

Chokecherry and Sierra Madre Wind Energy Project Avian Resource Report

Phase I Wind Turbine Development

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1.0 INTRODUCTION

Power Company of Wyoming LLC (PCW) proposes to construct, operate, maintain and decommission the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project), located in Carbon County, Wyoming. The CCSM Project consists of up to 1,000 wind turbines capable of generating approximately 2,000 to 3,000 megawatts (MW) of clean, renewable wind energy. The primary components of the CCSM Project include the wind turbine generators, an internal road network, a rail facility, a quarry, an internal electrical collection and transmission system, substations, and operations and maintenance buildings.

The CCSM Project is located south of the city of Rawlins, primarily within the bounds of the Overland Trail Ranch (Ranch). The Ranch is owned and operated by PCW affiliate, The Overland Trail Cattle Company LLC (TOTCO). The Ranch is situated within an area of alternating sections of private and federal lands commonly referred to as the “checkerboard.” The vast majority of the private lands are owned by TOTCO and the federal lands are administered by the Bureau of Land Management (BLM) Rawlins Field Office (RFO). A small percentage of the land within the Ranch is owned by the State of Wyoming and is administered by the State Board of Land Commissioners. Finally, Anadarko Land Corporation owns some sections located on the periphery of the northwest boundary of the Ranch.

In 2008, PCW applied to BLM for right-of-way grants to construct, operate, maintain and decommission the CCSM Project on federal land within the CCSM Project Area. On June 29, 2012, the Notice of Availability for the Final EIS concerning the CCSM Project was published in the Federal Register (77 FR 63328). On October 9, 2012 the Secretary of the Interior signed the Record of Decision (ROD). In the ROD, BLM determined that over 200,000 acres within the CCSM Project Area are suitable for wind energy development subject to the requirements described under the Selected Alternative in the ROD. The area that was determined to be suitable for wind energy development consists of two wind development areas (WDAs) in which turbines would be located. The northern WDA is known as Chokecherry and the southern WDA is known as Sierra Madre. The WDAs are located approximately 9 miles apart.

Prior to issuing right-of-way grants for the CCSM Project, BLM will conduct subsequent environmental analysis of site-specific plans of development submitted by PCW. The site-specific plans of development will be screened against the analysis conducted in the EIS and the requirements described under the Selected Alternative in the ROD. Included in the ROD is the Wildlife Monitoring and Protection Plan for the CCSM Project that identifies measures to be completed for each site-specific plan of development, including a discussion of avian and bat inventory and monitoring requirements (BLM 2012b: Appendix G). Inventory and monitoring for avian species, including eagles and migratory birds, will be conducted in accordance with the CCSM Project Bird and Bat Conservation Strategy (BBCS) and Eagle Conservation Plan (ECP). A discussion of the inventory completed to date, as it relates to the Phase I Wind Turbine Development is included in this Avian Resource Report.

2.0 BACKGROUND AND METHODS

SWCA Environmental Consultants (SWCA) has been collecting avian species occurrence and habitat data for the CCSM Project since 2009. A combination of avian radar data collection, raptor long-watch surveys, Rocky Mountain Bird Observatory grid sampling surveys, 20-minute point count surveys, waterbird use surveys, and aerial nest surveys have been completed across the CCSM Project Site. Generally, the avian surveys that have been completed include:

- Long-watch raptor surveys at more than 80 locations across all habitat types in the CCSM Project Site;
- Migratory bird point count surveys at 19 locations in 2008-2009 and 15 locations in 2011-2012;
- Aerial raptor nest surveys across 700,000 acres within 5 miles of the CCSM Project Site;
- Breeding bird grid sampling at 16 locations and all representative habitat types across the CCSM Project Site;
- Seasonal water bird use surveys at four reservoirs in the CCSM Project Site; and
- Avian radar data collected continuously between April 2011 and April 2013 at six locations throughout the CCSM Project Site.

These data are suitable to identify the species and use associated with the habitats in the Phase I Wind Turbine Development Site. Additionally, SWCA biologists conducted wildlife surveys within the Phase I Wind Turbine Development Site (Figures 1 and 2), as well as a minimum 100 foot buffer. Incidental observations of special status avian species were recorded during these surveys.

