Tier 1 & 2 Site Characterization Study for the Proposed Foote Creek Rim I - Repower Wind Project Carbon County, Wyoming

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September 2018

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INTRODUCTION

Knowledge of biological resource issues during the development of a wind energy facility helps the developer identify and avoid or minimize potential issues. PacifiCorp is evaluating the repowering the existing of the Foote Creek Rim I wind project (Project or FCRI) in Carbon County, Wyoming. The Project is located approximately two miles (mi; 3 kilometers [km]) north of Arlington in Carbon County, Wyoming (Figures 1 and 2). The facility has 68 turbines that would be decommissioned and 12 new turbines would be constructed. PacifiCorp contracted Western EcoSystems Technology, Inc. (WEST) to complete a Tier 1 & 2 Site Characterization Study (SCS) for the proposed development based on the US Fish and Wildlife Service (USFWS) Land-Based Wind Energy Guidelines (WEG; USFWS 2012). The purpose of the SCS is to identify the environmental characteristics within the Project to evaluate the potential impact of wind energy development, and to determine if additional environmental resource surveys may be warranted. Because the Project is an existing facility that will be repowered, the Tier 1 process will be limited and the Tier 2 process will be focused on the propose Project, not specifically the existing Project. Tier 1 is typically used to evaluate multiple development option; however, FCR I has already be selected and operating for nearly two decades. Additionally, because this is an existing Project, some components of the Tier 2 analysis may not be applicable. In most cases, it is assumed that the potential impacts from constructing the Project have already occurred or will be minimized by the reduced footprint; however, the Tier 2 exercise can still be used to understand the environmental resources in and around the Project.

This report includes information gathered and reviewed to help answer the four key question posed for a Tier 1 assessment and seven key questions posed for a Tier 2 SCS in the 2012 USFWS WEG. The key questions include:

Tier 1 – Questions

1. *Are there species of concern present on the potential site(s), or is habitat (including designated critical habitat) present for these species?*
2. *Does the landscape contain areas where development is precluded by law or areas designated as sensitive according to scientifically credible information?*
3. *Are there known critical areas of congregation of species of concern, 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?*
4. *Are there large areas of intact habitat with the potential for fragmentation, with respect to species of habitat fragmentation concern needing large contiguous blocks of habitat?*

Tier 2 – Questions

1. *Are known species of concern present on the proposed site, or is habitat (including designated critical habitat) present for these species?*

2. *Does the landscape contain areas where development is precluded by law or designated as sensitive according to scientifically credible information?*
3. *Are there plant communities of concern present or likely to be present at the site?*
4. *Are there known critical areas of congregation of species of concern, 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?*
5. *Using best available scientific information has the developer or relevant federal, state, tribal, and/or local agency identified the potential presence of a population of a species of habitat fragmentation concern?*
6. *Which species of birds and bats especially those known to be at risk by wind energy facilities area likely to use the proposed site based on an assessment of site attributes?*
7. *Is there a potential for significant adverse impacts to species of concern based on the answers to the questions above, and considering the design of the proposed project?*

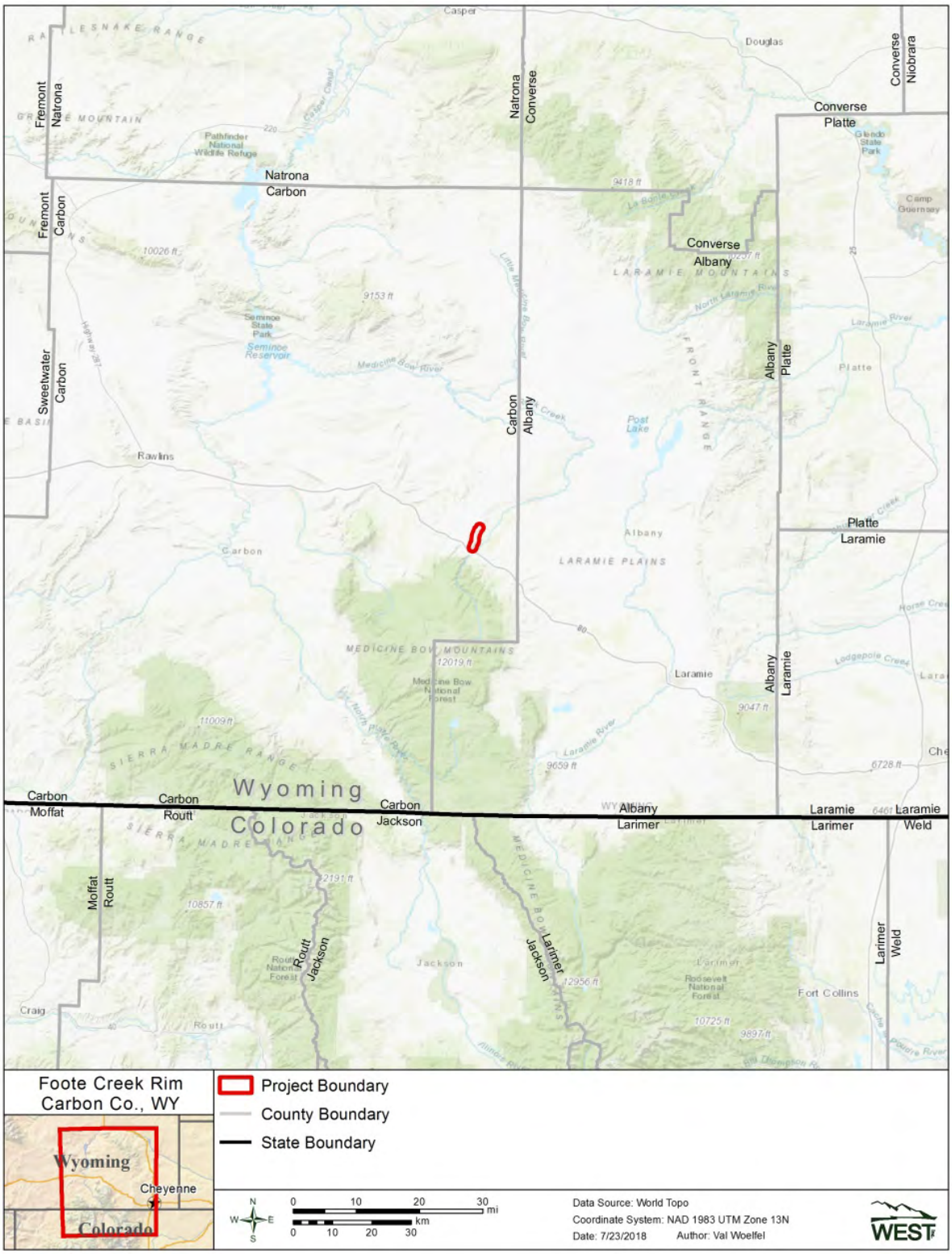

Figure 1. General location of the Foote Creek Rim I project, Carbon County, Wyoming.

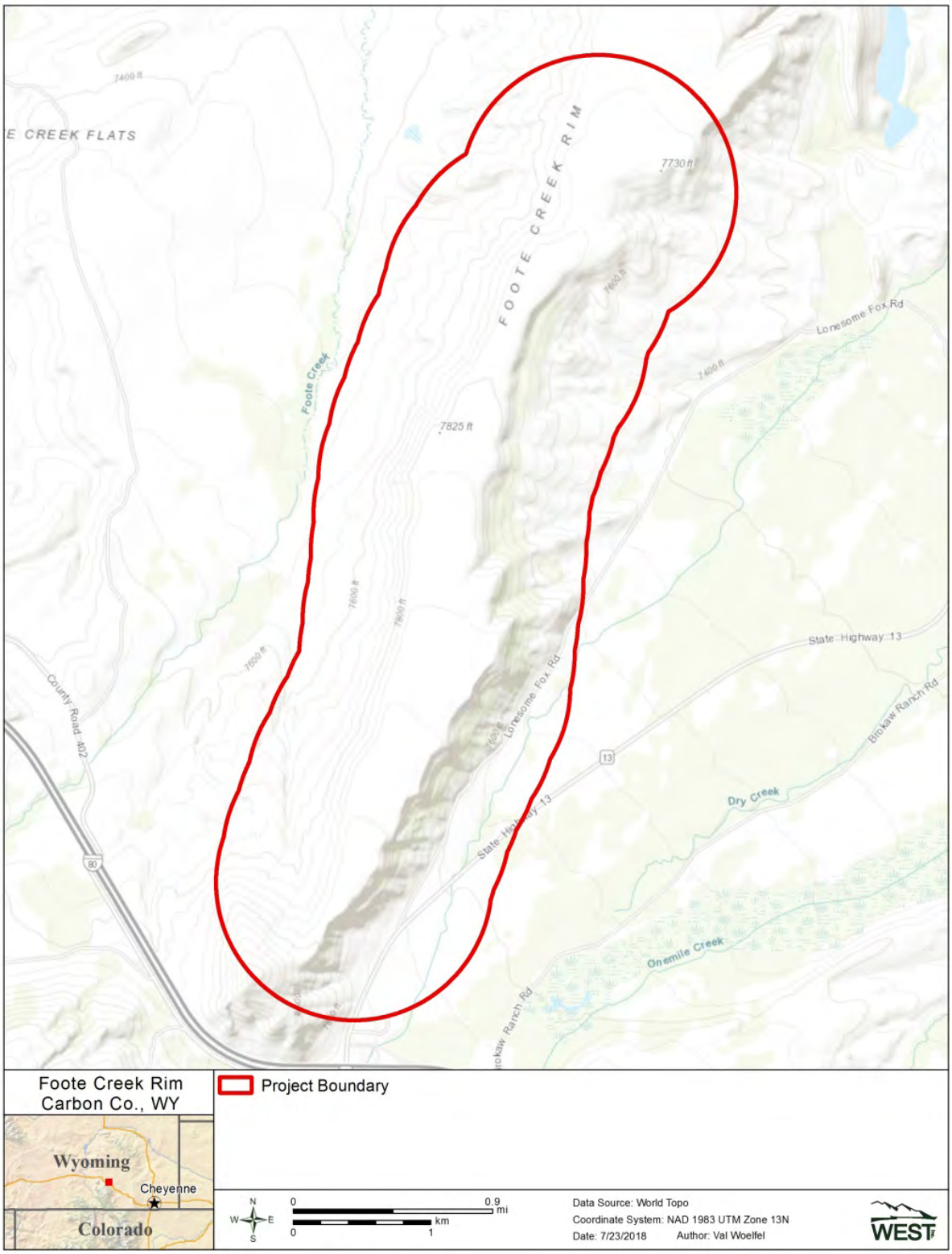

Figure 2. Topographic layout for the Foote Creek Rim I project, Carbon County, Wyoming.

METHODS

To complete the Tier 1 & 2 studies, WEST completed multiple site visits as part of the current Project work and gathered publicly available data from multiple sources. Communication with the USFWS and Wyoming Game and Fish Department (WGFD) was initiated including email correspondence, phone conversations, and a site visit on August 16, 2018. Communication is ongoing to determine if any additional survey or information requests are appropriate. WEST submitted a consultation request to the USFWS Information for Planning and Consultation (IPaC) decision support system to evaluate potential impacts from the Project. WEST completed the IPaC review and incorporated the results throughout this report. The IPaC response is provided in Appendix A. Additional data were obtained as available from the WGFD and USFWS websites (WGFD 2010b, USFWS 2017a). WEST contacted the Wyoming Natural Diversity Database (WYNDD) to request a review of the Project along with data for any listed, proposed, and candidate species (including plants), tracked species, or sensitive environmental areas that could be affected by the Project. To date, this information has not been received. Information obtained through this data request will be incorporated throughout the Tier 2 study once received. Other publicly available data used to prepare this report included US Geological Survey (USGS) National Land Cover Data (NLCD), National Wetland Inventory (NWI) datasets, and various field guides, maps and aerial imagery, and non-governmental organization websites (e.g., Audubon). Finally, there have been extensive studies, during the planning, construction, and operational periods that have provided Tier 3 level details. These studies will be referenced in this document as appropriate, however readers are encouraged to review the full technical reports as detailed summaries on the methods and results will not be part of this report. General findings from previous reports will be used as appropriate to inform topical discussions.

In addition to the publicly available data sources and existing reports, this report also relies on WEST's experience with wind energy development and wildlife in Wyoming. The following sections contain a summary of biological issues which may influence repowering a wind energy development within the Project.

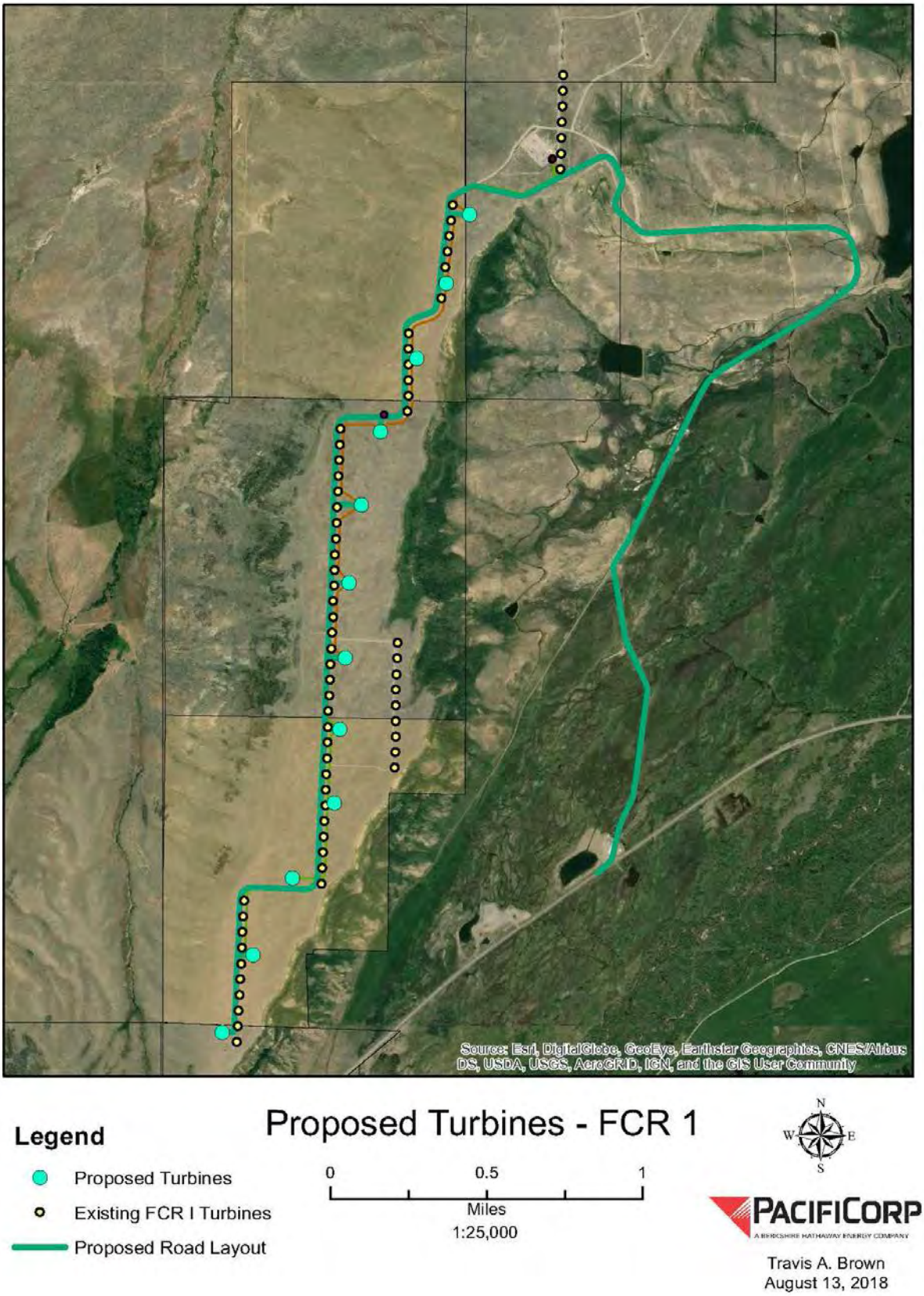

Figure 3. Foote Creek Rim I existing and proposed turbine locations, Carbon County, Wyoming.

STUDY AREA

The existing wind energy facility consists of 68 turbines with a nameplate capacity of 41.1 megawatt (MW). The original Project had 69 turbines, but Turbine 11 malfunctioned and no longer exists. The turbines have a rotor diameter of 138 feet (ft; 42 meters [m]) and the wind turbines are situated on 131-ft (40-m) tall steel tubular towers secured concrete foundations. In addition, the Project consists of an electrical collection system, fiber optic communication system, SCADA, permanent meteorological towers, substations, an Operations and Maintenance (O&M) building, and access roads. The proposed repower Project will decommission the existing 68 turbines and reclaim the land following the Project's original Plan of Development, then construction 12 new turbines (Figure 3). As much of the existing roads as possible will be utilized for the new alignment and add spur roads to the new turbines where needed.

For the purpose of this assessment two general study areas were identified to describe the regional conditions and more local conditions. The regional scale provides an undefined wide-range view and general descriptions. The local view is based on a 1-km buffer from the proposed turbine locations and provides quantitative data, where appropriate (e.g., land cover percentages). Additionally, discussions in this report will include areas where direct impacts are proposed (Figure 3).

