies and monitoring may be conducted by any qualified wildlife biologist without regard to his/her affiliation or interest in the site.

Please also be aware of the potential application of the MBTA and the BGEPA. The MBTA prohibits taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. Unlike the ESA, neither the MBTA nor its implementing regulations (50 CFR Part 21) provide for permitting "incidental take" of migratory birds.

While the MBTA has no provision for allowing unauthorized take, the Service realizes that some birds may be killed at structures such as wind turbines even if all reasonable measures to protect them are used. The Service's Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries that have taken effective steps to minimize their impacts on migratory birds, and by encouraging others to enact such programs. It is not possible to absolve individuals, companies, or agencies from liability even if they implement avian mortality avoidance or similar conservation measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without regard for their actions or without implementing all reasonable measures to avoid take.

The BGEPA prohibits knowingly taking or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing activities, unless allowed by permit. The term "disturb" under the BGEPA means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

Protective measures to help reduce possible impacts to migratory birds and other raptors should be installed whenever possible. For example, 7 CFR § 1724.52 allows for deviations from construction standards for raptor protection, provided that structures are designed and constructed in accordance with the Avian Power Line Interaction Committee's (APLIC) *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*, by the Edison Electric Institute, APLIC, and

the California Energy Commission. The regulation requires that such structures be in accordance with the National Electrical Safety Code and applicable State and local regulations.

If a formal section 7 consultation is required, the Service will make every effort to accommodate the applicant's schedules to prevent project delays. If your office or the applicant would like to discuss the proposed project in relation to Platte River system depletive issues in Colorado, please contact Sandy Vana-Miller in my office at (303) 236-4748.

Sincerely,



Susan C. Linner
Colorado Field Supervisor

Enclosure: Species List

cc: FWSR6/ES/LK, S. Vana-Miller

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Appendix B

Representative Project Area Photographs

Haxtun Wind Project
Logan and Phillips Counties, Colorado

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Typical landscape in Haxtun Wind Project Area (dry land wheat)



Typical landscape in Haxtun Wind Project Area (corn)



Typical ephemeral drainage in crop field Haxtun Wind Project Area (no defined channel or visible OHWM)



Typical ephemeral stream between crop fields in Haxtun Wind Project Area



Largest contiguous non-native grass remnant in Haxtun Wind Project Area



Typical non-native grass strip on hilltop between crop fields in Haxtun Wind Project Area

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Appendix C

CNHP Environmental Review

Haxtun Wind Project
Logan and Phillips Counties, Colorado

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May 28, 2010

Kari Block
Environmental Scientist
Westwood Professional Services
7699 Anagram Drive
Eden Prairie, MN 55344-7310

Dear Kari:

The Colorado Natural Heritage Program (CNHP) is in receipt of your request for information regarding a confidential energy project in Logan and Phillips Counties, Colorado. In response, I have searched our Biodiversity Tracking and Conservation System (BIOTICS) for natural heritage elements (occurrences of significant natural communities and rare, threatened or endangered plants and animals) documented from the vicinity of the area specified in your request, specifically within a two-mile radius of the shapefile Westwood Professional Services provided to CNHP for the purposes of this data request.

The enclosed report describes natural heritage resources known from this area and gives location (by Township, Range, and Section), precision information, and the date of last observation of the element at that location. This report includes elements known to occur within the specified project site, as well as elements known from similar landscapes near the site. Please note that “precision” reflects the resolution of original data. For example, an herbarium record from “4 miles east of Colorado Springs” provides much less spatial information than a topographic map showing the exact location of the occurrence. “Precision” codes of Seconds, Minutes, and General are defined in the footer of the enclosed report.

The report also outlines the status of known elements. We have included status according to Natural Heritage Program methodology and legal status under state and federal statutes. Natural Heritage ranks are standardized across the Heritage Program network, and are assigned for global and state levels of rarity. They range from “1” for critically imperiled or extremely rare elements, to “5” for those that are demonstrably secure.

You may notice that some occurrences do not have sections listed. Those species have been designated as “sensitive” due to their rarity and threats by human activity. Peregrine falcons, for example, are susceptible to human breeders removing falcon eggs from their nests. For these species, CNHP does not normally provide location information beyond township and range. Please contact us should you require more detailed information for sensitive occurrences.

There are no CNHP designated Potential Conservation Areas (PCAs) located within your project area. In order to successfully protect populations or occurrences, it is necessary to delineate conservation areas. These conservation areas focus on capturing the ecological processes that are necessary to support the continued existence of a particular element of natural heritage significance. Conservation areas may include a single occurrence of a rare element or a suite of rare elements or significant features.