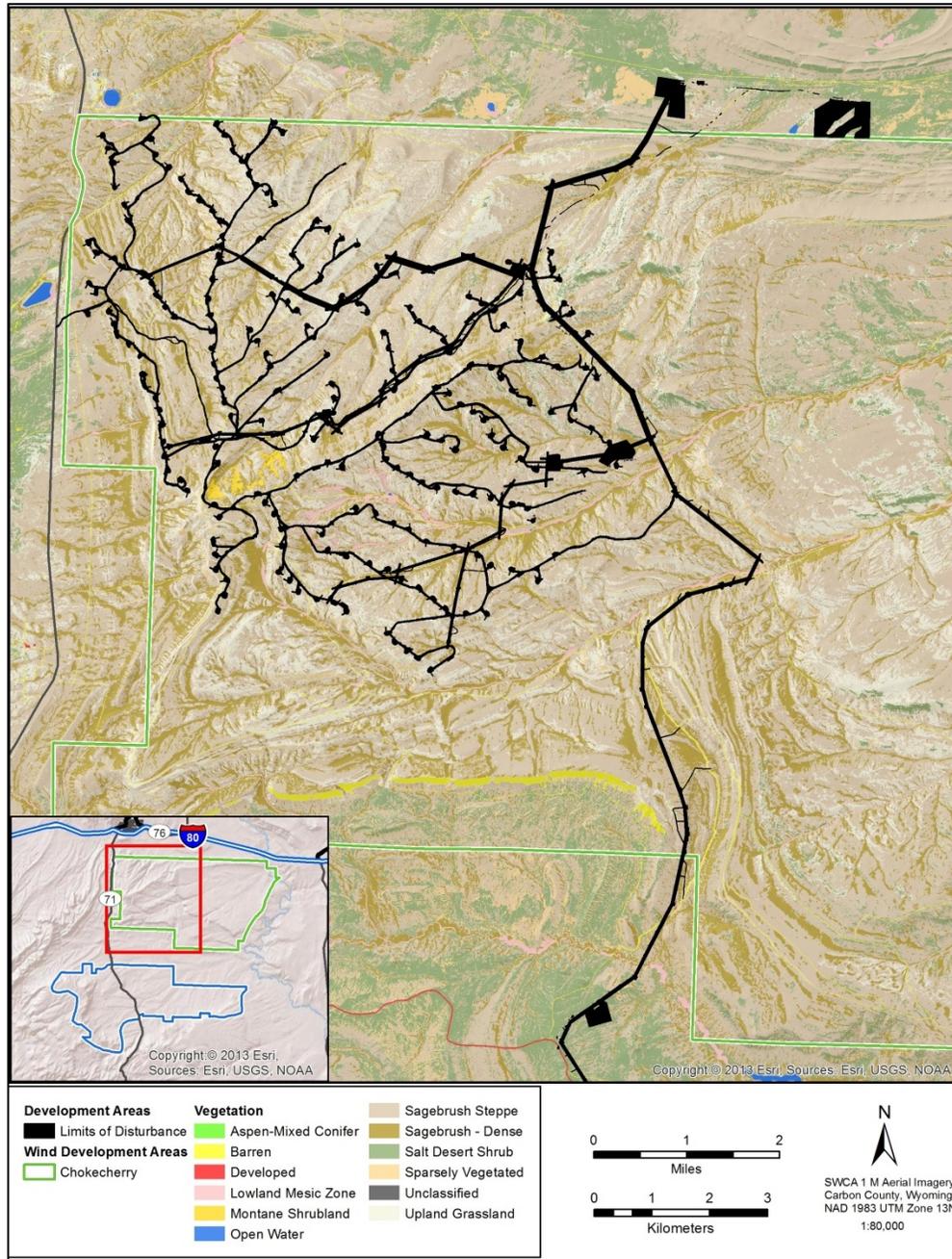


Figure 1. Phase I Wind Turbine Development Site within the Chokecherry Wind Development Area

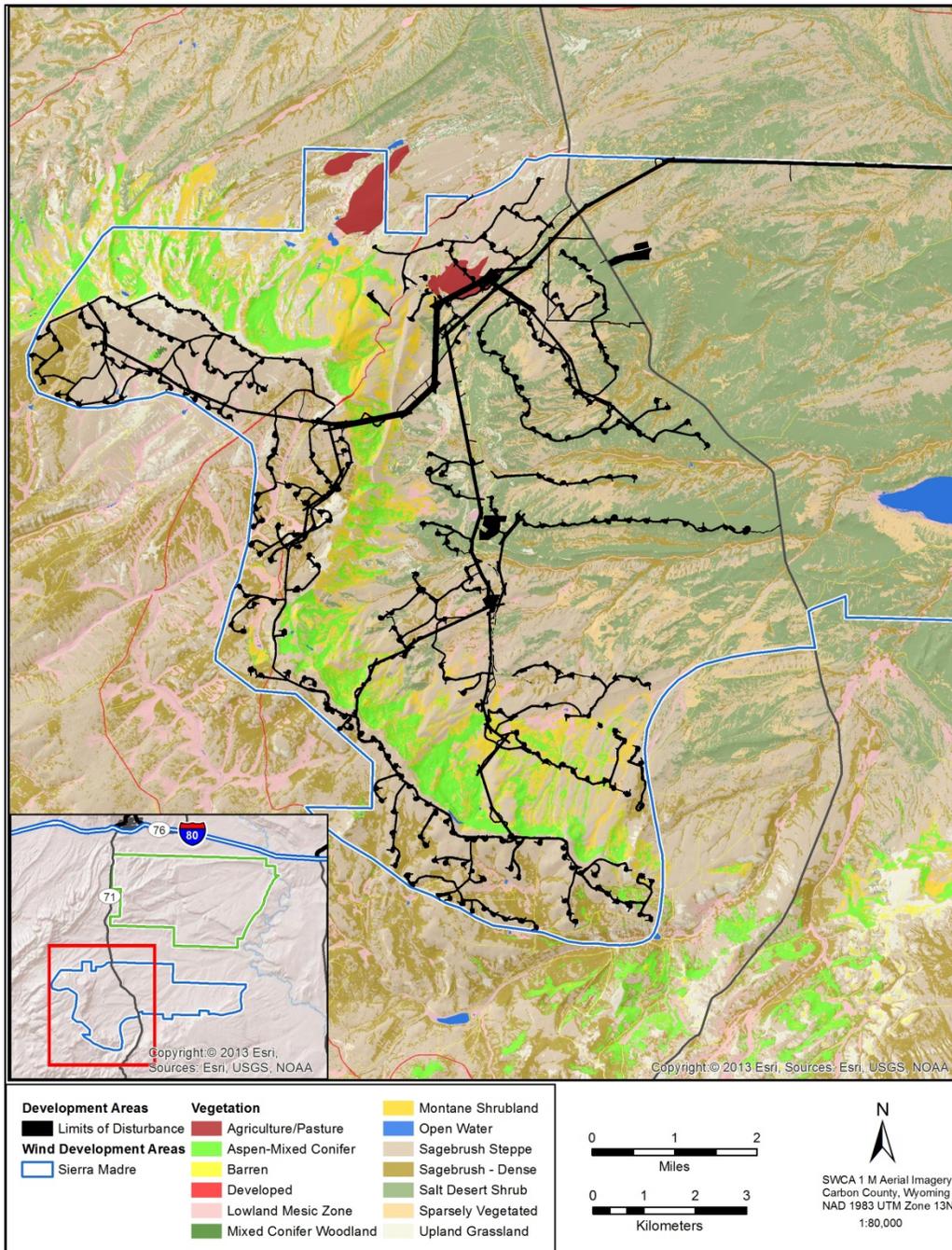


Figure 2. Phase I Wind Turbine Development Site within the Sierra Madre Wind Development Area

2.1 MIGRATORY AND BREEDING BIRDS

Migratory bird point count surveys and breeding bird grid sampling were used to characterize avian use in representative habitat types across the CCSM Project Site, as discussed above. Detailed information can be found in the BBCS for the CCSM Project.