The Project is located on a mix of private, State, and Federal land in Carbon County, Wyoming, approximately two mi (three km) north of Arlington and 20 mi (32 km) south of Medicine Bow (Figure 1). The Project occurs within the Laramie Basin subset of the Wyoming Basin ecoregion, which is found in portions of Colorado, Idaho, Montana, Utah, and Wyoming (US Environmental Protection Agency 2014). This ecoregion is a broad intermontane basin dominated by arid grasslands and shrublands supporting bunchgrasses and sagebrush, interrupted by high hills and low mountains. Most of the uplands in the Project are mapped as mixed-grass prairie vegetative community cover-type (a mixture of graminoids, forbs, and shrubs, with less than 25% of the canopy cover contributed by shrubs). Additional vegetative community cover types include Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), which is similar to the mixed-grass prairie but with more than 25% of the plant cover contributed by shrubs, irrigated cropland, dry-land crop, and greasewood. No riparian areas occur within the Project footprint, but do exist in the surrounding area. The Project lies within the drainage systems of Rock Creek and Medicine Bow River and their tributaries, which are tributaries to the North Platte River. Riparian areas are a mosaic of riparian shrubland on Foote Creek to the west and riparian forest along Rock Creek to the east. Livestock ranching operations occur throughout the region; however no evidence of livestock on the mesa top has been identified in approximately three years. Based on the Wyoming State Climate Office records, mean annual precipitation for the Project is between 11 and 15 inches (in; 27.9 and 38.1 centimeters [cm]). The elevation throughout the Project ranges from approximately 2,190 to 2,586 meter (m; Figure 4). Photographs taken at the Project are provided in Appendix B.

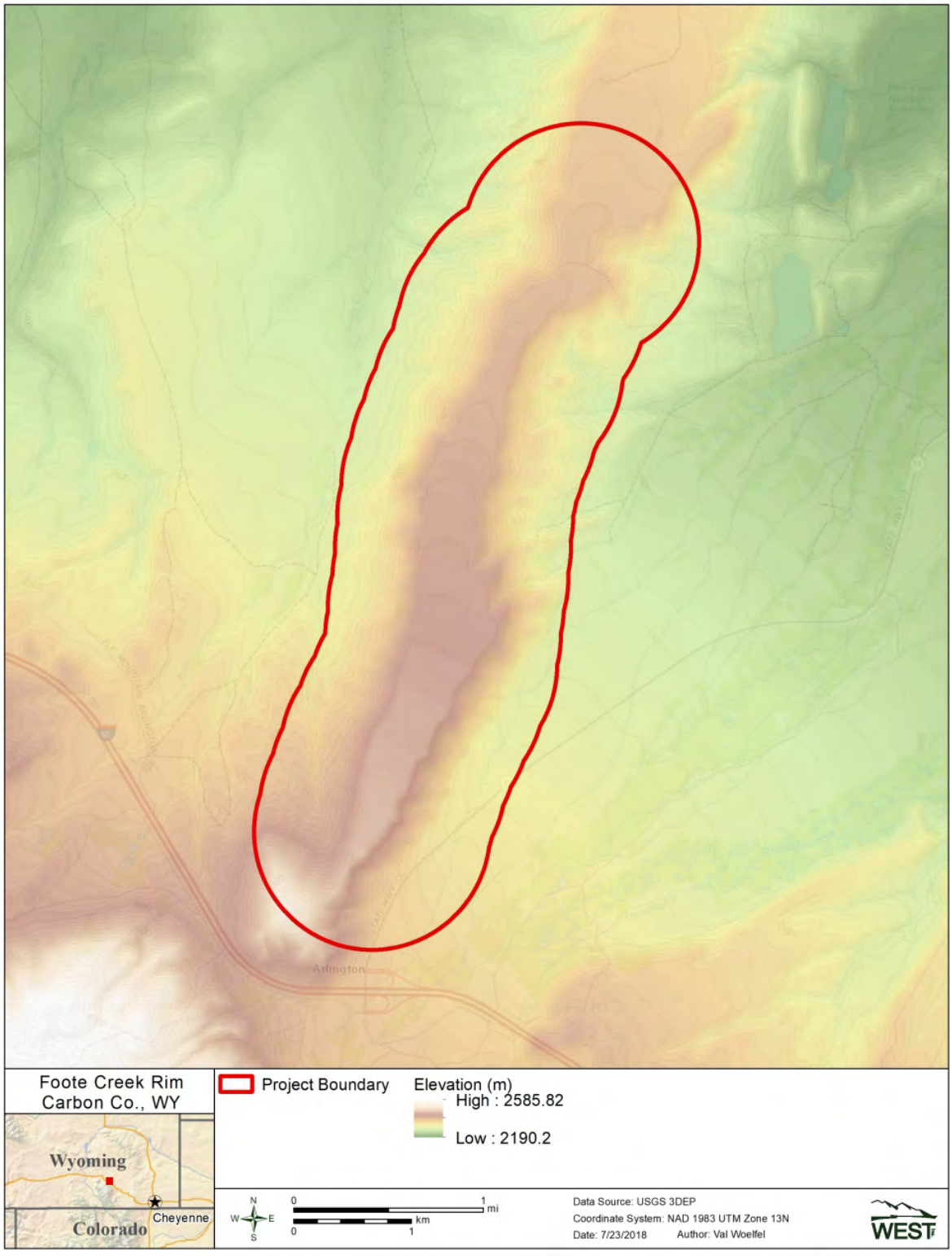

Figure 4. Elevation within the Foote Creek Rim I, Carbon County, Wyoming.

Land Use/Land Cover

Habitat within the Project based on the USGS NLCD (USGS 2011) is predominately shrub/scrub (90.7%) with smaller amounts of other land cover types (Table 1, Figure 5). Site visits noted limited shrub cover in the Project footprint, with most of the mesa top composed of grass, forbs, and draft shrub species. The mesa top has large portions of exposed gravel common to cushion plant communities. Shrub species observed during the site visits include rabbitbrush (*Ericameria nauseosa*), big sagebrush (*Artemisia tridentata*), snakeweed (*Gutierrezia sarothrae*). These species were sparse and low cover. Grass species included indian ricegrass (*Oryzopsis hymenoides*), June grass (*Koeleria macrantha*), three-awn *(Aristida purpurea*), slender wheat (*Elymus trachycaulus*), and sandberg bluegrass (*Poa secunda*). Forbs species included a variety of buckwheat (*Eriogonum* spp.), winterfat (*Krascheninnikovia lanata*), penstemon (*Penstemon* spp.), phlox (*Phlox* spp.), among others. Overall vegetative height ranged from 0-12 in and averaged four in and coverage on average was approximately 75%.

Table 1. Land use/land cover types present in the proposed Foote Creek Rim I Project, Carbon Counties, Wyoming.

	Project Area	
Land Use/Land Cover	**Acres**	**% Composition**
Shrub/Scrub	3,117.97	90.7%
Hay/Pasture	125.43	3.6%
Deciduous Forest	94.30	2.7%
Developed, Open Space	28.47	0.8%
Herbaceous	27.35	0.8%
Evergreen Forest	26.02	0.8%
Woody Wetlands	11.79	0.3%
Open Water	2.00	0.1%
Emergent Herbaceous Wetlands	2.00	0.1%
Developed, Low Intensity	1.11	<0.1%
Developed, Medium Intensity	0.44	<0.1%
Total	**3,436.88**	**100**

Data were obtained from land cover data compiled from satellite imagery (USGS NLCD 2011).

Protected Areas

No USFWS National Wildlife Refuges (NWR) occur within or adjacent to the Project (https://www.fws.gov/refuges/refugeLocatorMaps/Wyoming.html). The nearest USFWS refuge is the Bamforth NWR, located approximately 30 mi (48 km) southeast of the Project. Several state trust lands owned by the State of Wyoming as well as some parcels managed by the Bureau of Land Management (BLM), occur in and adjacent to the Project; one parcel within the Project is listed as a Wyoming State Conservation Area- Wick/Beumee Wildlife Habitat Management Area (WHMA); managed for biodiversity (https://maps.usgs.gov/padus/). The WHMA will not be directly impacted by the Project, but is immediately to the west.

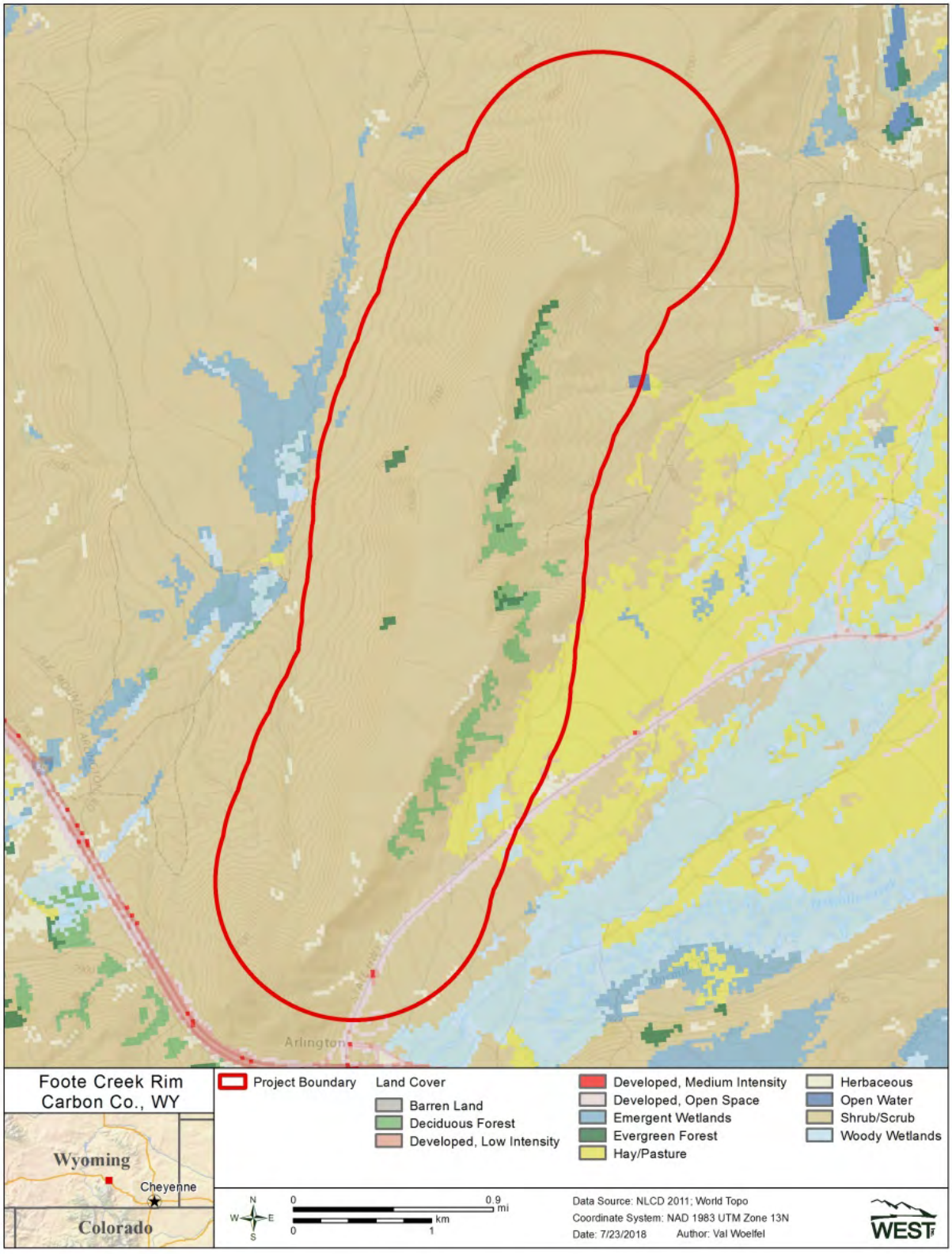

Figure 5. Land use/land cover within the Foote Creek Rim I, Carbon County, Wyoming.

Special Status Plant Species

No plant species covered by the USFWS Endangered Species Act (ESA) are likely to occur in the Project area based on the species list provided by the USFWS IPaC (Appendix A – 2018). One threatened plant species (western prairie fringed orchid [*Platanthera praeclara*]) was identified as potentially occurring downstream. Western prairie fringed orchid occurs along the Platte River downstream of the Project in Nebraska and would only be affected by water depletions of the Platte River system.

The Rawlins BLM Resource Management Plan lists eight plants as sensitive species (BLM 2008). Based on habitat evaluations and discussions with the Rawlins BLM (personal communication Heath Kline), only one plant has the potential to occur in the Project footprint. The Laramie false sagebrush (*Sphaeromeria simplex*) occurs on gentle slopes in cushion plant communities on rocky limestone ridges. If the species occurs in the Project footprint it has the potential to be impacted by construction activities. The most suitable habitat (i.e., slopes) would likely occur along the mesa rim and outside of the construction zone.

WYNDD provided a list of additional tracked plant species that may occur (or have been documented) in the Project and surrounding 2-mi (3.2-km) buffer. Tracked species include species listed by any agency (BLM, U.S. National Forest Service, USFWS, or WGFD) or deemed vulnerable based on WYNDD data review. Based on the WYNDD report, 16 tracked plant species may occur at or near the Project (Table 2). In most cases, these species have not been provided protection under the Endangered Species Act (1973) or other regulatory authority.

Wetlands and Riparian Areas

Based on land use/land cover data, there are approximately two acres (ac) of emergent herbaceous wetlands and approximately 12 ac of woody wetlands (Table 1) within one-km of the proposed turbine layout (Figure 5). USFWS NWI data (USFWS NWI 2018) indicate the presence of 36.6 ac of wetlands, including nine ac of freshwater emergent, one ac of freshwater forested/shrub wetland, and the remainder either freshwater ponds or riverine (Table 3, Figure 6). No wetlands or other aquatic resources existing on the mesa top (i.e., Project footprint); however, some wetlands may be present along access roads. Larger wetland/riparian areas do exist east and west of the Project along the Foote Creek and Rock Creek drainages. The Rock Creek drainage is a fairly expansive riparian area that extends to the east. If impacts to wetlands or other waters of the US are expected to occur, consultation with the US Army Corps of Engineers is recommended to ensure these impacts are authorized under the appropriate permit.

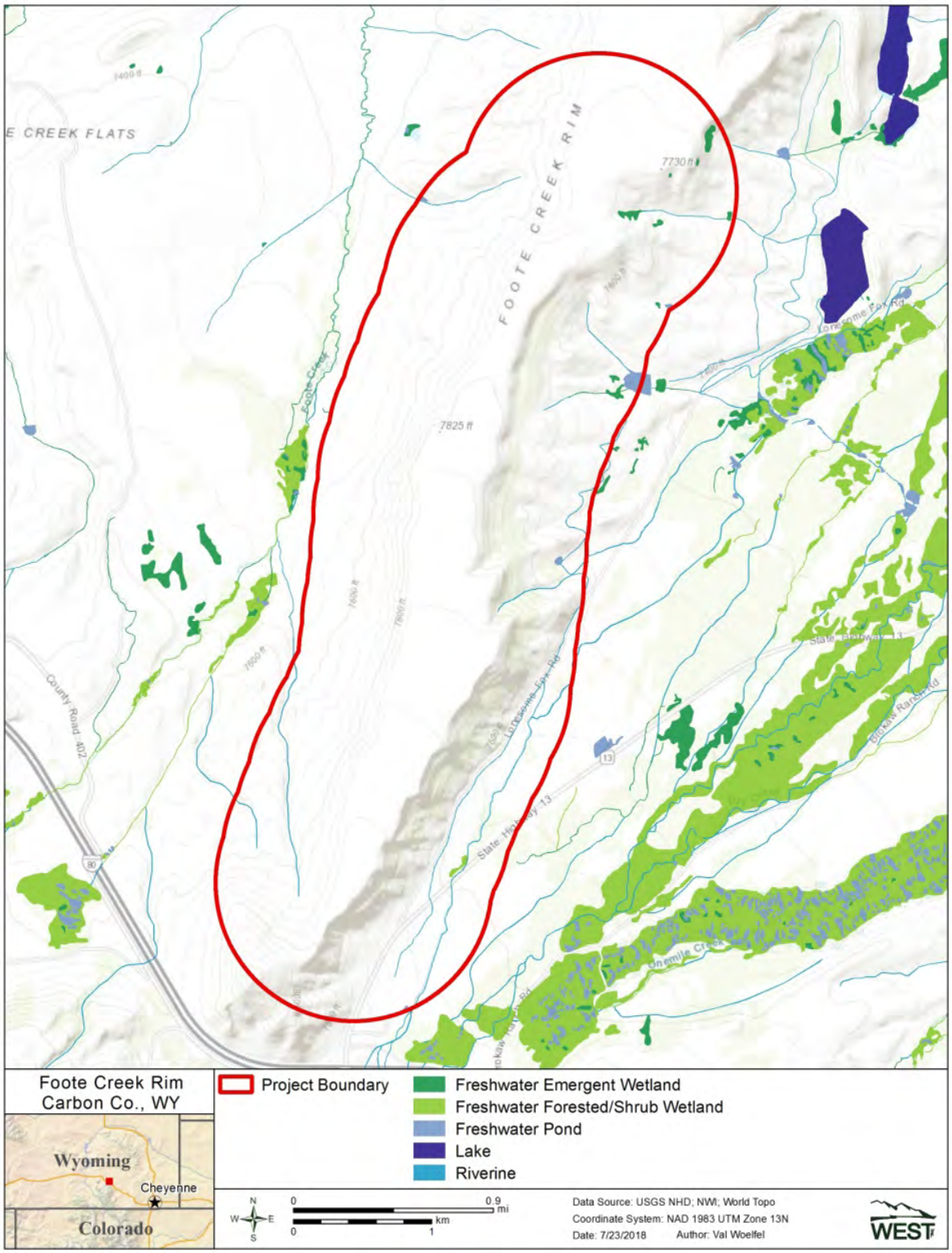

Figure 6. Wetlands within the Foote Creek Rim I, Carbon County, Wyoming based on National Wetlands Inventory data.