The goal of the process is to identify a land area that can provide the habitat and ecological processes upon which a particular element or suite of elements depends for their continued existence. The best available knowledge of each species' life history is used in conjunction with information about topographic, geomorphic, and hydrologic features, vegetative cover, as well as current and potential land uses. The proposed boundary does not automatically exclude all activity. It is hypothesized that some activities will cause degradation to the element or the process on which they depend, while others will not. Consideration of specific activities or land use changes proposed within or adjacent to the preliminary conservation planning boundary should be carefully considered and evaluated for their consequences to the element on which the conservation unit is based.

The Colorado Division of Wildlife has legal authority over wildlife in the state. CDOW would therefore be responsible for the evaluation of and final decisions regarding any potential effects a proposed project may have on wildlife. If you would like more specific information regarding these or other vertebrate species in the vicinity of the area of interest, please contact the Colorado Division of Wildlife.

The information contained herein represents the results of a search of Colorado Natural Heritage Program's (CNHP) Biodiversity Tracking and Conservation System (BIOTICS), and can be used as notice to anticipate possible impacts or identify areas of interest. Care should be taken in interpreting these data. Sensitive elements are currently not known from within a two-mile radius of the proposed project area, but additional undocumented elements may also exist. The nearest tracked element is an occurrence record for Greater Prairie Chicken (*Tympanuchus cupido pinnatus*) that is located over 4 miles south of the southeast corner of the project area. Please note that the absence of data for a particular area, species, or habitat does not necessarily mean that these natural heritage resources do not occur on or adjacent to the project site, rather that our files do not currently contain information to document their presence. CNHP information should not replace field studies necessary for more localized planning efforts, especially if impacts to wildlife habitat are possible.

Although every attempt is made to provide the most current and precise information possible, please be aware that some of our sources provide a higher level of accuracy than others, and some interpretation may be required. CNHP's data system is constantly updated and revised. Please contact CNHP for an update or assistance with interpretation of this natural heritage information.

The data contained in the report is the product and property of the Colorado Natural Heritage Program (CNHP), a sponsored program at Colorado State University (CSU). The data contained herein are provided on an as is, as available basis without warranties of any kind, expressed or implied, including (but not limited to) warranties of merchantability, fitness for a particular purpose, and non-infringement. CNHP, CSU and the state of Colorado further expressly disclaim any warranty that the data are error free or current as of the date supplied.

Sincerely,

Michael Menefee
Environmental Review Coordinator

Enc.



From: Menefee,Michael [mailto:Michael.Menefee@ColoState.EDU]

Sent: Tuesday, June 15, 2010 2:14 PM

To: Rob Bouta

Subject: RE: Natural Heritage Program Data Request- Colorado

Hi Rob,

Thanks so much for running this past us. As we discussed on the phone, Westwood using the CNHP website data that is labeled for non-commercial use would only be allowed for projects that Westwood has already made a paid data request to CNHP on. We would be happy to provide more updated versions catered to your project areas as well if that helps, but if you want to use the web data please use this disclaimer:

CNHP has provided a one-time special permission for Westwood Professional Services to use CNHP website data normally restricted to non-commercial use for inclusion in the appendix in a report for a confidential energy project in Logan and Phillips Counties, Colorado. Westwood Professional has also completed a CNHP BIOTICS database paid data search for the specific project area indicating no sensitive element records were in the immediate project area, and will use the website data for general background in the appendix only. CNHP website data is heavily generalized and not regularly refreshed, thus CNHP would advise this data is not appropriate for site-level planning. Please note that the absence of data for a particular area, species, or habitat does not necessarily mean that these natural heritage resources do not occur on or adjacent to the project site, rather that our files do not currently contain information to document their presence. CNHP information should not replace field studies necessary for more localized planning efforts, especially if impacts to wildlife habitat are possible.

I hope this helps and thanks again for your interest in utilizing CNHP data services,

Michael D. Menefee

Environmental Review Coordinator
Colorado Natural Heritage Program
Colorado State University
254 General Services Building
1474 Campus Delivery
Fort Collins, CO 80523-1474
Phone: (970)491-7331 -- Fax: (970)491-3349

Visit CNHP Online At:

<http://www.cnhp.colostate.edu>

Also Please Check out the [CNHP blog!](#)

From: Rob Bouta [mailto:Rob.Bouta@westwoodps.com]

Sent: Monday, June 14, 2010 5:27 PM

To: Menefee,Michael

Subject: RE: Natural Heritage Program Data Request- Colorado

Michael,

Thanks for the conversation this evening. Below are the links to the two maps that I would like to use in an appendix of our report. I would appreciate it if you would be kind enough to send me the disclaimer language that you spoke about on the phone.