2.2 BLM SENSITIVE SPECIES

2.2.1 Mountain Plover

The mountain plover (*Charadrius montanus*) was recently considered for federal listing under the ESA; however, as of May 12, 2011 the proposed listing was withdrawn as the USFWS concluded that the species is not endangered or threatened throughout all or a significant portion of its range. The mountain plover is still a BLM sensitive species. The mountain plover is considered a summer resident in Wyoming; however, its population status and trend are unknown, but suspected to be stable. Mountain plovers often inhabit open landscapes and nest in large, flat grassland expanses with sparse short vegetation.

Mountain plover habitat was assessed for the CCSM Project during 2008 survey efforts (BLM 2012a). Mountain plover habitat was further assessed for the Phase I Wind Turbine Development during suitable habitat mapping efforts and site-specific surveys between 2012 and 2014.

2.2.2 Greater sage-grouse

PCW has been conducting greater sage-grouse population monitoring within the CCSM Project Site and surrounding areas since spring 2010. Surveys completed as part of the greater sage-grouse monitoring program included outfitting 50 female greater sage-grouse with GPS Platform Terminal Transmitters, and completing lek counts, nest monitoring, and brood surveys. The study design for greater sage-grouse monitoring follows a before-after control-impact design (Smith 2002). This allows for a stronger inference regarding the success of proposed conservation measures, particularly due to those measures that seek to reduce greater sage-grouse mortality and improve productivity by enhancing nesting and brood-rearing habitat. A discussion of the proposed conservation measures and a detailed greater sage-grouse monitoring report are included as part of the Sage-grouse Conservation Plan in the CCSM Project Plan of Development published with the CCSM ROD (BLM 2012b).

2.2.3 Sagebrush Obligates

BLM-sensitive sagebrush obligates include sage thrasher (*Oreoscoptes montanus*), sagebrush sparrow (*Artemisiospiza nevadensis*, formerly sage sparrow), and Brewer's sparrow (*Spizella breweri*). Sagebrush obligates were recorded during 2011 through 2013 migratory bird point counts and breeding bird grid surveys as well as during 2012 through 2014 site-specific wildlife surveys when observed. All observations were recorded as point features with a GPS device and their environmental setting was described.

2.2.1 Western Burrowing Owl

Western burrowing owls (*Athene cunicularia*) are considered uncommon summer residents in Wyoming and utilize a wide variety of arid and semiarid environments characterized by sparse vegetation and bare ground within a level to gently sloping landscape (WGFD 2010). Burrowing owls are dependent upon burrowing mammals, such as prairie dogs and ground squirrels, for nesting, roosting, and escape cover and their abundance and distribution is determined by the presence of these species.

White-tailed prairie dog colonies with open burrows and other potential habitat were assessed during surveys of the Phase I Wind Turbine Development Site. Areas of potentially suitable burrowing owl habitat within mapped prairie dog colonies were surveyed for the presence of burrowing owls.

2.3 RAPTORS

PCW has collected detailed data on raptor use of the CCSM Project Site through raptor count surveys, long-watch raptor surveys, raptor nest inventories, and other monitoring protocols. Detailed information on point count survey methods and results can be found in the BBCS and ECP for the CCSM Project.

3.0 RESULTS AND DISCUSSION

Habitats in the Phase I Wind Turbine Development are used by a number of avian species. Data collection efforts across the CCSM Project Site and wildlife surveys of the Phase I Wind Turbine Development Site identify the species most likely to occur in the Phase I Wind Turbine Development Site. The varied habitats in the Phase I Wind Turbine Development Site are described below.

3.1 MIGRATORY AND BREEDING BIRDS

Habitats in the Phase I Wind Turbine Development Site are used by a number of avian species. Data collection efforts across the CCSM Project Site help identify the species most likely to occur in the Phase I Wind Turbine Development Site. The most common habitat in the Phase I Wind Turbine Development Site is sagebrush steppe (61% of total area) followed distantly by salt desert scrub (22% of total area).

Based on survey data collected throughout the CCSM Project Site, horned lark (*Eremophila alpestris*), Brewer's sparrow (*Spizella breweri*), and vesper sparrow (*Pooecetes gramineus*) are the most abundant breeding and migratory birds in the area. These three species were the most commonly recorded species in the sagebrush and salt desert shrub habitats throughout the CCSM Project Site.

3.1.1 Sagebrush Steppe

Sagebrush steppe is the most common vegetation type and covers approximately 61% of the Phase I Wind Turbine Development survey area. This habitat is characterized by a mosaic of sagebrush, allied shrubs, forbs, and grasses, and is dominated or codominated by one or more *Artemisia* species. Vegetation communities include Wyoming big sagebrush, mountain big sagebrush, black sagebrush, and basin big sagebrush. Bird species found in sagebrush steppe include sagebrush obligates, such as sagebrush sparrow and sage thrasher. Other species commonly found include Brewer's sparrow and vesper sparrow. These four species accounted for 37% of the total individuals recorded during breeding bird surveys in 2011.

3.1.2 Salt Desert Shrub

Salt desert shrub covers approximately 22% of the Phase I Wind Turbine Development survey area and often occurs in association with sparsely vegetated landscapes, both of which are characterized by very barren soils generally consisting of alkaline and saline conditions. Vegetation communities include shadscale saltbush, Gardner's saltbush, and greasewood. Few bird species are found in this habitat type. Horned lark is the most prevalent species within salt desert shrub as it is a generalist inhabiting open landscapes characterized by a high percentage of bare ground. Horned lark accounted for 21% of the total individuals recorded during breeding bird surveys, and 62% of the total individuals recorded during migratory bird surveys in 2011.