Table 2. Plant species tracked by the WYNDD that may occur in or near the Foote Creek Rim I study area, Carbon County, Wyoming.

Common name	Scientific name
limber pine	*Pinus flexilis*
brightgreen spleenwort	*Asplenium trichomanes-ramosum*
alpine besseya	*Besseya alpina*
lesser panicled sedge	*Carex diandra*
Rocky Mountain snowlover	*Chionophila jamesii*
clustered lady's slipper	*Cypripedium fasciculatum*
beavertip draba	*Draba globosa*
featherleaf fleabane	*Erigeron pinnatisectus*
dropleaf buckwheat	*Eriogonum exilifolium*
Ward's false goldenweed	*Oonopsis wardii*
Rocky Mountain nailwort	*Paronychia pulvinata*
persistent sepal yellowcress	*Rorippa calycina*
pale blue-eyed grass	*Sisyrinchium pallidum*
pygmy goldenweed	*Tonestus pygmaeus*
lesser bladderwort	*Utricularia minor*
Colorado tansyaster	*Xanthisma coloradoense*

Table 3. Wetland types present within the Foote Creek Rim I study area, Carbon County, Wyoming (USFWS NWI 2016).

Wetland Type	Acres (Hectares)
Riverine	21.05
Freshwater Emergent Wetland	8.57
Freshwater Pond	5.65
Freshwater Forested/Shrub Wetland	1.35
Total	**36.63**

WILDLIFE RESOURCES

Wildlife resources within the proposed Project were examined through a search of existing data, previous studies, and site visits. Several sources of available data were used to identify wildlife resources within the Project, including published literature, field guides, the WYNDD, public data sets, WGFD and USFWS websites, and reports from previous studies conducted at the existing Project. During the site visits, ecologists evaluated habitat, potential for bird migratory pathways, raptor nests, prey populations, and other biological resources. Photographs taken are provided to document representative conditions of the Project across multiple time periods (Appendix B).

Potential Avian Concerns

Most species of birds are protected by the Migratory Bird Treaty Act (MBTA 1918). The MBTA prohibits the taking of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. According to the National Academy of Science, available data suggest that while collision mortality at wind energy facilities is well documented, population level effects have not been detected at any wind energy facilities in North America (National Research Council [NRC] 2007). The USFWS states in guidance and policy documents that it is not possible to absolve individuals, companies, or agencies from liability, even if they implement bird mortality avoidance or other similar protective measures (USFWS 2012). However, the USFWS recommends that wind energy developers follow the voluntary recommendations in the 2012 USFWS WEG in order to avoid, minimize, and mitigate for potential impacts to wildlife species of concern, including species protected under the MBTA (1918), the Bald and Golden Eagle Protection Act (BGEPA, 1940), and the ESA (1973), and to receive consideration during the enforcement process (USFWS 2012). The local USFWS Ecological Services Office recommends the development of a Bird and Bat Conservation Strategy (BBCS) and has provided a recommended outline for the development of a BBCS. Additionally, the BLM has identified a list of sensitive bird species for the Rawlins area as part of the Resource Management Plan (BLM 2008). A Project-specific BBCS document is being developed for the FCR I repower project.

Important Bird Areas

The Audubon Society has designated three Important Bird Areas (IBA) within 50 mi (80 km) of the Project (Audubon 2018 http://www.audubon.org/important-bird-areas/state/wyoming; Figure

7). These include the Laramie Greenbelt IBA, located along the Laramie River Albany county (approximately 38 mi [61 km] away), the Snowy Range Peaks IBA, located in alpine areas of the Medicine Bow National Forest and on the Carbon/Albany County border (approximately 10 mi [16 km] away), Laramie Plains Lakes Complex IBA, located in several areas of Albany County (approximately 22 mi [34 km] away), and the Shirley Basin IBA, located in contiguous sagebrush in Carbon County (approximately 40 mi [64 km] away). Other IBAs occur in Carbon County but not in the vicinity of the Project. Construction of the Project would likely not have any negative effect on IBAs in the region.

Breeding Birds

The Project is dominated by shrub and grassland communities, and several species of grassland passerines may use the Project during the breeding season. Wind energy facility construction appears to cause small-scale local displacement of some grassland passerines and is likely due to the birds avoiding turbine noise and maintenance activities (Leddy 1996, Leddy et al. 1999, Johnson et al. 2000a, Erickson et al. 2004, Young et al. 2005, Shaffer and Johnson 2008). Construction also reduces habitat effectiveness because of the presence of access roads and large gravel pads surrounding turbines (Leddy 1996, Johnson et al. 2000a). While it is likely that some small scale displacement of grassland passerines would result from repowering activities within the Project, specifically during the construction phase, similar and higher quality habitats are abundant in the region and any displacement of grassland passerines is not expected to result in population level impacts. Additionally, it is not clear if avoid of the Project is already occurring due to the site's operation as an active wind project for over 15 years. Reclamation of previously impacted areas may provide additional habitat opportunities for grassland species, while the construction of new turbines may results in new impacts and potential for avoidance. It is not clear if the larger turbines would results in greater avoidance activities from breeding birds.

US Geological Survey (USGS) Breeding Bird Survey

Four USGS Breeding Bird Survey (BBS) routes (USGS 2001b) are located within 20 mi (32 km) of the Project (Figure 8). The Walcott Route is located approximately 10 mi (16 km) to the west; the Ryan Park Route is located approximately 16 mi (26 km) south; the Rock River Route is located approximately 17 mi (27 km) to the northeast; and the Harmony Route is located approximately 19 mi (31 km) to the SE. The BBS routes are 24.5 mi (39.4 km) long and consist of 50 3-minute (min) counts along the length of the route (USGS 2001a). Information gathered from the survey provides some indication of species that may occur in the Project either transiently or for breeding habitat during the summer.

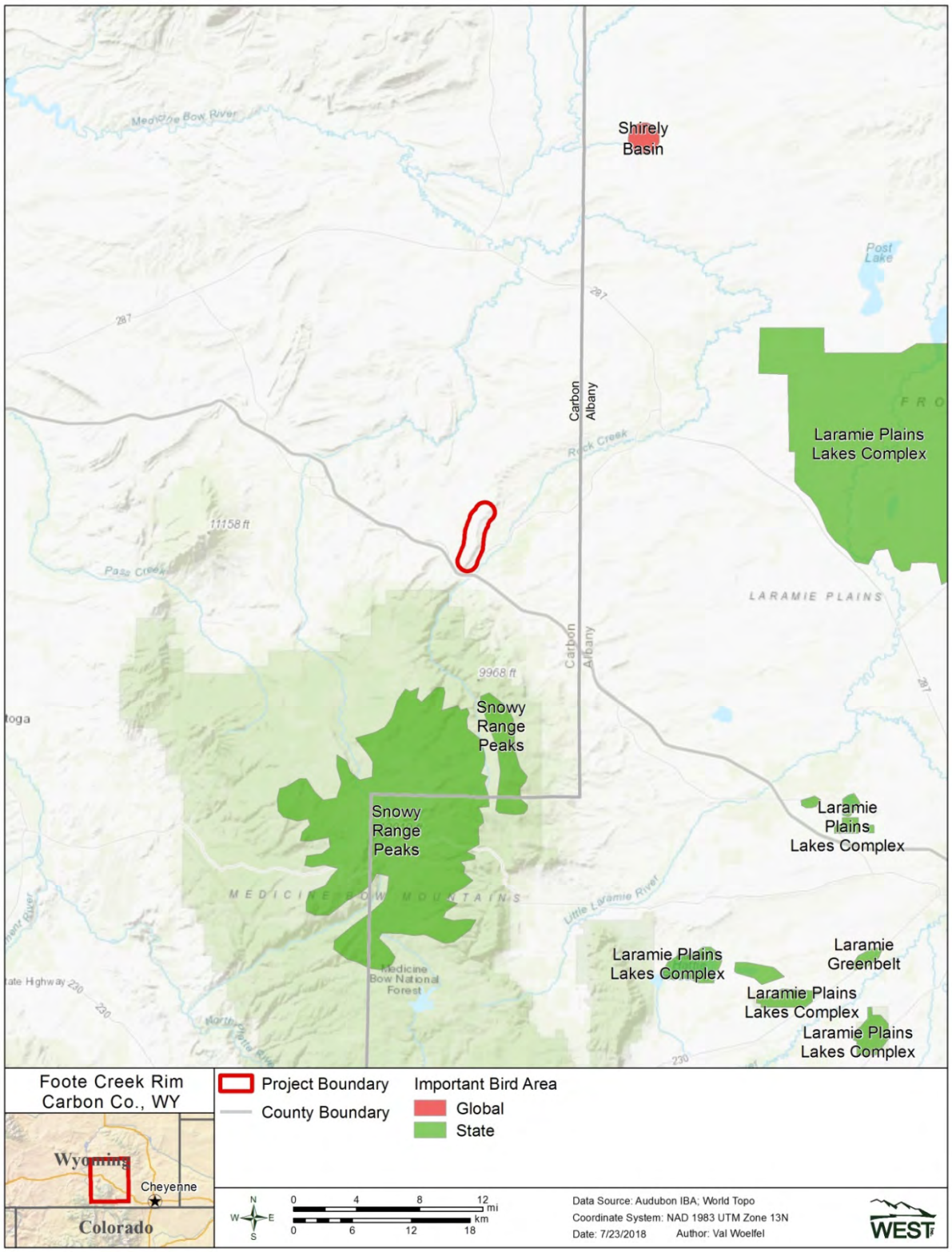

Figure 7. Audubon designated Important Bird Areas located near the Foote Creek Rim I in Carbon County, Wyoming.

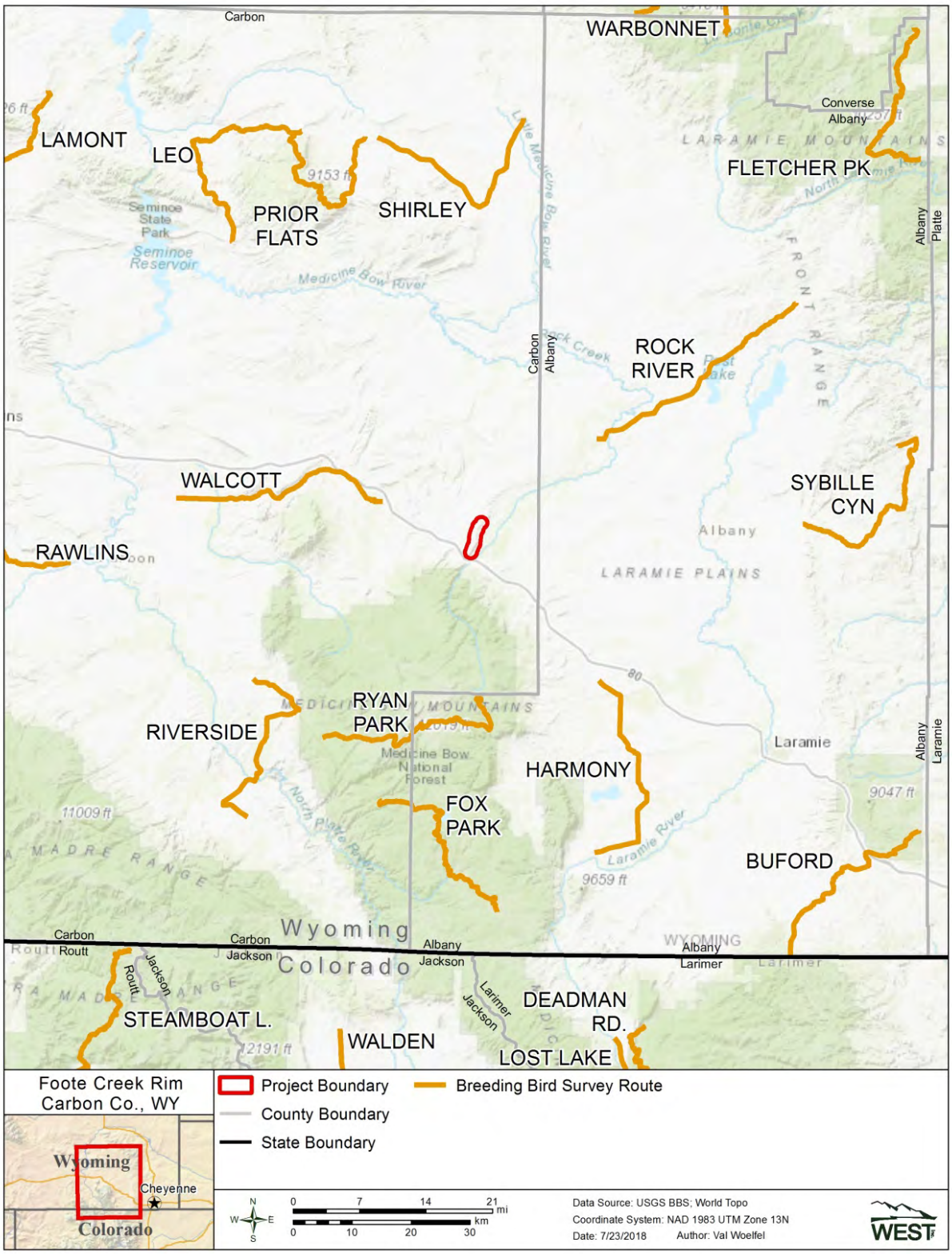

Figure 8. Breeding Bird Survey routes located near the Foote Creek Rim I in Carbon County, Wyoming.

The Rock River Route has been monitored for 11 years between 1990 and 2015 (Sauer et al. 2017) and provides as an example of species likely to be observed at the Project. In total, 84 species were observed in that time period. The most commonly observed species were Canada goose (*Branta canadensis*; 1,967), horned lark (*Eremophila alpestris*; 1,799), California gull (*Larus californicus*; 659), cliff swallow (*Petrochelidon pyrrhonota*; 547), McCown's longspur (*Rhynchophanes mccownii*; 501), mallard (*Anas platyrhynchos*; 332), American white pelican (*Pelecanus erythrorhynchos*; 282), and western meadowlark (*Sturnella neglecta*; 200). Raptor species observed during the surveys included turkey vulture (*Cathartes aura*; two), bald eagle (*Haliaeetus leucocephalus*; one), golden eagle (*Aquila chrysaetos;* 25), Swainson's hawk (*Buteo swainsonii;* 31), ferruginous hawk (*Buteo regalis;* 29), red-tailed hawk (*Buteo jamaicensis;* eight), northern harrier (*Circus cyaneus;* 11), great horned owl (*Bubo virginianus*; one), American kestrel (*Falco sparverius*; five), and prairie falcon (*Falco mexicanus;* 13).

Other Studies

Avian point count surveys conducted in 2017 and 2018 at the Project (Martinson et al 2018) recorded limited breeding bird observations. A total of 126 small bird observations were recorded within 36 separate groups during the fixed-point small bird use surveys. Horned lark accounted for 79 observations, or 62.7% of all small bird observations. Among other small bird species, Brewer's blackbird (*Euphagus cyanocephalus*) was the next most commonly recorded species and accounted for 31 observations or 24.6% of small bird observations. Most (55.5%) of small bird observations were recorded in summer (70 observations), followed by spring (30 observations; 23.8% of all small birds reported). Horned lark (45 observations) and Brewer's blackbird (20 observations) accounted for 92.9% of summer observations, and horned lark (12 observations) and Brewer's blackbird (11 observations) accounted for 76.7% of spring small bird observations. Bank swallow (*Riparia riparia*) was also observed in spring, and accounted for 13.3% of spring observations. Significantly more breeding birds were observed during the 4-year pre-construction studies conducted at FCR (see Johnson et al. 2000b). These numbers should be interpreted with some caution as study methods and areas included are not identical between the two studies. The post-construction monitoring report (Young et al. 2003) did report that approximately 50% of the mortalities identified during the 3-year study were assumed to be breeding birds. Significant studies on mountain plovers were also conducted, as they have been identified as breeding/nesting on the FCR mesa; however, most of the identified nests were north of FCR I in the existing FCR II-IV project area (Johnson et al. 2001).

Avian Migration

Although many species of songbirds migrate at night and may collide with tall man-made structures, no large mortality events on the same scale as those seen at communication towers have been documented at wind energy facilities in North America (National Wind Coordination Collaborative [NWCC] 2004). Large numbers of songbirds have collided with lighted communication towers and buildings when foggy conditions occur during spring or fall migration. Birds appear to become confused by the lights during foggy or low cloud ceiling conditions, flying circles around lighted structures until they become exhausted or collide with the structure (Erickson et al. 2001). Most collisions at communication towers are attributed to the guy wires on these structures, which are absent for wind turbines. Additionally, the large mortality events

observed at communication towers have occurred at structures greater than 500 ft (152 m) in height (Erickson et al. 2001), likely because most songbirds migrate at elevations of 900 ft (274 m) or higher (USFWS 1998). Modern wind turbines are well below 900 ft (274 m) in height. The repowering will increase the rotor swept area and turbine height, which may result in increased opportunities for collision with migrating birds. Migrating songbirds are likely more at risk of turbine collision when ascending and descending from stopover habitats.