http://www.cnhp.colostate.edu/download/gis/element_map.asp

http://www.cnhp.colostate.edu/download/gis/pca_map.asp

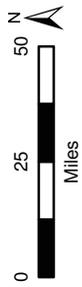
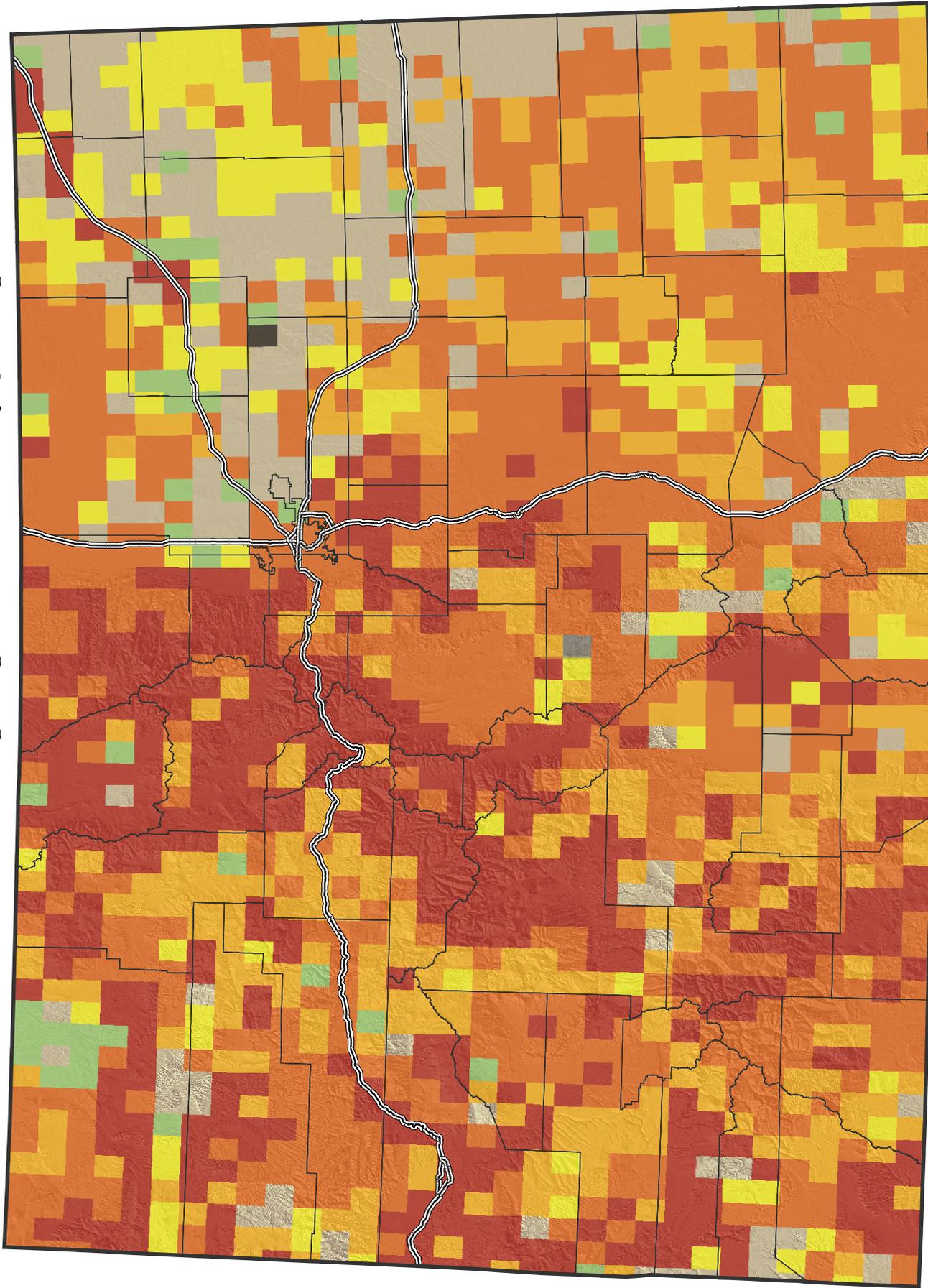
Regards,