3.1.3 Developed

Developed areas cover approximately 4% of the Phase I Wind Turbine Development survey area, and generally refer to existing secondary roads or energy corridors. No bird species are directly associated with this habitat type, although roadways kept clear of snow during winter months may attract passerines present in the CCSM Project Site, such as horned lark or longspurs, that feed on exposed seeds.

3.1.4 Barren Slopes

Areas categorized as barren slopes cover less than 1% of the Phase I Wind Turbine Development survey area and generally consist of exposed alkaline and saline soils. These sites are rarely used by birds. Killdeer (*Charadrius vociferus*) may nest in barren sites if they occur near water.

3.1.5 Aspen Woodland and Riparian/Mesic Lowland Communities

Aspen woodlands and riparian/mesic lowlands cover approximately 2% of the Phase I Wind Turbine Development survey area. The predominant overstory vegetation is an open-canopy of quaking aspen (*Populus tremuloides*) interspersed with a variety of conifers. The dense understory consists of forbs, grasses, and montane shrubs. Species associated with this forested habitat include American robin (*Turdus migratorius*), warbling vireo (*Vireo gilvus*), house wren (*Troglodytes aedon*), chipping sparrow (*Spizella passerina*), and western wood-pewee (*Contopus sordidulus*).

3.1.6 Mixed Mountain Shrub

Mixed mountain shrublands cover less than 1% of the Phase I Wind Turbine Development survey area and are predominantly located in the southern and southwestern portions of the area at elevations ranging between 7,200 to 8,100 feet. Inclusions of sagebrush steppe or grassland often occur, but the vegetation is typically dominated by a variety of shrubs including serviceberry (*Amelanchier* spp.), mountain mahogany (*Cercocarpus montanus*), antelope bitterbrush (*Purshia tridentata*), and skunkbush sumac (*Rhus trilobata*). Bird species associated with this habitat type include dusky flycatcher (*Empidonax oberholseri*), green-tailed towhee (*Pipilo chlorurus*) and lazuli bunting (*Passerina amoena*).

3.2 BLM SENSITIVE SPECIES

3.2.1 Mountain Plover

Potential mountain plover habitat is present in the Phase I Wind Turbine Development survey area in habitats consisting of flat to gentle slopes with low vegetation structure. Mountain plover habitat in the western periphery of its range, which includes the Phase I Wind Turbine Development survey area, is primarily xeric, shrubland (e.g., saltbush *Atriplex* spp. and sagebrush *Artemisia* spp.) communities with extensive bare ground (Smith and Keinath 2004). Suitable habitat was mapped (Figures 3 and 4) using site-specific vegetation data and incidental observations that were made during survey efforts. Suitable habitat was defined as bird's foot sagebrush communities, Gardner's saltbush communities, shadscale saltbush communities, and upland grass communities with extensive bare ground and relatively low

herbaceous height. This suitable habitat map closely matches the modeled habitat presented in the BLM's FEIS for the CCSM Project (BLM 2012a). Surveys were conducted at the same time as wildlife surveys in 2012 through 2014, no plover were observed in the survey area for the Phase I Wind Turbine Development.

3.2.2 Greater Sage Grouse

Greater sage-grouse habitat occurs throughout much of the Phase I Wind Turbine Development survey area. Grouse use observed in the survey area occurs across the Chokecherry and Sierra Madre wind development areas. Year-round use occurs across much of the Chokecherry and Sierra Madre WDAs although grouse do not use the Upper Miller Hill area during winter months (November-March) and use in Lower Miller Hill is very low during winter months. Greater sage-grouse core area (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3) does not exist within the WDAs.

3.2.2.1 Chokecherry Wind Development Area

Lekking, nesting, brood-rearing, and winter use occurs in the Chokecherry WDA within the Phase I Wind Turbine Development Site. Use within the Chokecherry WDA varies seasonally and is generally lower than that observed in surrounding greater sage-grouse core area habitats (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3). Many brood-rearing hens and many males leave the Chokecherry WDA and move to more mesic areas in surrounding greater sage-grouse core area habitats (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3) during mid-late summer months.

During spring months, eight leks are located within two (2) miles of the Phase I Wind Turbine Development Site. Of these, the Upper Iron Springs, Chokecherry Bench, Wild Horse Canyon, and Hugus Draw leks have been consistently attended during the past five (5) years.

3.2.2.2 Sierra Madre Wind Development Area Lower Miller Hill

Lekking, nesting, and brood-rearing activities occur in the area although most birds use the area in early spring and then move to surrounding greater sage-grouse core area habitats (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3). Limited winter use has been documented in areas east of Highway 71 in the Phase I Wind Turbine Development Site. Use within the Sierra Madre WDA east of Miller Hill varies seasonally.

During spring months, the Deadman Creek and Sage Creek Ranch leks are within two (2) miles of the Phase I Wind Turbine Development Site. Both leks have been attended over the past five (5) years. The Sage Creek Ranch lek is located in designated greater sage-grouse core area (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3) but is outside the Sierra Madre WDA. Nesting and brood-rearing activities for birds associated with the Sage Creek Ranch lek occurs almost entirely within designated greater sage-grouse core area habitats (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3). The Phase I Wind Turbine Development Site and all other CCSM Project infrastructure will be located outside of designated greater sage-grouse core area (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3).

Many of the greater sage-grouse that visit the Deadman Creek lek nest and raise broods in greater sage-grouse core area (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3) habitats on Miller Hill. Some nesting and brood-rearing activities occur west of Highway 71 along Miller Creek and Deadman Creek within the Phase I Wind Turbine Development Site. Additionally, several birds have been documented using agricultural hay meadows for brood-rearing purposes.

Winter use in the Sierra Madre WDA east of Miller Hill within the Phase I Wind Turbine Development Site is generally very low. This area is used by birds transitioning to winter use areas from nesting and brood-rearing habitats in greater sage-grouse core area on Miller Hill (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3). The Phase I Wind Turbine Development Site has been designed to avoid several patches of sagebrush that are used during these transition periods. Some limited winter use occurs in the area although this use is generally very dispersed and characteristic of few individuals.