It is likely that birds migrate through the Project, including songbirds. However, due to the scarcity of habitats such as forests, wetlands, and riparian areas within the Project, there is limited stopover habitat for many migrating birds. Species that inhabit grasslands and shrublands are more likely to use the Project. The riparian areas and waterbodies that are present in the region may attract migrating waterfowl and shorebirds; although, it is unlikely that the majority of the Project receives substantial use by these bird types due to lack of hydrology. The post-construction monitoring report (Young et al. 2003) did report that approximately 50% of the mortalities identified during the 3-year study were assumed to be birds migrating through the region.

Potential for Raptor Migration in the Area

On a regional scale, the Project is located to the northern point a mountain range (Elk Mountain) which may result in birds flying toward the east or west of the Project. The rim along within the Project is likely to provide updrafts that soaring raptors can use for lift while hunting (see Liguori 2005); however, these features may not provide conditions that would be expected to facilitate large scale migration routes. Turbines are often placed on prominent ridges in order to use higher wind speeds and updrafts that raptors also use. A review of WGFD avian migration models scores the Project high for migratory bird use.

Raptor Nesting

No suitable raptor nest habitat occurs within the Project; however, adjacent habitat includes trees, rock outcrops, and man-made features (e.g., distribution lines). Raptor nest surveys were conducted from 1995 to 1999 (pre-construction; Johnson et al. 2000b) and 2015 to 2018 (during operation; unpublished WEST memos). The pre-construction surveys covered a large area (16-km buffer from the Foote Creek Rim project area [this included areas associated with a separate project Simpson's Ridge), while 2015 to 2017 surveys covered a 2.5-mi buffer from the FCR I proposed turbines and the 2018 survey covered a 10-mi buffer from the FCR I proposed turbines. The FCR raptor nest study area contained 56 active nests in 1995, 83 active nests in 1997 and 70 active nests both in 1998 and 1999 (Johnson et al. 2000b). Based upon four years of active nest data, the most common active nests observed at FCR and Simpson's Ridge were red-tailed hawk (mean = 58/year), golden eagle (30), ferruginous hawk (19), prairie falcon (11), Swainson's hawk (six), great-horned owl (six), and bald eagle (three). Maps were not available for the 1995 to 1999 period. During the 2015 and 2016 raptor nest surveys, there was one golden eagle nest, two bald eagle nests and six red-tailed hawk nests identified as occupied (Figure 9 and 10). In 2017, one bald eagle nest, one golden eagle nest, and six red-tailed hawk nests were identified as occupied (Figure 11). Surveys and results for 2018 are still being compiled and will be updated when available.

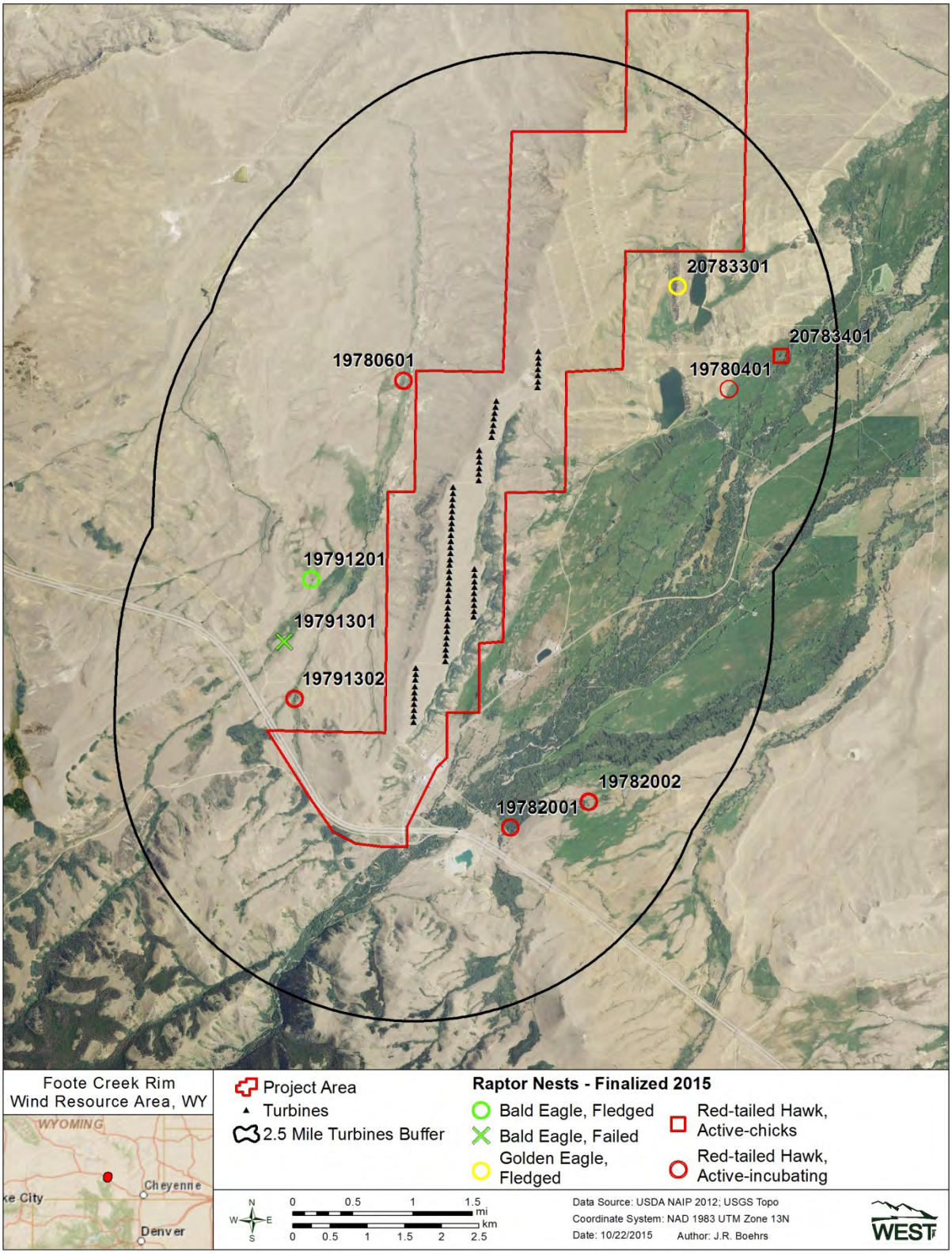

Figure 9. Raptor nest locations near Foote Creek Rim I based on 2015 surveys, Carbon County, Wyoming.

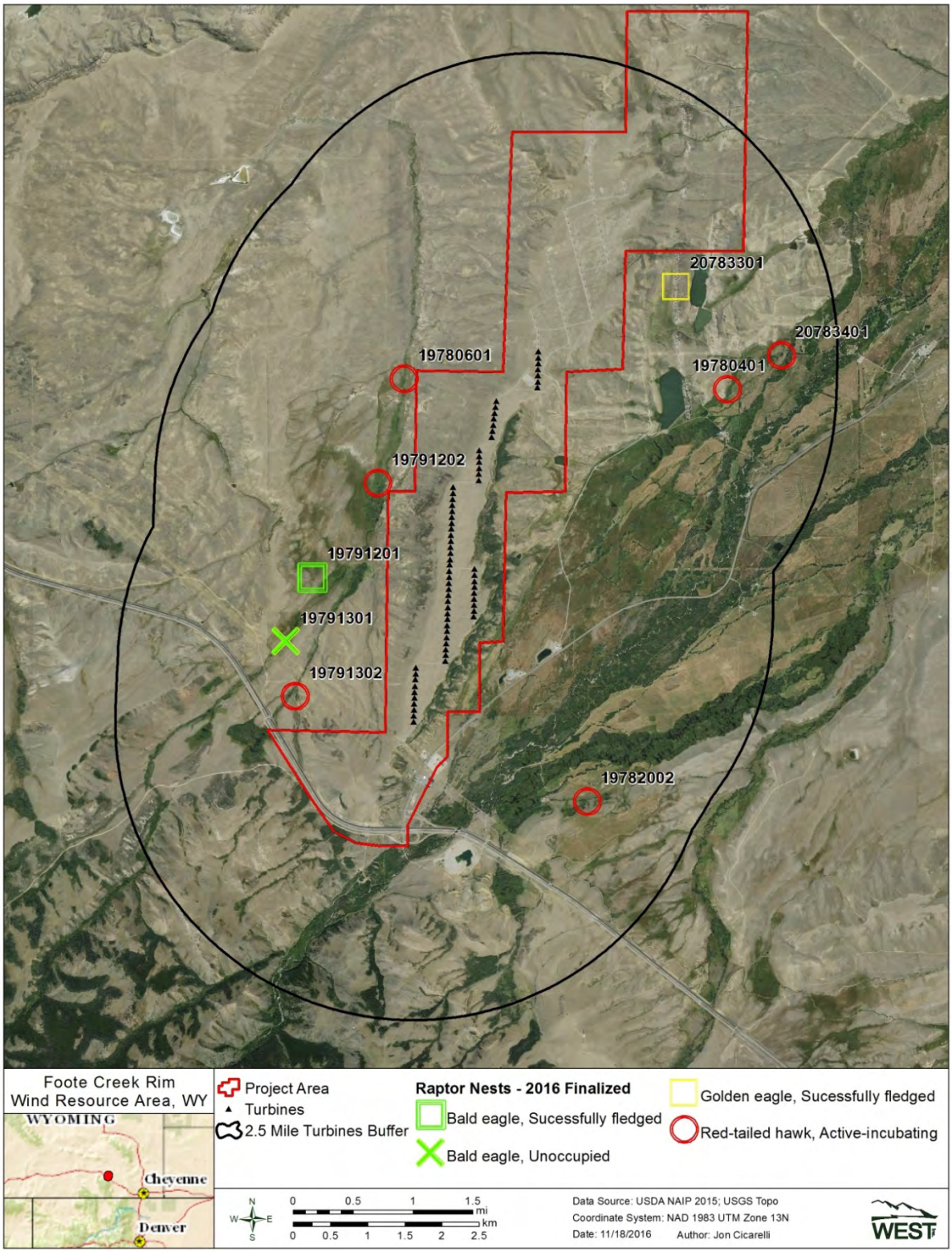

Figure 10. Raptor nest locations near Foote Creek Rim I based on 2016 surveys, Carbon County, Wyoming.

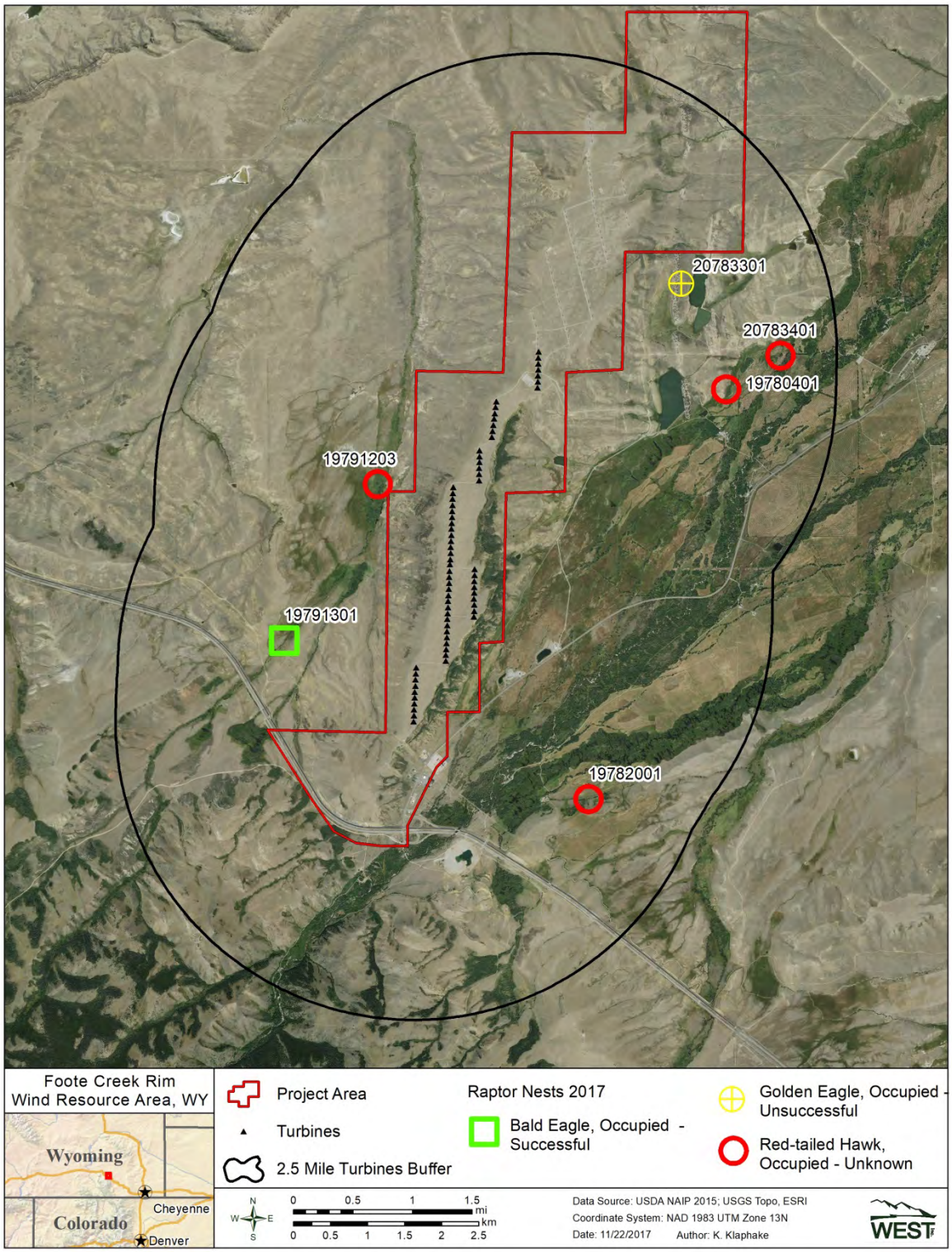

Figure 11. Raptor nest locations near Foote Creek Rim I based on 2017 surveys, Carbon County, Wyoming.

Areas of Potentially High Prey Density

High densities of fossorial mammals, such as prairie dogs (*Cynomys* spp.) and ground squirrels, in or near wind energy facilities may be an important factor in the relatively high rates of raptor fatalities, as indicated from studies conducted at the Altamont and High Winds wind energy facilities (Kerlinger et al. 2005). Various raptor species, including golden eagles, are expected to concentrate over prairie dog towns throughout the year, and nesting success and productivity may increase in areas where colonial rodents are present. Prairie dogs, a common prey species for golden eagles, have not been identified in the Project footprint, but were observed in pre-construction surveys north of the Project in adjacent wind resource areas (Johnson et al. 2000b). A pre-construction survey also identified low levels of lagomorphs when compared to other regional locations, but high levels of ground squirrels. No evidence of large concentrations of prey species have been identified during the regular site visits.

Examples of other prey species present within the Project include cottontail rabbits (*Sylvilagus* spp.), jackrabbits (*Lepus* spp.), and several species of mice and voles. Livestock and big game in the area could also provide carrion that could attract eagles and vultures. Pronghorn (*Antilocapra americana*) were observed throughout the Project during regular site visits. Reports from PacifiCorp operation staff have confirmed a lack of livestock on the mesa over the past three years (personal communication Aaron Anderson – PacifiCorp FCR I Site Manager).

Greater Sage-Grouse

In an effort to prevent listing of greater sage-grouse, the Wyoming Governor's office developed a map of greater sage-grouse Core Population Areas (Version 4). The Core Population Areas include areas with the highest densities of breeding greater sage-grouse in the state, as well as identified areas important for connectivity between populations. The Core Population Areas include roughly 25% of the state but contain 83.1% of the greater sage-grouse population. On July 29, 2015, Governor Mead issued Greater Sage-Grouse Executive Order (EO) 2015-4, which states that new development or land uses within Core Population Areas should be authorized or conducted only when it can be demonstrated that the activity will not cause declines in greater sage-grouse populations. Due primarily to the lack of data on greater sage-grouse response to wind energy, the EO stated that wind energy development is not recommended in Core Population Areas. Based on this language in the EO is it unlikely that state agencies would permit new wind energy developments in sage-grouse Core Population Areas.

The Project is not located within a greater sage-grouse Core Population Area; the nearest Core Area is located approximately one mi west of the Project (Figure 12). The WGFD also does not have any records of greater sage-grouse leks within 2.0 mi (6.4 km) of the study area. The nearest known lek is located approximately three mi (9.6 km) to the west (Figure 12). A pre-construction greater sage-grouse lek survey was conducted for the Project (Johnson et al. 2000b) and a 3.2-km buffer. Survey included aerial and ground checks. No active sage grouse (*Centrocercus urophasianus*) leks were observed during these surveys. Pellet count surveys were also conducted in summer and winter to evaluate sage grouse use (Johnson et al. 2000b).

Mean sage grouse pellet density at FCR during the winter period ranged from zero per acre during winter 1997/1998 to 69 per hectare (ha) during winter 1994/1995. During the summer period, sage grouse pellet density ranged from 11 per ha during 1995 to 4/ha during 1997.

Bald and Golden Eagles

Both bald and golden eagles are protected by the MBTA (1918) and the BGEPA (1940). The BGEPA prohibits the take of bald and golden eagles, unless authorized by federal regulation. In 2009, the USFWS first publicized rules authorizing the issuance of eagle take permits (USFWS 2009). The rule was update in 2016 and the Final Eagle Rule 2016 was published. The eagle rule authorizes take where take: 1) is compatible with the preservation of the bald and golden eagle, 2) is associated with and not the purpose of an otherwise lawful activity and 3) cannot practicably be avoided. Additional evaluation, risk assessment, and mitigation standards were also presented in the Final Eagle Rule 2016. Many of these standards were unchanged from previously issued documents.