Rob Bouta, CSE, WDC

Sr. Environmental Scientist

Westwood Professional Services

Colorado Natural Heritage Program Rare Elements by Quadrangle



Version Date: July 29, 2009

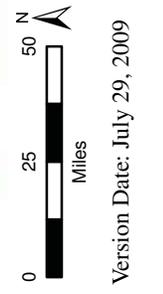
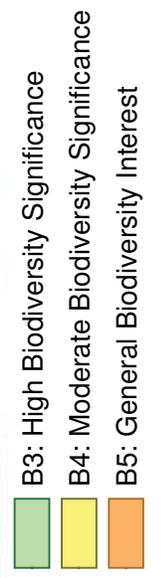
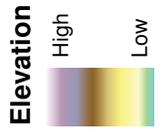
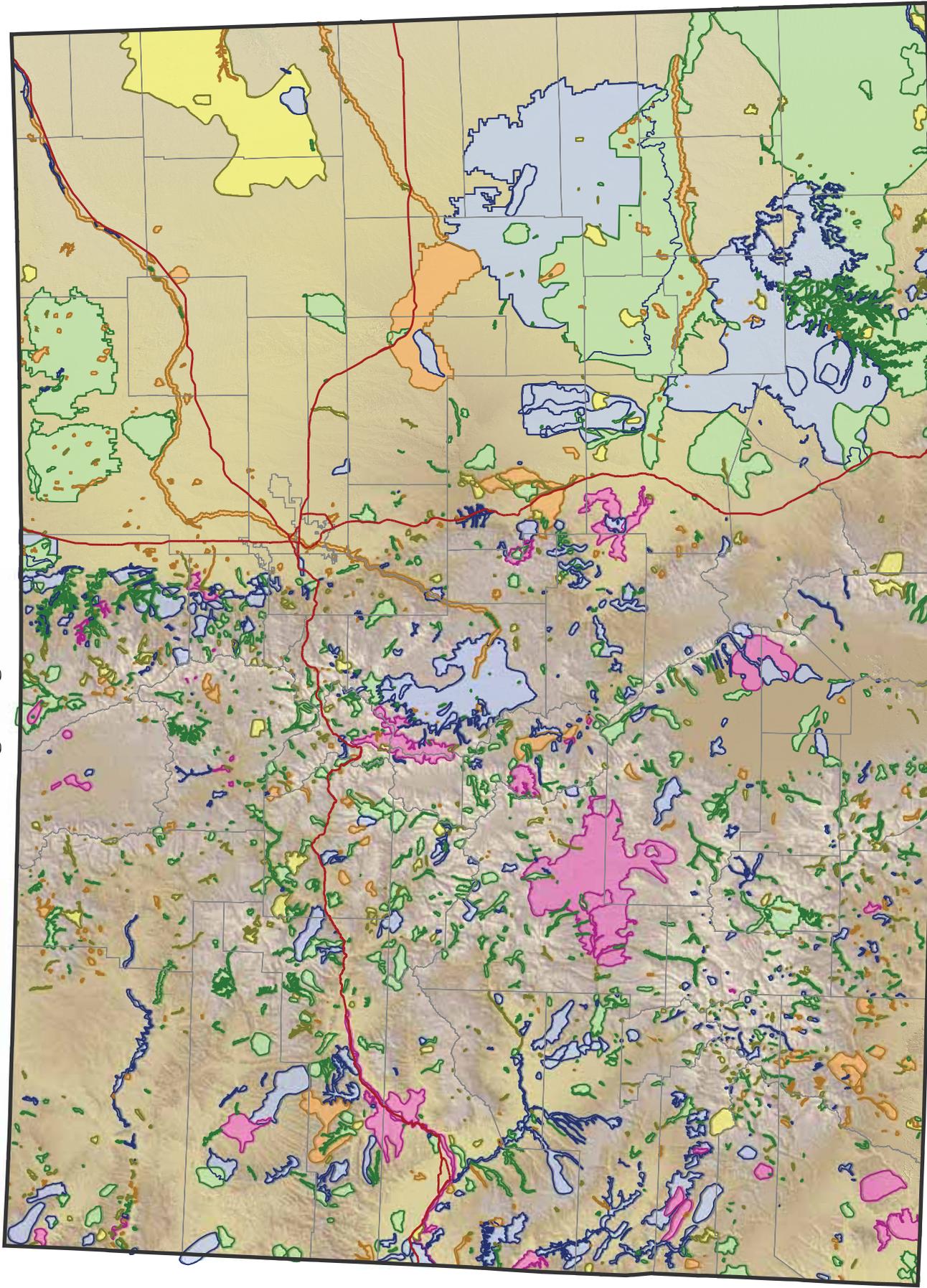
Rarest Element in Quadrangle

- G1 Element Present
- G2 Element Present

- G3 Element Present
- G4 Element Present
- G5 Element Present

- Elements are Unranked
- Occurrences are Extirpated

Colorado Natural Heritage Program Potential Conservation Areas



Version Date: July 29, 2009



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