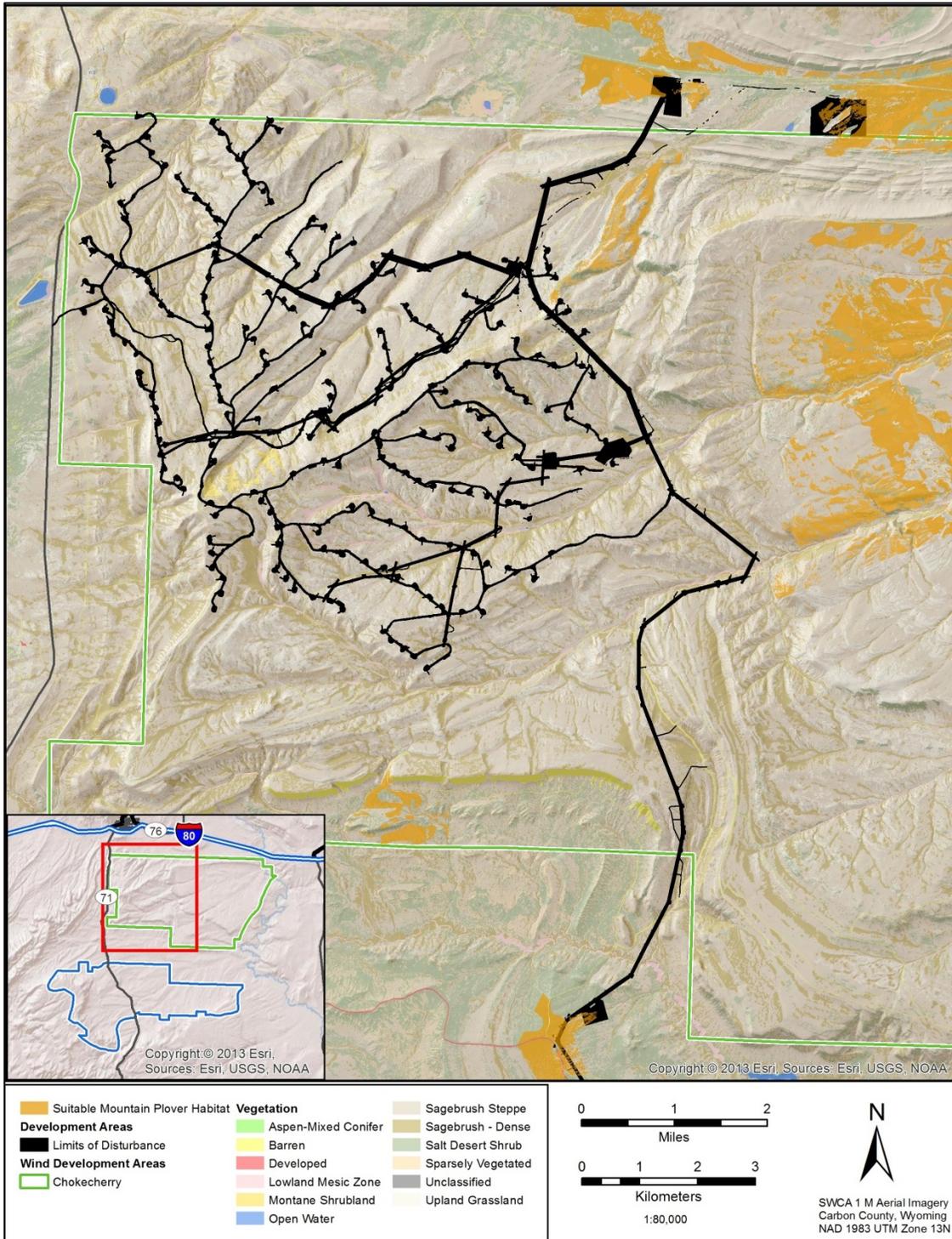


Figure 3. Suitable Mountain Plover Habitat in the Chokecherry WDA and surrounding areas of the Phase I Wind Turbine Development Site.