The USFWS explained its approach to issuing programmatic eagle take permits in the 2011 Draft Eagle Conservation Plan Guidance (Draft ECPG; USFWS 2011). The Draft ECPG was updated and finalized in April 2013 (USFWS 2013). In December 2016, the USFWS issued its final changes to its rules on eagle take permits that can be issued pursuant to the BGEPA (USFWS 2016). These documents provide guidance on obtaining an eagle take permit and what measures wind energy companies can implement to address potential impacts to eagles from wind energy production.

On a landscape scale, the Project is within an area modeled to have relatively high use by golden eagles during late summer based on estimates of golden eagle abundance from aerial line transect surveys and several land cover and other environmental variables (Nielson et al. 2016). However, most of Wyoming outside of areas dominated by high elevation coniferous forest was modeled as having similar higher probabilities of golden eagle use (Figure 13), and the coarse-scale of the mapping is not particularly useful for small-scale assessment of golden eagle use on a project by project basis.

Both bald and golden eagles are known to occur within and nest in the vicinity of the Project. Golden eagle use was observed year round the most recent avian use surveys (Martinson et al 2018) at the Project, while bald eagle use was only observed in the late-fall through early-spring period. These uses values are consistent with pre-construction surveys which also identified golden eagles as the species most recorded during point count surveys (Johnson et al. 2000b). Most of the eagle use was concentrated along the western rim. Results of nest surveys have also identified both bald and golden eagles nesting in the vicinity of the Project. The closest bald eagle nest is approximately 1.5 mi from the proposed turbines and the closest golden eagle nest is approximately 2.0 mi from the proposed turbines. Riparian habitat to the east and scattered open water bodies also provide suitable foraging, nesting, and roosting habitat for bald eagles. To date, two golden eagles mortalities have been identified during post-construction monitoring efforts. No bald eagles mortalities have been identified to date.

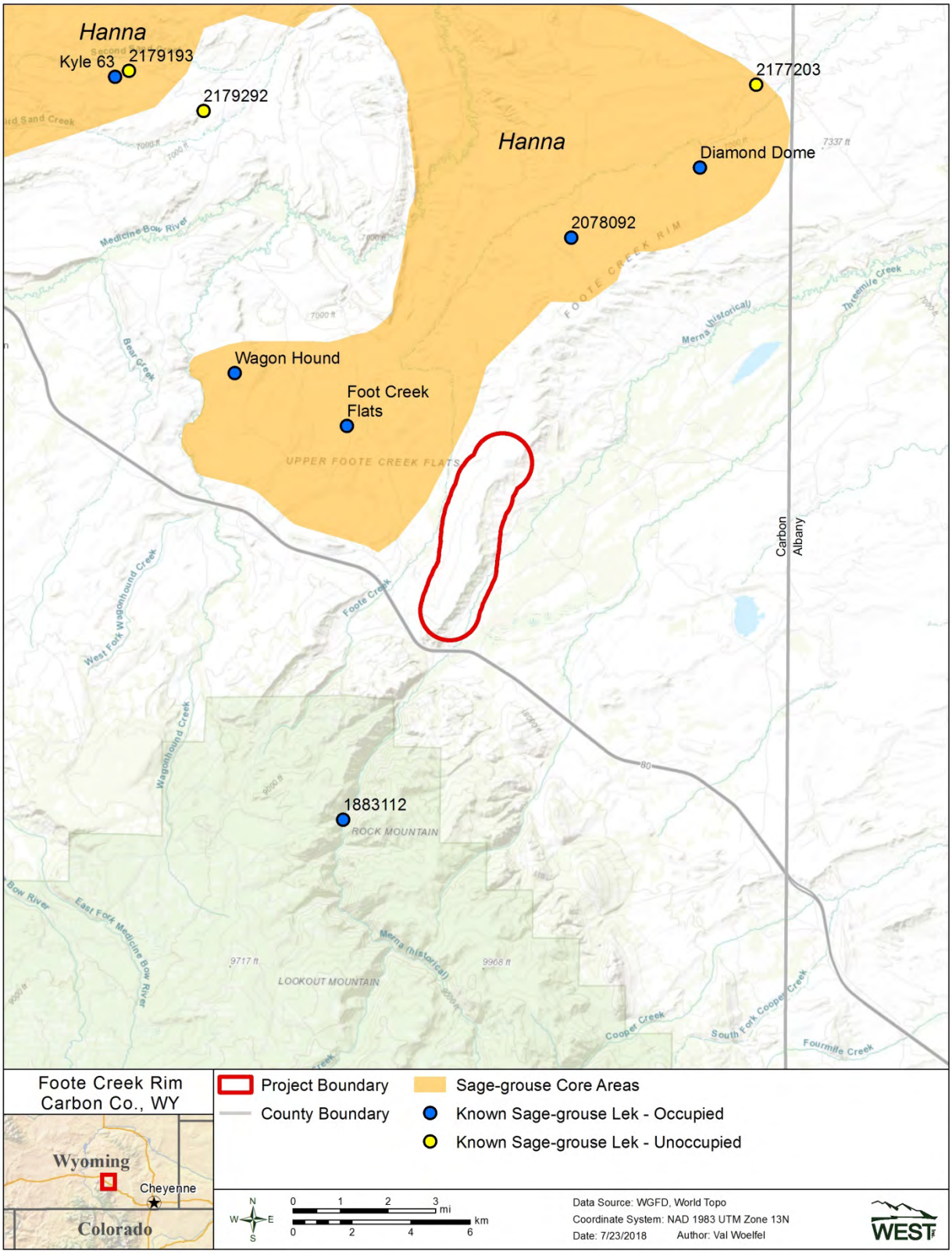

Figure 12. Greater sage-grouse Core Population Areas and lek locations in relation to the McFadden Ridge II Wind Resource Area, Albany and Carbon Counties, Wyoming.

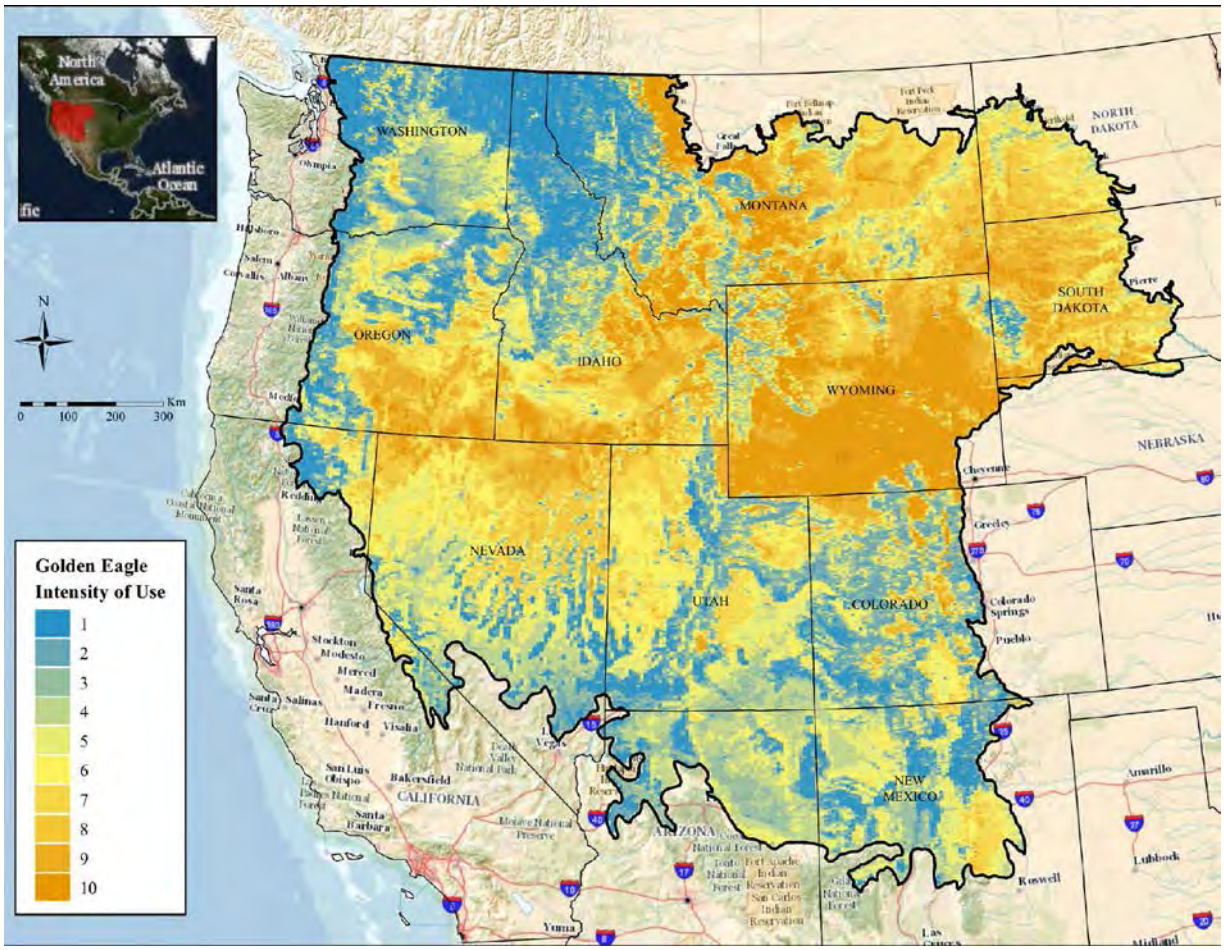

Figure 13. Predicted intensity of golden eagle use in the western United States during late summer (from Nielson et al. 2016).

Continued investigation into the potential occurrence of both bald and golden eagles and their nests, along with coordination with the USFWS regarding any additional preconstruction (Tier 3) studies, is recommended. In addition, PacifiCorp is proposing to develop an Eagle Conservation Plan (ECP) in accordance with the 2013 USFWS ECPG for the Project which also will apply to any new Project development.

An assessment of the potential risk to eagles at the Project should consider a variety of factors that may influence risk. Table 4 below provides a brief overview of factors to consider and characteristics of the Project. These potential risk factors are suggested in the 2013 USFWS ECPG (USFWS 2013). Early consideration of these factors may reduce potential project related impacts and assist in development of an ECP that avoids and minimizes potential risk to eagles.

Table 4. Risk factors listed in the 2013 US Fish and Wildlife (USFWS) Eagle Conservation Plan Guidance (ECPG) and a discussion of these factors for the Foote Creek Rim I, Carbon Counties, Wyoming.

Risk Factor	Scientific Evidence/Support	Citations	Project Situation
Bird Density	Mixed results; likely some relationship but other factors have overriding influence across a range of species	Barrios and Rodríguez (2004), de Lucas et al. (2007), Hunt (2002), Smallwood and Karas (2009), Ferrer et al. (2011)	Somewhat limited species use due to the small size of the project. Additional avian and raptor use surveys (Tier 3) will help inform this factor. Golden and bald eagle use has been documented in the Project although densities do not appear to be relatively high.
Bird Age	Mixed results. Higher number of fatalities among subadult and adult golden eagles in one area. Higher fatalities among adult white-tailed eagles (*Haliaeetus albicilla*), a conspecific of bald eagles, in another.	Hunt (2002), Nygård et al (2010)	Both adult and juvenile golden and bald eagles have been documented in the Project region.
Proximity to Nests	White-tailed eagle nesting areas close to turbines have been observed to have low nest success and be abandoned over time.	Nygård et al (2010)	A bald eagle nest have been documented 1.5 miles west of the Project, and a golden eagle nests has been documented within 2 miles.
Bird Residency Status	Mixed findings. Higher risk to resident adults in Egyptian vultures (*Neophron percnopterus*). Higher number of mortalities among subadults and floating adults in golden eagles in one other study.	Barrios and Rodríguez (2004), Hunt (2002)	The Project is located within the known year-round and migratory ranges of bald and golden eagles. Golden eagle use has been observed year round, while bald eagles were only observed in spring and fall during baseline studies. Both species nest in the region and are resident during the breeding season
Season	Mixed findings. In some cases for some species, risk appears higher in seasons with greater propensity to use slope soaring (fewer thermals) or kiting flight (windy weather) while hunting.	Barrios and Rodríguez (2004), de Lucas et al. (2007), Hoover and Morrison (2005), Smallwood et al. (2009)	Golden eagle use has been observed year round, while bald eagles were only observed in spring and fall during baseline studies. Additional Tier 3 surveys are warranted to inform this factor.
Flight Style	Species most at risk perform more frequent flights that can be described as kiting, hovering, and diving for prey.	Smallwood et al. (2009)	Both bald and golden eagles were observed flying within the potential rotor swept zone during baseline studies; however, most of the activity is associated with the Mesa Rim and not at turbine locations.
Interaction with Other Birds	Higher risk when interactive behavior is occurring.	Smallwood et al. (2009)	Potential for this factor exists based on the presence of eagles and other raptors within the Project.

Table 4. Risk factors listed in the 2013 US Fish and Wildlife (USFWS) Eagle Conservation Plan Guidance (ECPG) and a discussion of these factors for the Foote Creek Rim I, Carbon Counties, Wyoming.

Risk Factor	Scientific Evidence/Support	Citations	Project Situation
Active Hunting/Prey Availability	High risk when hunting close to turbines, across a range of species.	Barrios and Rodríguez (2004), de Lucas et al. (2008), Hoover and Morrison (2005), Hunt (2002), Smallwood et al. (2009)	There are limited to no prairie dog colonies and no greater sage-grouse in the Project; lagomorph species and other small mammals, variety of avian species, livestock and big game species may be present within the Project.
Turbine Height	Mixed, contradictory findings across a range of species.	Barclay et al. (2007), de Lucas et al. (2008)	Both bald and golden eagles were observed flying within the Proposed turbine rotor swept zones.
Rotor Speed	Higher risk associated with higher blade-tip speed for golden eagles in one study, but this finding may not be generally applicable.	Chamberlain et al. (2006)	This factor may be potentially controlled by state-of-the-art technology, low revolutions per minute (RPM), and more space between rotor sweeps; however tip speeds are generally the same.
Rotor-swept Area	Meta-analysis found no effect, but variation among studies clouds interpretation.	Barclay et al. (2007)	Both bald and golden eagles were observed flying within the Proposed turbine rotor swept zones.
Topography	Several studies show higher risk of collisions with turbines on ridgelines and on slopes. Also a higher risk in saddles that present low-energy ridge crossing points.	Barrios and Rodríguez (2004), de Lucas et al. (2008), Hoover and Morrison (2005), Smallwood and Thelander (2004)	There is little topographical relief within the Project; however; the west Mesa Rim is a clear attractant and should be considered during siting.
Wind Speed	Mixed findings, probably locality dependent.	Barrios and Rodríguez (2004), Hoover and Morrison (2005), Smallwood et al. (2009)	This factor may be based on the prevailing wind direction in relation to topography, including slope, aspect, and elevation.

Operation-Related Avian Mortality at the Foote Creek Rim I Wind Energy Facility

Post-construction monitoring has been conducted at the Project over multiple years. These results represent impacts associated with the existing Project, not the proposed Project; therefore interpretation of results should be mindful of potential unknowns that may be associated with the repower. While not directly comparable, the results of mortality monitoring can provide information on species and temporal considerations that may be expected for once the new turbine are constructed. Below is a summary of the mortality monitoring results to date.

Standardized carcass searches for birds and bats, searcher efficiency trials, and carcass persistence trials were conducted at FCR I between 1998 and 2002. Carcass searches were conducted at half of the turbines and at the met towers once every two weeks and all turbines were searched once every 28 days November 1998 – December 2000. Between June 2001 and

June 2002, half of all turbines and all met towers were search every 28 days. For more details regarding methods, please see Young et al. 2003.

During standardized carcass searches, 56 birds were found during the first study year (November 3, 1998 – October 31, 1999), 37 birds were found during the second study year (November 1, 1999 – December 31, 2000) and 26 birds were found during the third study year (June 1, 2001 – June 5, 2002) for a total of 119 birds. Three additional birds were found incidentally during September and October 1998, before formal carcass searches began, for a total of 122 birds found between 1998 and 2001. Approximately 92% of all birds found were passerines, most of which were common passerine species. No bald or golden eagles were found. A total of six raptors were found, three American kestrels, one northern harrier, and one short-eared owl (*Asio flammeus*). For more details regarding species composition and spatial and temporal patterns, please see Young et al. 2003.

The turbine-related fatality estimate at FCR I was 141, 100, and 80 estimated bird fatalities for the first, second, and third study year respectively. Combining all years of data, there were an estimated 103 (90% CI: 67 – 140) bird fatalities annually or 1.50 birds/turbine (90% CI: 0.93 – 2.08). The met tower-related fatality estimate at FCR I was 63, 13, and 46 estimated bird fatalities during the first, second, and third study year respectively. Combining all years of data, there were an estimated 40 (90% CI: 20 – 55) bird fatalities annually or 8.09 birds/tower (90% CI: 5.02 – 11.04).

From 2015 to the present, standardized carcass searches have been conducted, but focused on large birds, specifically eagles. During 2015 to 2017 carcass searches were conducted at half of the turbines and all met towers twice per month. These turbines were pad checked with vehicle-based survey conducted at the remaining turbine. Starting in 2017 through the present, all turbines and meteorological towers were surveyed once per month using 20-m transects. No formal analyses for 2015 – 2018 mortality data have been performed at this point.

During the 2015 – 2018 mortality monitoring surveys, a total of 18 birds were found as of July 31, 2018. Two birds were found during 2015, seven birds were found during 2016, six birds were found during 2017, and three birds have been found as of July 31, 2018. Two of the 18 bird mortalities found were golden eagles. Other raptors found included one northern harrier, and two American kestrel. There were three water-associated species found including American white pelican, mallard, and gadwall (*Anas strepera*) as well as a common raven (*Corvus corax*), common nighthawk (*Chordeiles minor*), and northern flicker (*Colaptes auratus*). The remainder of the birds found were small passerine species.

Bats

Bat casualties have been reported from most wind energy facilities where post-construction fatality data are publicly available. Reported estimates of bat mortality at wind power facilities have ranged from 0.01 – 47.5/turbine/year (0.9 – 43.2 bats/MW/year) in the US with an average

of 3.4 bats/turbine or 4.6 bats/MW (NWCC 2004). Most of the bat casualties at wind energy facilities to date are migratory species, which conduct long migrations between summer roosts and winter areas (Kunz et al. 2007, Arnett et al. 2008). The species most commonly found as fatalities at wind power facilities include hoary bats, silver-haired bats, and eastern red bats (Johnson 2005, Arnett et al. 2008). The highest numbers of bat fatalities found at wind energy facilities to date have occurred in eastern North America on ridgetops dominated by deciduous forest (NWCC 2004); however, Barclay et al. (2007), Gruver et al. 2009, BHE Environmental (2010, 2011), Good et al. (2011, 2012), and Jain (2005), among others, reported relatively high fatality rates at facilities located in grassland and agricultural habitats in Canada, Wisconsin, Indiana, and Iowa. The causes of the relatively high number of migratory bat deaths at wind energy facilities are not well understood (Baerwald et al. 2008, Cryan and Barclay 2009) but it is now believed that most bats are killed by direct collision with turbine blades rather than from barotrauma (Rollins et al. 2012, Houck 2012). Furthermore, quantitative predictions of migratory bat use based on strong field methods are lacking. Repowering the Project will likely result in the mortality of some migratory bat species, such as hoary bats and silver-haired bats. Thus far, resident bat species at other wind energy facilities are generally not found as casualties (Arnett et al. 2008) and mortality rates at wind energy facilities in the Rocky Mountain region (range: 1.05 to 11.42 fatalities/MW/year) have generally been considered low relative to other regions of the US. No pre-construction surveys for bats have been conducted to date, but are planned for the 2019 season.

Eleven bat species may occur in the vicinity of the Project based on range of occurrence (Harvey et al. 1999, Bat Conservation International 2003, Abernethy et al. 2015): big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), eastern red bat (*Lasiurus borealis*), western small-footed bat (*Myotis ciliolabrum*), western long-eared bat (*Myotis evotis*), little brown bat (*Myotis lucifugus*), fringed bat (*Myotis thysanodes*), long-legged bat (*Myotis volans*), pallid bat (*Antrozous pallidus*), and Townsend's big-eared bat (*Corynorhinus townsendii*). The Project footprint does not contain potential bat roosting habitat in the form of trees, rocky outcrops, or abandoned buildings; however, potentially suitable roosting habitat does exist in the surrounding vicinity. Bats generally forage over water and over open spaces, such as fields and scrub/shrub land cover. Riparian areas with trees and water are located along drainages adjacent to the Project and may provide bat habitat; however, the Project footprint is void of any clear attractants to bat species.

During standardized carcass searches (1998 – 2002) 47 bats were found during the first study year, 18 during the second, and 14 during the third (Young et al. 2003). All bats found were associated with turbines; no bats were found at met towers. The majority of the bats found (79.7%) were hoary bats while the remainder included little brown (seven), silver-haired (six), big brown (one), and two unidentified bats. For more details regarding species composition and spatial and temporal patterns, please see Young et al. 2003.

All bat carcasses found were used in fatality estimate calculations for bats. The turbine-related fatality estimate at FCR I was 165, 40, and 90 estimated bat fatalities for the first, second, and third study year respectively. Combining all years of data, there were an estimated 90 (90% CI:

30 – 150) bat fatalities annually or 1.34 bats/turbine (90% CI: 0.20 – 2.43). A total of five bats have been found during the 2015 – present surveys including two hoary bats, two little brown myotis, and on silver-haired bat. Surveys during this period were modified specifically for eagles; therefore the number of bat detections likely underrepresents the actual number of bat mortalities.

Big Game

The 2010 WGFD Wildlife Protection Recommendations for Wind Energy Development in Wyoming recommend avoidance of crucial big game ranges (including crucial winter, identified parturition, and migration corridors) when siting wind energy facilities (WGFD 2010a). If a project occurs on lands designated as crucial winter range, identified parturition areas, or will bisect known migration corridors, the WGFD recommends appropriate surveys be completed.

According to spatial data from the WGFD, the Project is not located within any crucial winter or other important seasonal ranges for pronghorn (*Antilocapra Americana*; Figure 14), mule deer (*Odocoileus hemionus*; Figure 15), white-tailed deer (*Odocoileus virginianus*; Figure 16), elk (*Cervus canadensis*; Figure 17) or moose (*Alces alces*; Figure 18). All of these species occur in the area but their seasonal ranges are limited to yearlong or winter/yearlong use. Crucial range is located approximately three miles south of the Project for pronghorn, mule deer, and elk. A mule deer migration route is located southeast of the Project, but does not cross through the Project footprint. Pronghorn, elk, and mule deer have been observed on and near the Project with some regularity.

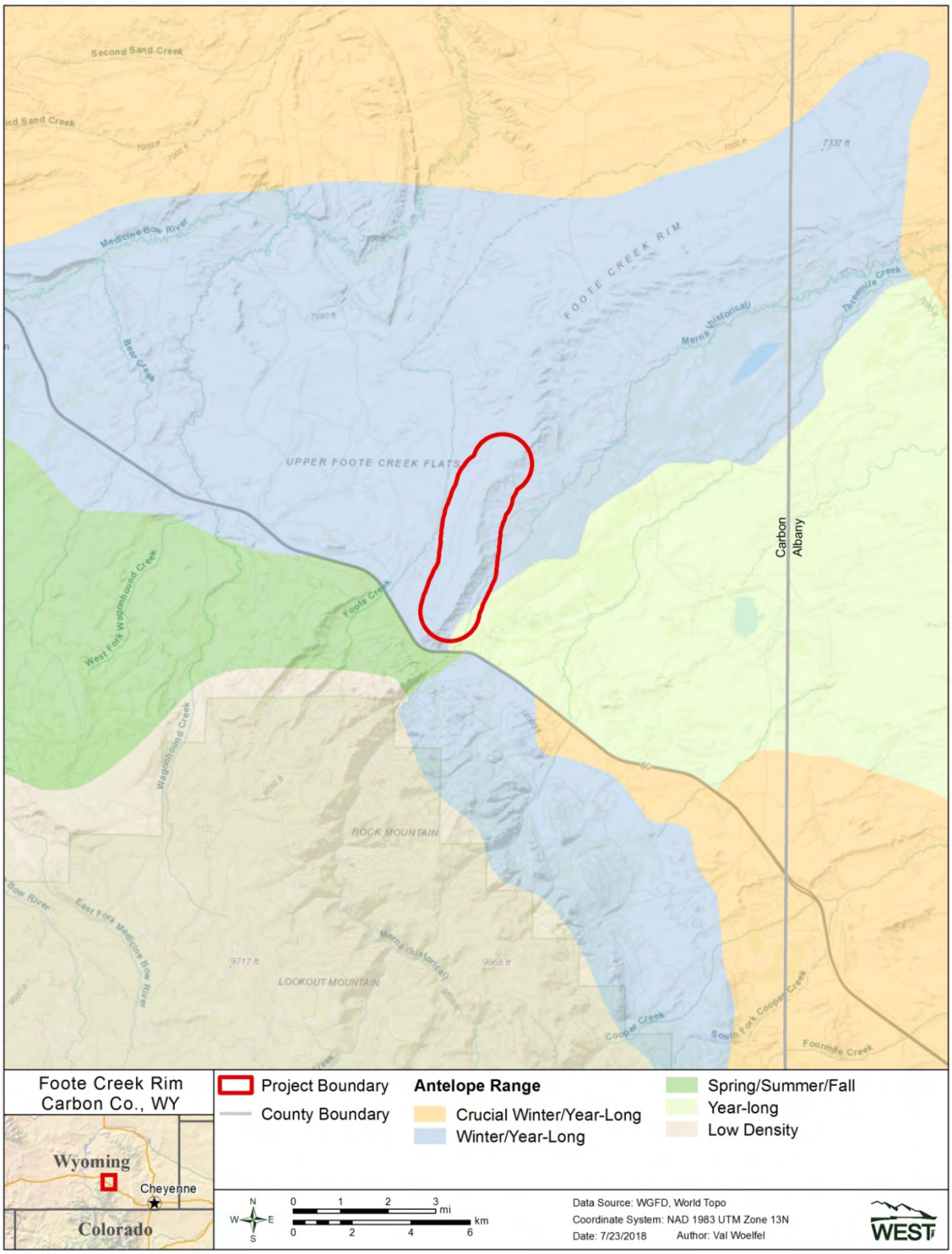

Figure 14. Pronghorn ranges in the FCR I, Carbon County, Wyoming.

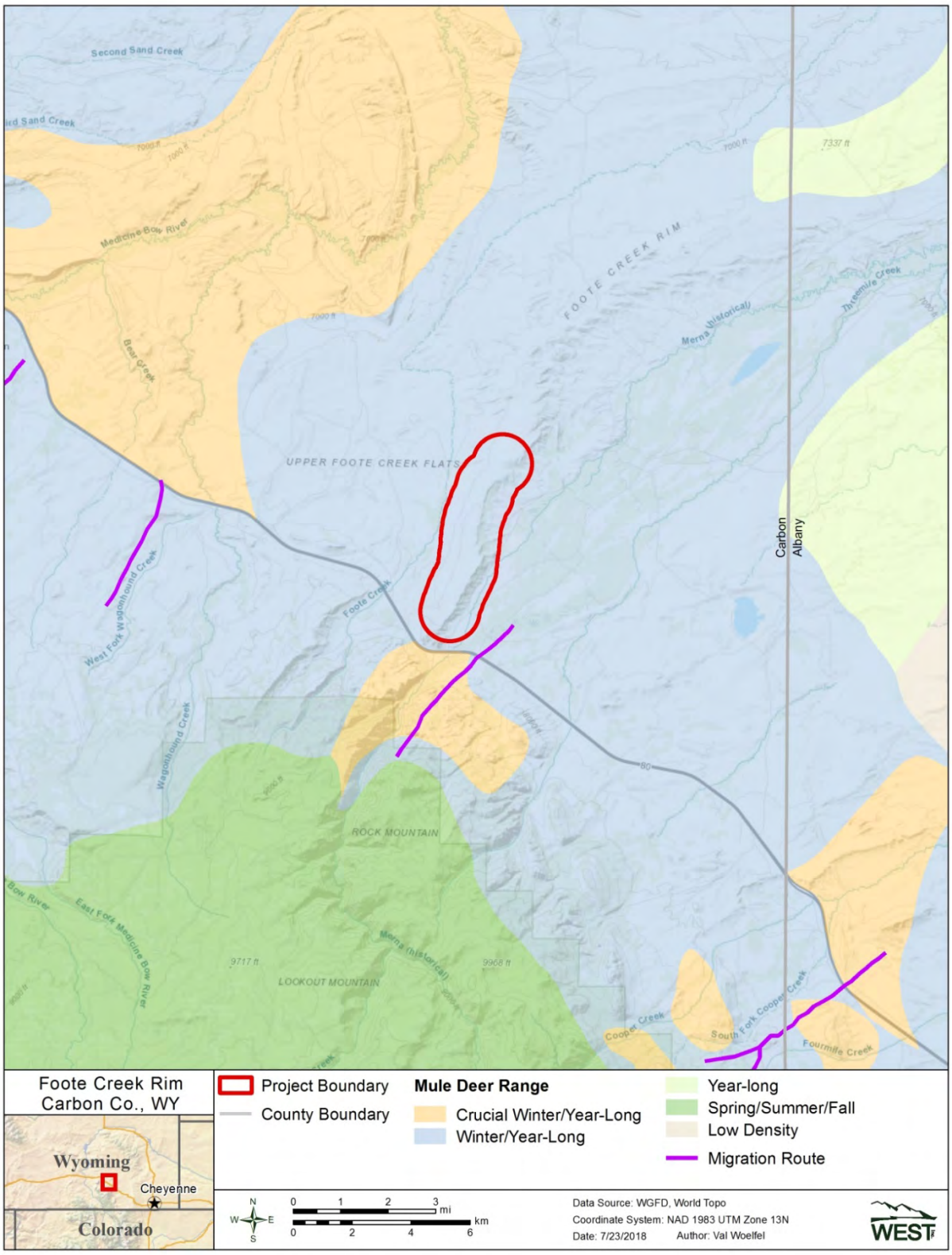

Figure 15. Mule deer ranges in the FCR I, Carbon County, Wyoming.

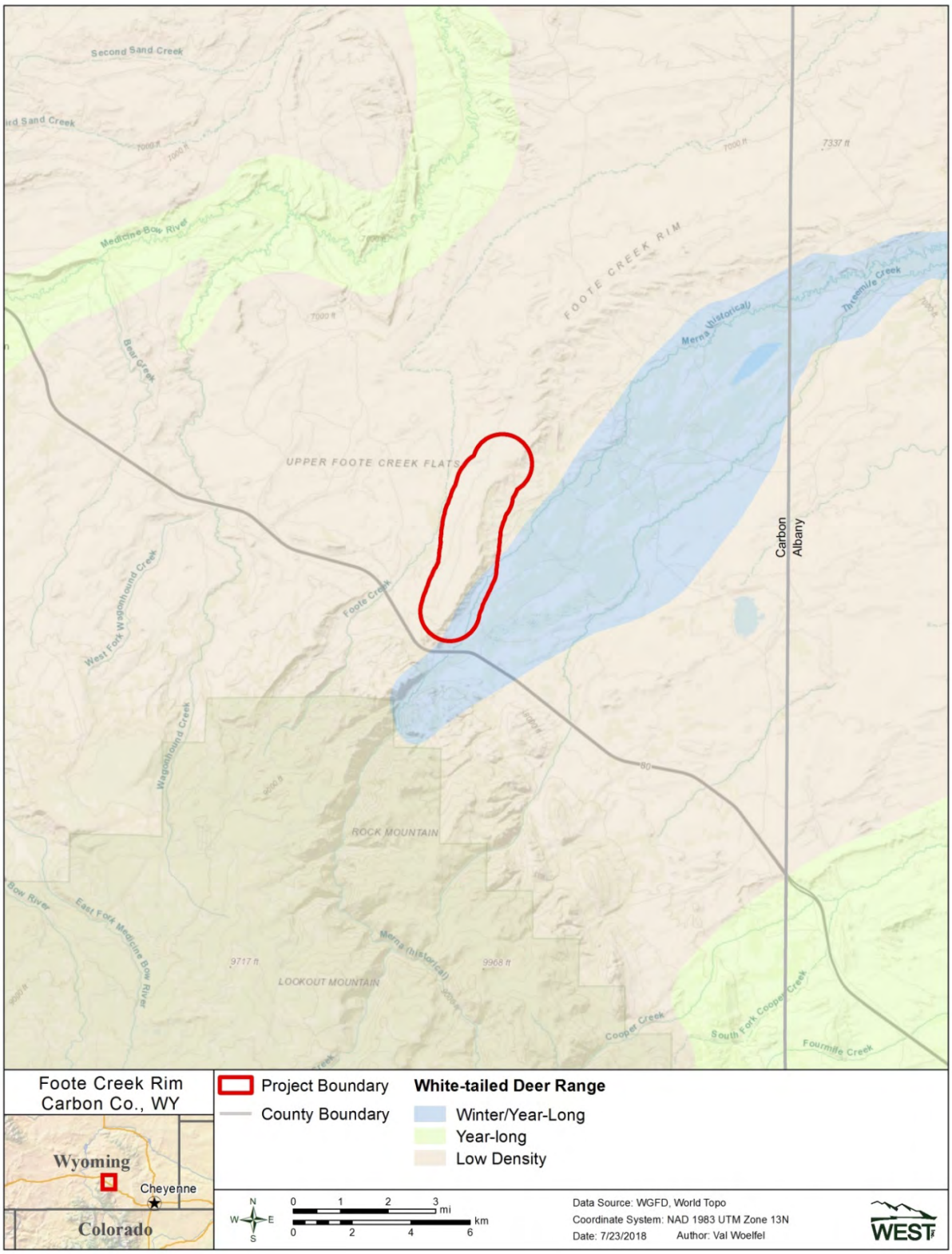

Figure 16. White-tailed deer ranges in the FCR I, Carbon County, Wyoming.