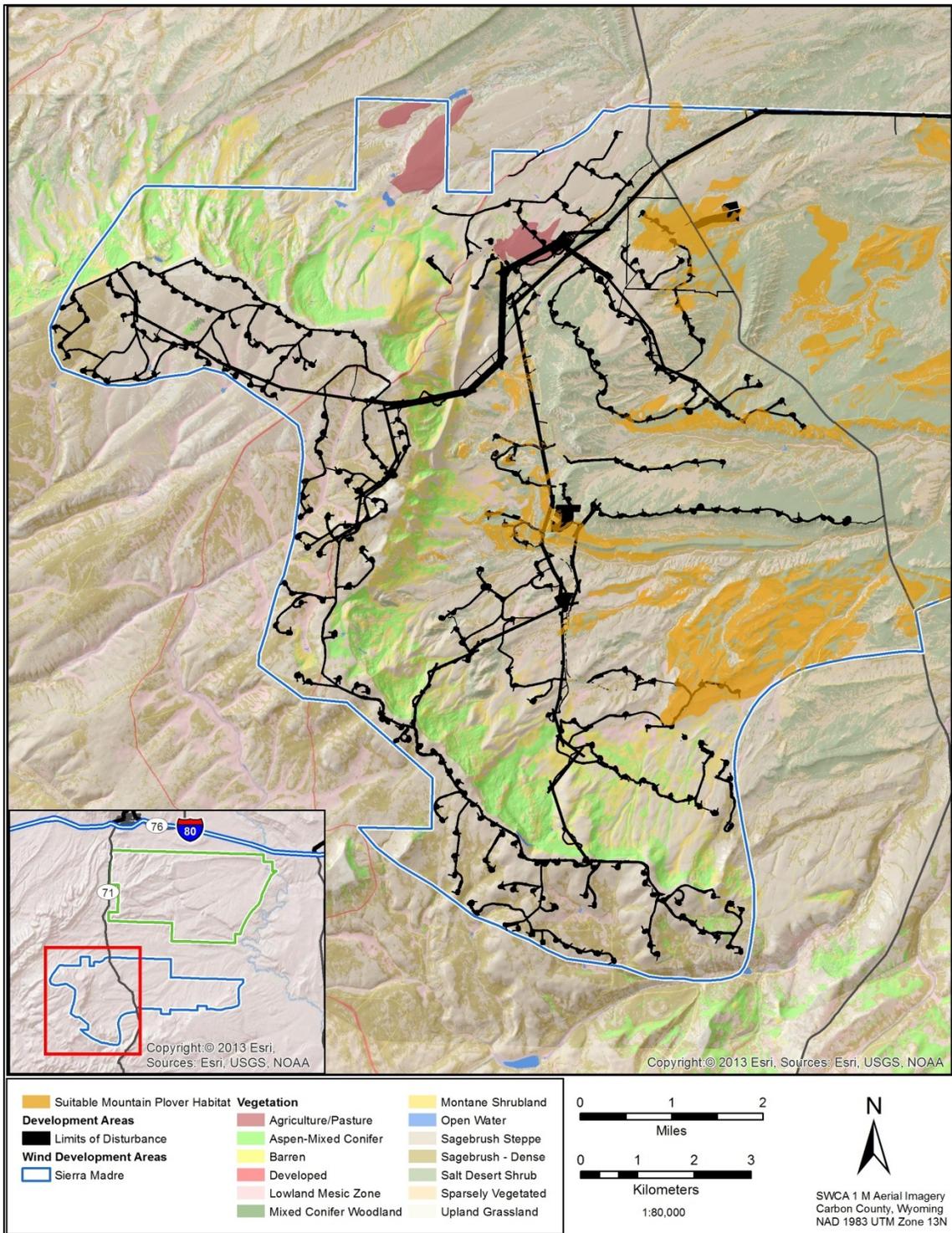


Figure 4. Suitable Mountain Plover Habitat in the Sierra Madre WDA and surrounding areas of the Phase I Wind Turbine Development Site.

3.2.2.3 Sierra Madre Wind Development Area Upper Miller Hill

Lekking, nesting, and brood-rearing activities occur primarily in greater sage-grouse core area habitats (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3) outside of the Phase I Wind Turbine Development Site. Two leks (Rawlins Reservoir and McKinney Crossing) are located within 2 miles of the Phase I Wind Turbine Development Site. Both of these leks are relatively small and birds using these leks primarily use only the areas within greater sage-grouse core area (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3).

Portions of Upper Miller Hill near the McKinney Creek headwaters are used for summer and brood-rearing activities. These activities primarily occur within designated greater sage-grouse core area (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3) although some summer use overlaps with the Phase I Wind Turbine Development Site.

Winter use (November to March) does not occur on Upper Miller Hill due to heavy snow cover. Sage-grouse using Upper Miller Hill for summer activities generally move long distances to use winter habitats in the Sage Creek Basin, Severson Flats, south of Saratoga, or east of the North Platte River.

3.2.3 Sagebrush Obligates

Sagebrush obligate species have been observed throughout the CCSM Project. No sagebrush obligates were observed within the Phase I Wind Turbine Development Site but it is likely that they occur in suitable sagebrush habitat.

3.2.4 Western Burrowing Owl

One western burrowing owl was observed in the northwest corner of the Sierra Madre WDA. The individual was adjacent to the area outside an active prairie dog colony, approximately 200 meters from the Phase I Wind Turbine Development Site. The individual was identified as a transient visitor and no nesting activity or breeding behavior was observed. Other potential habitat (i.e., white-tailed prairie dog colonies) was observed during surveys, but no additional burrowing owls or signs of activity were observed.

3.3 RAPTORS

3.3.1 Raptor Count Surveys

Between August 2012 and August 2013, 800-meter raptor count surveys were conducted within Phase I of the CCSM Project. Protocols and methodologies used to assess avian species in the CCSM Project Site during surveys in 2012 and 2013 were developed in consultation with the USFWS, and are in accordance with recommendations made by the USFWS, the BLM, and the Wyoming Game and Fish Department (WGFD). Surveys were initiated during August 2012 at 40, 800-meter survey locations across CCSM Project Site (Figure 5). To increase the spatial and temporal coverage of survey efforts, the survey program was increased to 60, 800-m survey locations for surveys completed from mid-November 2012 through August 2013 (Figure 5). A spatially balanced sampling design was

used to capture the variability in habitat conditions, terrain features, and turbine numbers and densities. The data collected during these surveys captures the fall migration period; winter use; nesting, incubation and chick rearing periods; and summer use within Phase I of the CCSM Project.

During the August 2012 to August 2013 raptor count surveys, 748 individual surveys were conducted within the Phase I portions of the Chokecherry and Sierra Madre WDAs for a total of 53,704 minutes (895.07 hours; Tables 1 through 4). Generally, survey minutes were evenly distributed across the 33 Phase I survey locations but varied slightly at some survey locations due to safety and accessibility issues caused by inclement weather. Results from the August 2012 to August 2013 surveys have been parsed into different groupings that roughly correspond to the fall, winter, spring, and summer seasons.

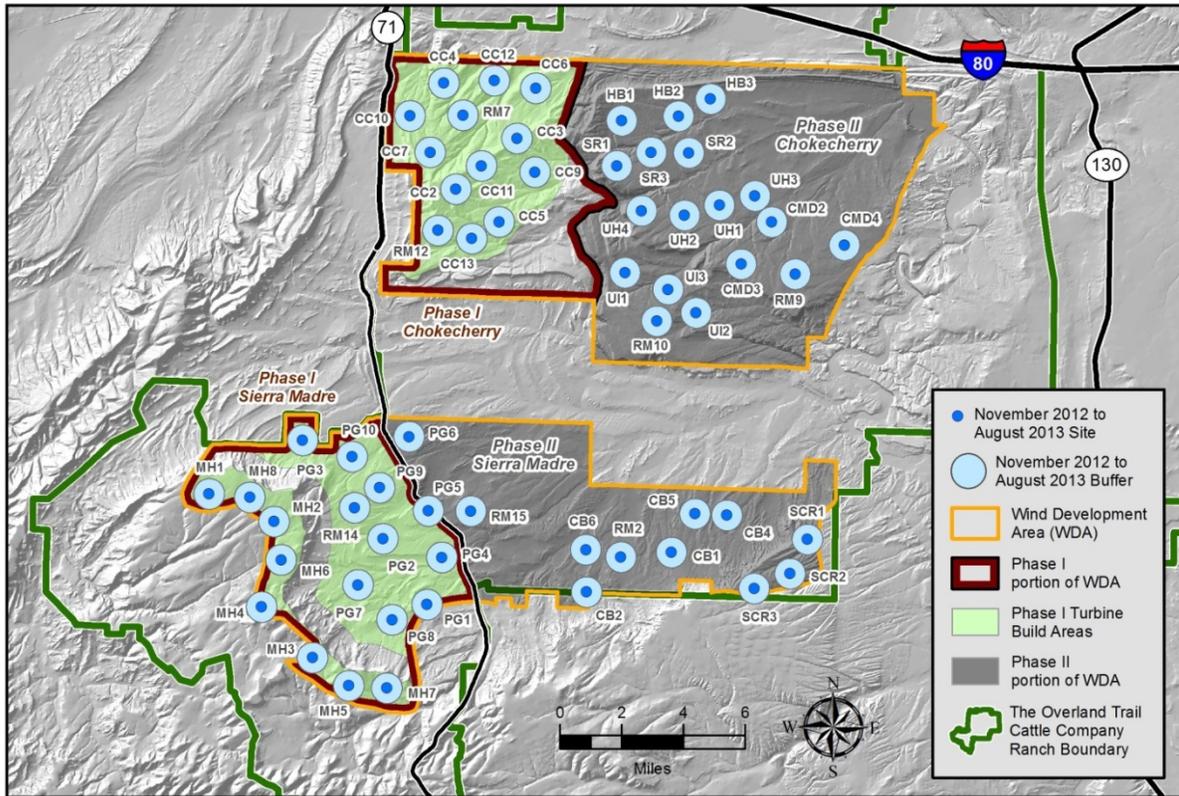


Figure 5. 800-meter raptor count locations

August 20 to November 9, 2012 Survey Results

Surveys during this period were completed at 24 Phase I locations; nine in the Chokecherry WDA and 15 in the Sierra Madre WDA. In sum, 144 surveys were conducted at these 24 locations for a total of 17,494 minutes during the August 20 to November 9, 2012 period (Table 1). During the 144 surveys, 64 observations of raptors were made for a total of 146 raptor flight minutes, which is only 0.8% of the 17,494 survey minutes. Swainson's hawk (*Buteo swainsoni*) was the most detected raptor, followed by golden eagle (*Aquila chrysaetos*) and American kestrel (*Falco sparverius*). These three species accounted for 71.9% of all raptor observations recorded during this period.

The MH3 survey location had the highest proportion of raptor observations per 1-hour period and highest proportion of raptor flight minutes per 1-hour period (1.08 and 2.08, respectively; Table 1); however, this is mainly due to a single group of Swainson's hawk migrating through the MH3 survey area on a single day. Sites PG3, MH1, and MH6 saw the next highest proportions of raptor observations (0.75, 0.67, and 0.58, respectively) and raptor flight minutes (1.33, 1.58, and 1.33, respectively) per 1-hour period. The remainder of the 24 sites had far fewer raptor observations and raptor flight minutes than MH3, PG3, MH1, and MH6, with seven sites (29.2% of all sites) having no raptor observations during this period.

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Table 1. August 20 to November 9, 2012 Raptor Data Summary.

WDA	Location	Survey Minutes	Number of Raptor Observations	Raptor Observations Per 1-Hour Period	Raptor Flight Minutes	Raptor Flight Minutes Per 1-Hour Period
Chokecherry	CC1	720	0	0	0	0
	CC2	720	0	0	0	0
	CC3	698	1	0.09	2	0.17
	CC4	720	4	0.33	8	0.67
	CC5	720	1	0.08	1	0.08
	CC6	716	3	0.25	5	0.42
	CC7	780	0	0	0	0
	CC8	720	2	0.17	8	0.67
	CC9	720	0	0	0	0
Sierra Madre	MH1	720	8	0.67	19	1.58
	MH2	720	4	0.33	11	0.92
	MH3	780	14	1.08	27	2.08
	MH4	720	2	0.17	6	0.50
	MH5	780	0	0	0	0
	MH6	720	7	0.58	16	1.33
	PG1	720	2	0.17	3	0.25
	PG2	720	2	0.17	8	0.67
	PG3	720	9	0.75	16	1.33
	PG4	840	0	0	0	0
	PG5	780	2	0.15	8	0.62
	PG6	600	1	0.10	3	0.30
	PG7	720	1	0.08	2	0.17
	PG8	840	1	0.07	3	0.21
PG9	600	0	0	0	0	

November 12, 2012 to March 29, 2013 Survey Results

During the November 12, 2012 to March 29, 2013 survey period, 267 surveys were conducted at 33 Phase I locations for a total of 15,990 minutes (Table 2). During the 267 surveys, 14 observations of raptors were made for a total of 56 raptor flight minutes, which is only 0.4% of the 15,990 survey minutes. Golden eagle, rough-legged hawk (*Buteo lagopus*), and ferruginous hawk (*Buteo regalis*) were the only raptors detected during this survey period. The single ferruginous hawk observation occurred at the end of the survey period and was likely an early migrant back to south-central Wyoming. As expected, golden eagle and rough-legged hawk comprised the majority of winter raptor observations as these are the only two raptor species expected to occur in the vicinity of the CCSM Project Site during the winter months.