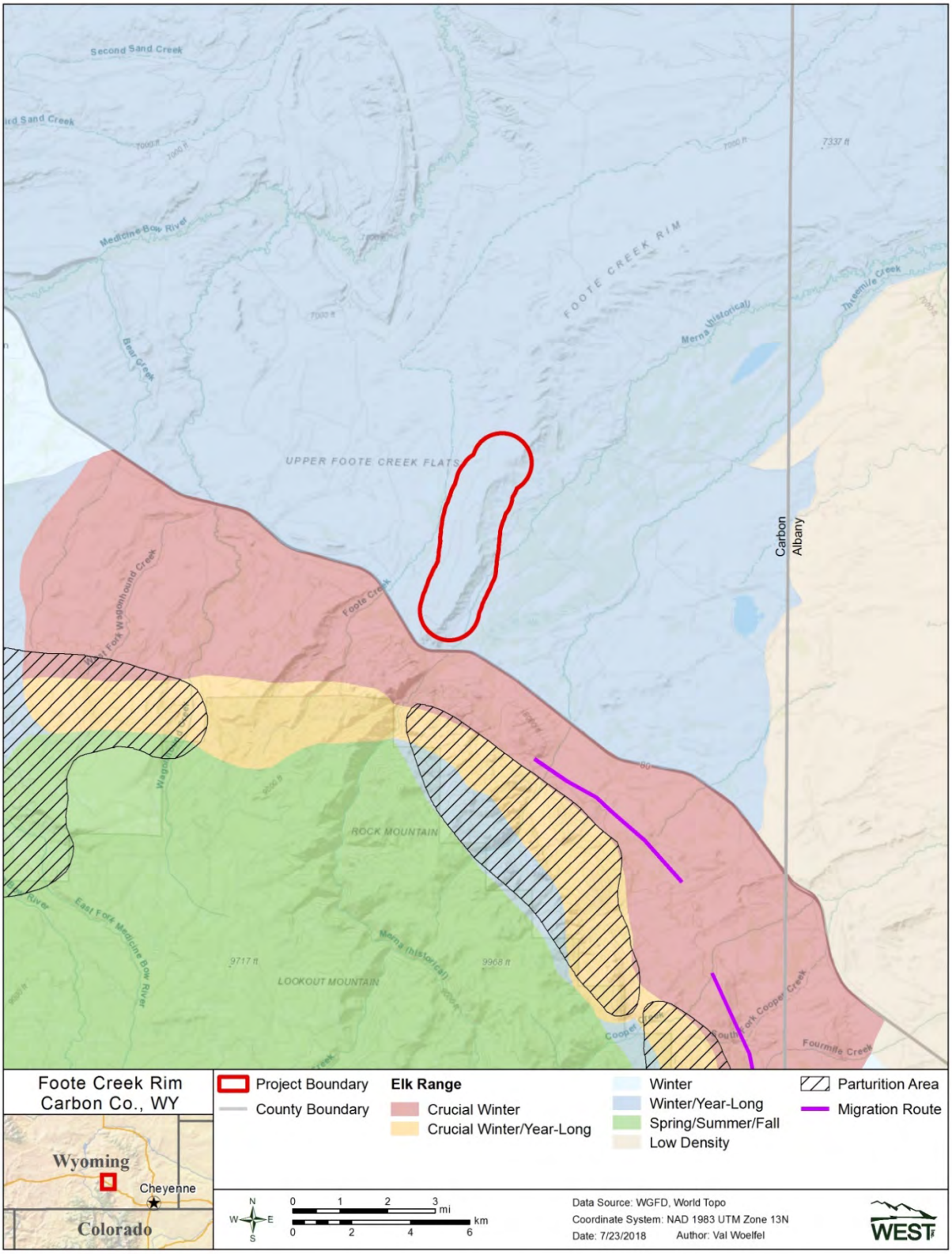

Figure 17. Elk ranges in the FCR I, Carbon County, Wyoming.

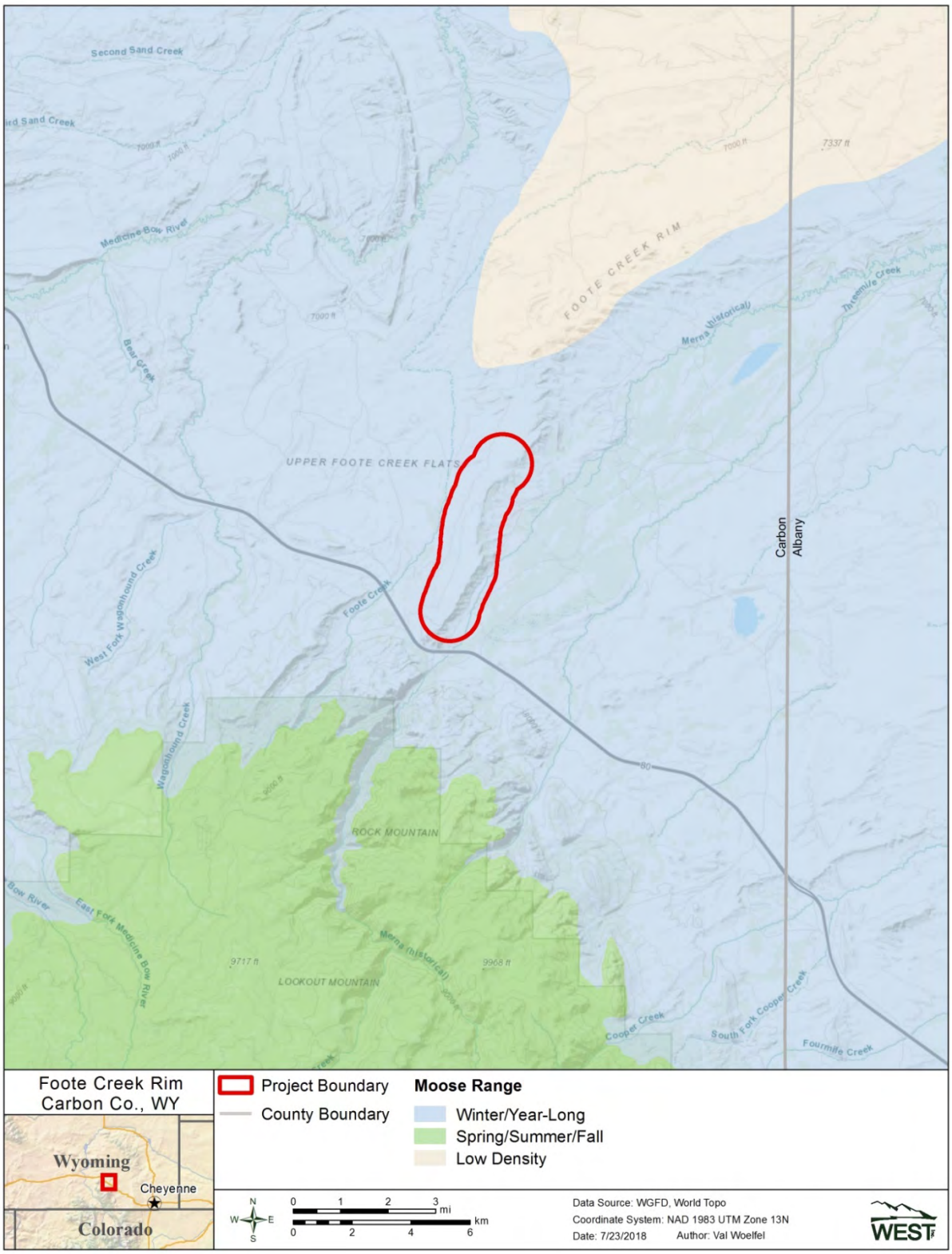

Figure 18. Moose ranges in the FCR I, Carbon County, Wyoming.

Species of Concern

Federally Listed Species

According to the USFWS IPaC system (USFWS 2018), no species listed as threatened, endangered, candidate, or experimental non-essential under the federal ESA (1973) are likely to occur in the Project area (Table 5; USFWS 2018). Five species were identified by the USFWS IPaC (2017) as species that occur along the Platte River downstream from Wyoming that may be affected by water depletions to the Platte River system. The Platte River species include three birds, (least tern – interior population [*Sternula antillarum*; endangered], piping plover [*Charadrius melodus*; endangered], and whooping crane [*Grus americana*; endangered]), one fish (pallid sturgeon [*Scaphirhynchus albus*; endangered]), and one plant (western prairie fringed orchid; threatened]). While these species and their habitats do not occur within the Project, any project that results in water depletions or influences waters that are hydrologically connected to the Platte River System may affect these species.

Table 5. US Fish and Wildlife Service (USFWS) Platte River listed species downstream from the Foote Creek Rim I, Carbon County, Wyoming

Species	Status
Birds	
least tern (*Sterna antillarum*)	Endangered
piping plover (*Charadrius melodus*)	Threatened
whooping crane (*Grus americana*)	Endangered
Fish	
pallid sturgeon (*Scaphirhynchus albus*)	Endangered
Plants	
western prairie fringed orchid (*Platanthera praeclara*)	Threatened

Birds of Conservation Concern (BCC)

In addition to federally listed species, many species of bird have been identified by the USFWS as Birds of Conservation Concern (BCC; USFWS 2008; USFWS 2017b [IPaC]). BCC are "species, subspecies, and populations of migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973" (USFWS 2008). Virtually all birds listed as BCC are protected under the MBTA while all eagles are also protected under the BGEPA. The Project is located in the BCR 10 – Northern Rockies. According to the USFWS (IPaC 2017), five species of BCC may occur in the Project (Table 6). A full list of BCR -10 BCC can be found in the USFWS Birds of Conservation Concern 2008 documents (USFWS 2008). A list of BCC identified during the 2017 and 2018 avian point count surveys is provided in Table 7.

Table 6. Birds of Conservation Concern (BCC) identified as possibly occurring in the Foote Creek Rim I (from IPAC 2018).

Common name	Scientific name
Bald eagle	*Haliaeetus leucocephalus*
Cassin's finch	*Carpodacus cassinii*
Golden eagle	*Aquila chrysaetos*
Mountain plover	*Charadrius montanus*
Rufus hummingbird	*Selasphorus rufus*

State Listed Species

Wyoming does not have a State Endangered Species Act. The WGFD State Wildlife Action Plan (WGFD 2017) does designate wildlife as Species of Greatest Conservation Need (SGCN; see WGFD 2017). This designation does not provide specific regulatory protection, but species listed as SGCN may also receive federal protection and are target for management at the state level. A list of SGCN identified during the 2017 and 2018 avian point count surveys is provided in Table 7. Data provided by the WYNDD lists two crustaceans, one insect, five mollusks, two fish, four amphibians, three reptiles, 88 birds, and 27 mammals that are tracked by the group as occurring in the Project or within the surrounding 2-mi (3.2-km) buffer (Table 8). WYNDD counts for each species were provided if available. Occurrence of most species listed in Table 8 is considered regular while occurrence of five bird species (juniper titmouse, bufflehead common goldeneye, tundra swan, and bushtit) and two mammal species (wolverine and Canada lynx) is considered irregular.

BLM Sensitive Species

The Rawlins BLM office has compiles a list of species of concern as part of the Resource Management Plan (RMP; BLM 2008). The list includes mammals, birds, fish, amphibians, and plants (see above for plant information). Fish and amphibians are unlikely to occur in the Project footprint, but may occurring in surrounding areas where aquatic resources are present. Mammal and birds species may occur in the Project or surrounding region. A list of BLM sensitive species identified during the 2017 and 2018 avian point count surveys is provided in Table 7.

Table 7. Summary of special status species observed at the Foote Creek Rim I study area during fixed-point large bird use surveys, fixed-point small bird use surveys, and as incidental wildlife observations from May 5, 2017 – April 26, 2018.

			Total	
Species	**Scientific Name**	**Status**	**# grps**	**# obs**
American kestrel	*Falco sparverius*	SGCN	7	8
bald eagle	*Haliaeetus leucocephalus*	SGCN, BGEPA, BCC	9	10
ferruginous hawk	*Buteo regalis*	SGCN, BCC, BLM	2	2
golden eagle	*Aquila chrysaetos*	SGCN, BGEPA	18	18
great blue heron	*Ardea herodias*	SGCN	1	1
merlin	*Falco columbarius*	SGCN	1	1
northern goshawk	*Accipiter gentilis*	SGCN, BLM	1	1
Swainson's hawk	*Buteo swainsoni*	SGCN, BCC	7	7
trumpeter swan	*Cygnus buccinator*	SGCN, BLM	1	3
white-tailed prairie dog	*Cynomys leucurus*	SGCN	2	2
Total			**49**	**53**

SGCN = Species of Greatest Conservation Need (Wyoming Game and Fish Department 2017; E =Federally Endangered; BGEPA=Bald and Golden Eagle Protection Act; BCC=Bird of Conservation Concern Region 10 (USFWS 2008); BLM = BLM Sensitive Animals, Rawlins RMPPA (BLM 2008)
obs=observations; grps=groups

Table 8. Animal species tracked by the WYNDD that may occur in or near the Foote Creek Rim I Project.

Common name	Scientific name	# Observations	Occurrence
Crustaceans			
Pocket Pouch Fairy Shrimp	*Branchinecta lateralis*	-	Regular
Circumpolar Fairy Shrimp	*Branchinecta paludosa*	-	Regular
Insects			
Tawny Crescent	*Phyciodes batesii*	-	Regular
Molluscs			
Dusky Fossaria	*Fossaria dalli*	-	Regular
Ash Gyro	*Gyraulus parvus*	-	Regular
Prairie Fossaria	*Fossaria bulimoides*	-	Regular
Tadpole Physa	*Physa gyrina*	1	Regular
Umbilicate Sprite	*Promenetus umbilicatellus*		Regular
Fish			
Iowa Darter	*Etheostoma exile*	-	Regular
Bigmouth Shiner	*Notropis dorsalis*	-	Regular
Amphibians			
Western Tiger Salamander	*Ambystoma mavortium*	-	Regular
Western Toad	*Anaxyrus boreas*	-	Regular
Northern Leopard Frog	*Lithobates pipiens*	-	Regular
Wood Frog	*Lithobates sylvaticus*	-	Regular
Reptiles			
Smooth Greensnake	*Opheodrys vernalis*		
Prairie Rattlesnake	*Crotalus viridis*		
Smooth Greensnake	*Opheodrys vernalis*		
Birds			
Northern Goshawk	*Accipiter gentilis*	3	Regular
Clark's Grebe	*Aechmophorus clarkii*	-	Regular
Western Grebe	*Aechmophorus occidentalis*	-	Regular
Boreal Owl	*Aegolius funereus*	-	Regular
Grasshopper Sparrow	*Ammodramus savannarum*	-	Regular
American Pipit	*Anthus rubescens*	-	Regular
Sandhill Crane	*Antigone canadensis*	16	Regular
Golden Eagle	*Aquila chrysaetos*	13	Regular
Great Blue Heron	*Ardea herodias*	23	Regular
Sagebrush Sparrow	*Artemisiospiza nevadensis*	-	Regular
Short-eared Owl	*Asio flammeus*	-	Regular
Burrowing Owl	*Athene cunicularia*	-	Regular
Ring-necked Duck	*Aythya collaris*	2	Regular
Juniper Titmouse	*Baeolophus ridgwayi*	3	Irregular
Upland Sandpiper	*Bartramia longicauda*	-	Regular
American Bittern	*Botaurus lentiginosus*	-	Regular
Cattle Egret	*Bubulcus ibis*	-	Regular
Bufflehead	*Bucephala albeola*	-	Irregular
Common Goldeneye	*Bucephala clangula*	-	Irregular
Ferruginous Hawk	*Buteo regalis*	143	Regular
Swainson's Hawk	*Buteo swainsoni*	4	Regular
Chestnut-collared Longspur	*Calcarius ornatus*	-	Regular
Canyon Wren	*Catherpes mexicanus*	-	Regular

Greater Sage-Grouse	*Centrocercus urophasianus*	32	Regular
Mountain Plover	*Charadrius montanus*	126	Regular
Black Tern	*Chlidonias niger*	-	Regular
Common Nighthawk	*Chordeiles minor*	3	Regular
American Dipper	*Cinclus mexicanus*	-	Regular
Northern Harrier	*Circus hudsonius*	4	Regular
Black-billed Cuckoo	*Coccyzus erythropthalmus*	-	Regular
Olive-sided Flycatcher	*Contopus cooperi*	-	Regular
Tundra Swan	*Cygnus columbianus*	-	Irregular
Tundra Swan	*Cygnus columbianus*	-	Regular
Bobolink	*Dolichonyx oryzivorus*	-	Regular
Snowy Egret	*Egretta thula*	-	Regular
Hammond's Flycatcher	*Empidonax hammondii*	-	Regular
Willow Flycatcher	*Empidonax traillii*	-	Regular
Merlin	*Falco columbarius*	14	Regular
Peregrine Falcon	*Falco peregrinus*	19	Regular
American Kestrel	*Falco sparverius*	8	Regular
Common Loon	*Gavia immer*	-	Regular
MacGillivray's Warbler	*Geothlypis tolmiei*	1	Regular
Common Yellowthroat	*Geothlypis trichas*	2	Regular
Bald Eagle	*Haliaeetus leucocephalus*	39	Regular
Black-necked Stilt	*Himantopus mexicanus*	-	Regular
Dark-eyed Junco	*Junco hyemalis*	3	Regular
Loggerhead Shrike	*Lanius ludovicianus*	10	Regular
Herring Gull	*Larus argentatus*	-	Regular
California Gull	*Larus californicus*	-	Regular
Ring-billed Gull	*Larus delawarensis*	-	Regular
Franklin's Gull	*Leucophaeus pipixcan*	-	Regular
Black Rosy-Finch	*Leucosticte atrata*	-	Regular
Brown-capped Rosy-Finch	*Leucosticte australis*	-	Regular
Red Crossbill	*Loxia curvirostra*	-	Regular
White-winged Crossbill	*Loxia leucoptera*	-	Regular
Eastern Screech-Owl	*Megascops asio*	1	Regular
Red-headed Woodpecker	*Melanerpes erythrocephalus*	-	Regular
Lewis's Woodpecker	*Melanerpes lewis*	-	Regular
Clark's Nutcracker	*Nucifraga columbiana*	-	Regular
Long-billed Curlew	*Numenius americanus*	-	Regular
Black-crowned Night-Heron	*Nycticorax nycticorax*	-	Regular
Sage Thrasher	*Oreoscoptes montanus*	-	Regular
Virginia's Warbler	*Oreothlypis virginiae*	-	Regular
Osprey	*Pandion haliaetus*	3	Regular
Blue Grosbeak	*Passerina caerulea*	-	Regular
American White Pelican	*Pelecanus erythrorhynchos*	21	Regular
Red-necked Phalarope	*Phalaropus lobatus*	-	Regular
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	-	Regular
American Three-toed Woodpecker	*Picoides dorsalis*	-	Regular
White-faced Ibis	*Plegadis chihi*	2	Regular
Bushtit	*Psaltriparus minimus*	-	Irregular
Flammulated Owl	*Psiloscops flammeolus*	-	Regular
Virginia Rail	*Rallus limicola*	-	Regular
American Avocet	*Recurvirostra americana*	1	Regular
Golden-crowned Kinglet	*Regulus satrapa*	-	Regular
McCown's Longspur	*Rhynchophanes mccownii*	-	Regular
Calliope Hummingbird	*Selasphorus calliope*	-	Regular

Rufous Hummingbird	*Selasphorus rufus*	-	Regular
Black-throated Gray Warbler	*Setophaga nigrescens*	-	Regular
Townsend's Warbler	*Setophaga townsendi*	-	Regular
Pygmy Nuthatch	*Sitta pygmaea*	-	Regular
Williamson's Sapsucker	*Sphyrapicus thyroideus*	-	Regular
Brewer's Sparrow	*Spizella breweri*	-	Regular
Clay-colored Sparrow	*Spizella pallida*	-	Regular
Forster's Tern	*Sterna forsteri*	-	Regular
Common Tern	*Sterna hirundo*	-	Regular
Barn Owl	*Tyto alba*	-	Regular
Red-eyed Vireo	*Vireo olivaceus*	-	Regular
Mammals			
Townsend's Big-eared Bat	*Corynorhinus townsendii*	-	Regular
White-tailed Prairie Dog	*Cynomys leucurus*	5	Regular
Wolverine	*Gulo gulo*	-	Irregular
Thirteen-lined Ground Squirrel	*Ictidomys tridecemlineatus*	-	Regular
Silver-haired Bat	*Lasionycteris noctivagans*	-	Regular
Eastern Red Bat	*Lasiurus borealis*	-	Regular
Hoary Bat	*Lasiurus cinereus*	1	Regular
Sagebrush Vole	*Lemmiscus curtatus*	-	Regular
Northern River Otter	*Lontra canadensis*	-	Regular
Canada Lynx	*Lynx canadensis*	-	Irregular
Bobcat	*Lynx rufus*	1	Regular
Pacific Marten	*Martes caurina*	-	Regular
Black-footed Ferret	*Mustela nigripes*	-	Regular
Western Small-footed Myotis	*Myotis ciliolabrum*	-	Regular
Long-eared Myotis	*Myotis evotis*	-	Regular
Little Brown Myotis	*Myotis lucifugus*	1	Regular
Fringed Myotis	*Myotis thysanodes*	-	Regular
Long-legged Myotis	*Myotis volans*	-	Regular
American Pika	*Ochotona princeps*	-	Regular
Olive-backed Pocket Mouse	*Perognathus fasciatus*	-	Regular
Plains Harvest Mouse	*Reithrodontomys montanus*	-	Regular
American Pygmy Shrew	*Sorex hoyi*	-	Regular
Dwarf Shrew	*Sorex nanus*	-	Regular
Western Spotted Skunk	*Spilogale gracilis*	-	Regular
Uinta Chipmunk	*Tamias umbrinus*	-	Regular
Wyoming Ground Squirrel	*Urocitellus elegans*	3	Regular
Swift Fox	*Vulpes velox*	-	Regular

SUMMARY/CONCLUSIONS

Based on the publicly available data gathered during this Tier 1 and 2 investigations, no fatal flaws to repowering the FCR I were identified. However, more site-specific and species-specific studies should be conducted during the development and operational process to better understand potential impacts and facilitate Project planning to avoid and minimize potential impacts to wildlife. The 2012 USFWS WEG poses four primary question that are recommended to be addressed during Tier 1 and seven primary questions that are recommended to be

addressed during a Tier 2 investigation. The questions and answers based on the information presented above in this Tier 1 & 2 SCS are presented below.

Tier 1 Questions

1. *Are there species of concern present on the potential site(s), or is habitat (including designated critical habitat) present for these species?*

No critical habitat for any species has been designated on or near the site. Habitat is present for some species of concern and some species of concern are known to exist within the Project. Both bald and golden eagle nests have been documented near the Project and both species of eagle are known to occur within the Project. Additionally, golden eagle mortalities have been documented at the Project. It is unlikely that any federally threatened or endangered species occur within or near the Project based on the USFWS IPaC species list and known species ranges. There are no greater sage-grouse Core Population Areas or leks in or within three miles of the Project. Limited to no use by greater sage-grouse is likely to occur.

2. *Does the landscape contain areas where development is precluded by law or areas designated as sensitive according to scientifically credible information?*

Based on the information reviewed for this Tier 1 study, there are no areas currently known to be protected or designated as sensitive that would preclude development as a matter of law. No greater sage-grouse Core Population Areas occur in the Project. Additionally, the BLM previously issued a ROW permit for the Project. Multiple big game ranges occur in the area; however, no crucial range was identified in the Project footprint.

3. *Are there known critical areas of congregation of species of concern, 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?*

Raptor nests (including bald and golden eagle nests) have been documented near the Project. No crucial winter ranges or other crucial habitats for big game occur within the Project proposed for expansion. Prairie dog (*Cynomys* spp.) colonies are not known to exist within the Project, but may exist in the surrounding area. Other potential prey (ungulates, fossorial species, jackrabbits, cottontail rabbits, and other small voles/mice species) were identified within the Project. No other known areas of wildlife congregation were identified from publicly available data. Data collected during other biologist studies do not suggest critical areas occur in the Project area. The Rock Creek riparian corridor east of the Project likely provides the greatest potential for wildlife congregation.

4. *Are there large areas of intact habitat with the potential for fragmentation, with respect to species of habitat fragmentation concern needing large contiguous blocks of habitat?*

The Project is an operational wind energy facility, so any fragmentation issues would already be occurring. Additionally, the footprint may be reduced and previously impacted areas restored through reclamation.

Tier 2 Questions

1. *Are known species of concern present on the proposed site, or is habitat (including designated critical habitat) present for these species?*

No critical habitat for any species has been designated on or near the site. Habitat is present for some species of concern and some species of concern are known to exist within the Project. Both bald and golden eagle nests have been documented near the Project and both species of eagle are known to occur within the Project. Additionally, golden eagle mortalities have been documented at the Project. It is unlikely that any federally threatened or endangered species occur within or near the Project based on the USFWS IPaC species list and known species ranges. There are no greater sage-grouse Core Population Areas or leks in or within three miles of the Project. Limited to no use by greater sage-grouse is likely to occur.

2. *Does the landscape contain areas where development is precluded by law or designated as sensitive according to scientifically credible information?*

Based on the information reviewed for this Tier 2 study, there are no areas currently known to be protected or designated as sensitive that would preclude development as a matter of law. No greater sage-grouse Core Population Areas occur in the Project. Additionally, the BLM previously issued a ROW permit for the project. Multiple big game ranges occur in the area; however, no crucial range was identified in the Project footprint.

3. *Are there plant communities of concern present or likely to be present at the site?*

No federally listed plant species are likely to occur in or adjacent to the Project. Some species of plants tracked by the WYNDD may occur on site; however, this information has not yet been received.

4. *Are there known critical areas of congregation of species of concern, 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?*

Raptor nests (including bald and golden eagle nests) have been documented near the Project. No crucial winter ranges or other crucial habitats for big game occur within the Project proposed for expansion. Prairie dog colonies are not known to exist within the Project, but may exist in the surrounding area. Other potential prey (ungulates, fossorial species, jackrabbits, cottontail rabbits, and other small voles/mice species) were identified within the Project. No other known areas of wildlife congregation were identified from publicly available data. Data collected during other biologist studies do not suggest critical areas occur in the Project area. The Rock Creek riparian corridor east of the Project likely provides the greatest potential for wildlife congregation.

5. *Using best available scientific information has the developer or relevant federal, state, tribal, and/or local agency identified the potential presence of a population of a species of habitat fragmentation concern?*

The majority of the land within the Project is already disturbed from the existing wind energy facility. The proposed repower will remove 68 turbines and construct 12 turbines in a different configuration. Due to previous impacts and new impacts in the same location, the potential for additional habitat fragmentation is unlikely.

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

Multiple raptor species known to be at risk by wind energy facilities may use the proposed site. Golden eagles are likely the species of greatest concern due to their susceptibility to wind turbine collisions and confirmed presence and mortalities within the Project. Additional species which may warrant heightened concern as local residents or seasonal migrants include bald eagles, ferruginous hawks (*Buteo regalis*), and prairie falcons. In general, passerines and other bird species protected under the MBTA may be impacted by the Project; however, population level impacts are not expected to occur. There are no federally listed bat species with the potential for occurrence in the Project. While multiple bat species may be impacted by wind energy development; it is unclear if the project would result in any significant impacts to bat species and based on data collected during pre and post-construction surveys; it is likely that hoary and silver-haired bats will be the most impacted species.

7. *Is there a potential for significant adverse impacts to species of concern based on the answers to the questions above, and considering the design of the proposed project?*

Determining the potential for significant impacts to species of concern may require additional site specific surveys, specifically after the larger, modern turbines are constructed. Based on the information reviewed and collected to date, no significant impacts are anticipated. Pre- and post-construction surveys documented relatively low level of eagle use in the Project; however, impacts to eagles are anticipated after the repower is complete.

Additional data are necessary to further inform the questions and to address outstanding questions. It is also likely that additional site-specific data collected as part of a Tier 3 evaluation under the 2012 USFWS WEG would be necessary to fully assess potential impacts to species of concern, as well as areas of potential wildlife congregation. As such, if development within the Project is to continue, it is recommended that additional site-specific data be collected and that PacifiCorp coordinates with the appropriate agencies regarding additional study needs to ensure the proposed repower wind energy development avoids, minimizes, and/or mitigates potential impacts to wildlife species to the extent possible.

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Appendix A. US Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC) results for the Foote Creek Wind I

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Wyoming Ecological Services Field Office
5353 Yellowstone Road, Suite 308a
Cheyenne, WY 82009-4178
Phone: (307) 772-2374 Fax: (307) 772-2358
http://www.fws.gov/wyominges/

In Reply Refer To: August 14, 2018
Consultation Code: 06E13000-2018-SLI-0361
Event Code: 06E13000-2018-E-01129
Project Name: Foote Creek Rim I

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ES) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Please feel free to contact us if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. We also encourage you to visit the Wyoming Ecological Services website at https://www.fws.gov/wyominges/species_endangered.php.

The purpose of the ESA is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 et seq.), federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

We also recommend you consider the following information when assessing impacts to federally listed species, as well as migratory birds, and other trust resources:

Colorado River and Platte River Systems: Federal agencies must consult with the Service under section 7 of the ESA for projects in Wyoming that may lead to water depletions or have the potential to impact water quality in the Colorado River system or the Platte River system, because these actions my affect threatened and endangered species inhabiting the downstream reaches of these river systems. In general, depletions include evaporative losses and/or consumptive use of surface or groundwater within the affected basin, often characterized as diversions minus return flows. Project elements that could be associated with depletions include, but are not limited to: ponds, lakes, and reservoirs (e.g., for detention, recreating, irrigation, storage, stock watering, municipal storage, and power generation); hydrostatic testing of pipelines; wells; dust abatement; diversion structures; and water treatment facilities. For more information on consultation requirements for the Platte River species, please visit https://www.fws.gov/platteriver/.

Migratory Birds: The Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA) prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations. Except for introduced species and some upland game birds, almost all birds occurring in the wild in the United States are protected (50 CFR 10.13). On December 22, 2017, the Department of the Interior Solicitor's Office issued an opinion that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs.

While the opinion (M-37050) states that the MBTA prohibition on the taking or killing of migratory birds applies only to deliberate acts, project activities should avoid, to the extent possible, sensitive periods and habitats to conserve healthy populations of migratory birds. See our website for more information and example conservation measures at https://www.fws.gov/wyominges/species_migratory.php. Guidance for minimizing impacts to migratory birds for projects that include communication towers can be found at https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/communication-towers.php.

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; Eagle Act) 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, destruction, or killing. Eagle nests are protected whether they are active or inactive. Removal or destruction of nests, or causing abandonment of a nest could constitute a violation of the Eagle Act. Projects affecting eagles may require development of an eagle conservation plan (https://www.fws.gov/ecological-service/es-library/pdfs/Eagle_Conservation_Guidance-Module%201.pdf). Additionally, wind energy projects should follow the wind energy guidelines (https://www.fws.gov/ecological-service/energy-develpment/wind.html) for minimizing impacts to migratory birds and bats.

In addition to MBTA and the Eagle Act, Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds, obligates all federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Wyoming Ecological Services Field Office
5353 Yellowstone Road, Suite 308a
Cheyenne, WY 82009-4178
(307) 772-2374

Project Summary

Consultation Code: 06E13000-2018-SLI-0361

Event Code: 06E13000-2018-E-01129

Project Name: Foote Creek Rim I

Project Type: POWER GENERATION

Project Description: This is an existing wind project that will be repowered. The project will go from 68 turbines to 12 turbines.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.640185934271116N106.19111945160812W

Counties: Carbon, WY

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Least Tern Sterna antillarum Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505	Endangered
Piping Plover Charadrius melodus Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Whooping Crane Grus americana Population: Wherever found, except where listed as an experimental population There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

Fishes

NAME	STATUS
Pallid Sturgeon Scaphirhynchus albus No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162	Endangered

Flowering Plants

NAME	STATUS
Western Prairie Fringed Orchid Platanthera praeclara	Threatened

No critical habitat has been designated for this species.

Species profile: https://ecos.fws.gov/ecp/species/1669

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Cassin's Finch Carpodacus cassinii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15

NAME	BREEDING SEASON
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Mountain Plover Charadrius montanus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3638	Breeds Apr 15 to Aug 15
Rufous Hummingbird selasphorus rufus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

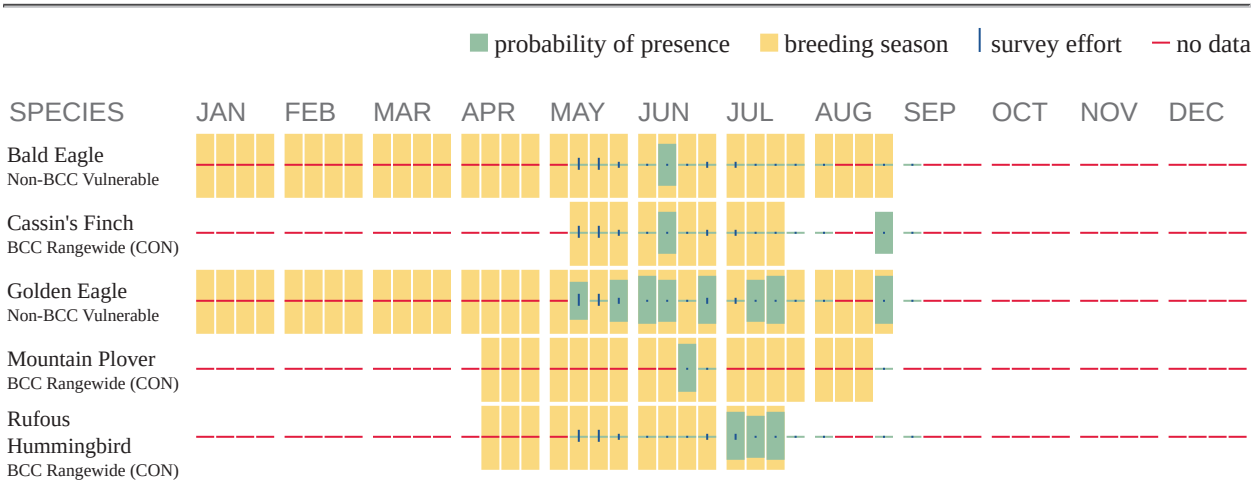
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php

- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.
Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1B
- PEM1Cb
- PEM1A
- PEM1C
- PEM1Ah
- PEM1Cx
- PEM1Ch
- PEM1F

FRESHWATER FORESTED/SHRUB WETLAND

- PSSCb
- PFOA
- PSSA
- PSSB
- PSSC

FRESHWATER POND

- PABGb
- PUBFx
- PABFh
- PUSCh
- PUSA
- PUSAh
- PUSAx

LAKE

- L1UBHh

RIVERINE

- R3UBF
- R4SBA
- R5UBH
- R4SBCx
- R4SBC
- R3UBH
- R5UBFx

Appendix B. Photographs of the Foote Creek Rim I

Representative photos of Project Area

Representative photos of Project Area ground cover

Representative photos of Project Area rim

Representative photos of other infrastructure in Project Area

Representative photos of riparian areas east of Project Area