The CC7 survey location had the highest proportion of raptor observations per 1-hour period at 0.25, followed by CC2, CC13, PG3, and PG4, all of which had a rate of 0.22. However, each of these five sites only had two raptor observations during the November 12, 2012 to March 29, 2013 period. The CC13 and PG3 sites had the highest proportion of raptor flight minutes per 1-hour period, (both at 1.11), followed by CC2 (0.89; Table 2). While each of these three sites had higher numbers of flight minutes than the other Phase I sites during this survey period, the flight minutes at each site were not independent as they were related to individual birds circle soaring and using the area for an extended time on a single survey date. The remainder of the 32 sites had far fewer raptor observations and flight minutes than CC13, PG3 and CC2, with 23 sites (71.9% of all sites) having no raptor observations during this period.

April 1 to June 21, 2013 Survey Results

During the April 1 to June 21, 2013 period, 177 surveys were conducted at 33 Phase I locations for a total of 10,620 minutes (Table 3). During the 177 surveys, 28 observations of raptors were made for a total of 45 raptor flight minutes, which is only 0.4% of the 10,620 survey minutes. Northern harrier was the most observed raptor during this survey period, followed closely by red-tailed hawk and Swainson's hawk. These three species accounted for 53.6% of all raptors observed during this survey period.

The MH7 and RM14 survey locations both had the highest proportion of raptor observations per 1-hour period at 0.67, followed by CC5, CC12, MH4, and PG10, all of which had a rate of 0.4 with only two raptor observations at each site. The RM14 site had the highest proportion of raptor flight minutes per 1-hour period 1.67; however, the majority of flight minutes at RM14 during this period were not independent as they were related to an individual bird utilizing the area for an extended time on a single survey date. The PG3 site had the second highest rate of raptor flight minutes per 1-hour period at 0.83, followed by MH1, MH6 and MH7, each at 0.67 (Table 3). The remainder of the 32 sites had far fewer raptor observations and flight minutes with 18 sites (56.3% of all sites) having no raptor observations during this period.

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Table 2. November 12, 2012 to March 29, 2013 Raptor Data Summary.

WDA	Location	Survey Minutes	Number of Raptor Observations	Raptor Observations Per 1-Hour Period	Raptor Flight Minutes	Raptor Flight Minutes Per 1-Hour Period
Chokecherry	CC2	540	2	0.22	8	0.89
	CC3	510	0	0	0	0
	CC4	540	0	0	0	0
	CC5	420	1	0.14	3	0.43
	CC6	480	0	0	0	0
	CC7	480	2	0.25	6	0.75
	CC9	480	0	0	0	0
	CC10	540	0	0	0	0
	CC11	540	0	0	0	0
	CC12	540	0	0	0	0
	CC13	540	2	0.22	10	1.11
	RM 7	540	0	0	0	0
	RM 12	540	0	0	0	0
Sierra Madre	MH1	300	0	0	0	0
	MH2	480	0	0	0	0
	MH3	480	0	0	0	0
	MH4	300	0	0	0	0
	MH5	480	0	0	0	0
	MH6	540	0	0	0	0
	MH7	480	0	0	0	0
	MH8	540	1	0.11	2	0.22
	PG1	540	0	0	0	0
	PG2	540	0	0	0	0
	PG3	540	2	0.22	10	1.11
	PG4	540	2	0.22	7	0.78
	PG5	540	0	0	0	0
	PG6	540	1	0.11	2	0.22
	PG7	480	0	0	0	0
	PG8	480	0	0	0	0
	PG9	480	0	0	0	0
PG10	540	0	0	0	0	
RM 14	480	1	0.13	8	1	

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Table 3. April 1 to June 21, 2013 Raptor Data Summary.

WDA	Location	Survey Minutes	Number of Raptor Observations	Raptor Observations Per 1-Hour Period	Raptor Flight Minutes	Raptor Flight Minutes Per 1-Hour Period
Chokecherry	CC2	360	0	0	0	0
	CC3	360	2	0.33	2	0.33
	CC4	300	0	0	0	0
	CC5	300	2	0.4	3	0.6
	CC6	300	0	0	0	0
	CC7	360	0	0	0	0
	CC9	360	1	0.17	1	0.17
	CC10	360	0	0	0	0
	CC11	360	1	0.17	1	0.17
	CC12	300	2	0.4	2	0.4
	CC13	300	0	0	0	0
	RM 7	300	0	0	0	0
	RM 12	300	0	0	0	0
Sierra Madre	MH1	360	2	0.33	4	0.67
	MH2	360	0	0	0	0
	MH3	360	1	0.17	2	0.33
	MH4	300	2	0.4	3	0.6
	MH5	300	0	0	0	0
	MH6	360	2	0.33	4	0.67
	MH7	360	4	0.67	4	0.67
	MH8	300	0	0	0	0
	PG1	360	1	0.17	2	0.33
	PG2	300	0	0	0	0
	PG3	360	2	0.33	5	0.83
	PG4	360	0	0	0	0
	PG5	360	0	0	0	0
	PG6	300	0	0	0	0
	PG7	360	0	0	0	0
	PG8	300	0	0	0	0
	PG9	300	0	0	0	0
	PG10	300	2	0.4	2	0.4
RM 14	360	4	0.67	10	1.67	

June 24 to August 30, 2013 Survey Results

During the June 24 to August 30, 2013 survey period, 160 surveys were conducted at 33 Phase I locations for a total of 9,600 minutes (Table 4). During the 160 surveys, 21 observations of raptors were made for a total of 37 raptor flight minutes, which is only 0.4% of the 9,600 survey minutes. American kestrel, golden eagle, and prairie falcon (*Falco mexicanus*) were the most observed raptors during this survey period, accounting for 61.9% of all raptors observed during this survey period.

The MH7 survey location had the highest proportion of raptor observations per 1-hour period at 1.2, followed by MH3 and RM14, both of which had a rate of 0.4 with only two raptor observations at each site. The MH7 site also had the highest proportion of raptor flight minutes per 1-hour period 2.8. All other sites had far fewer raptor observations per 1-hour period with the second highest being PG10 at 0.8, followed by MH4 and RM14 at 0.6. The remainder of the 32 sites had far fewer raptor observations and flight minutes with 18 sites (56.3% of all sites) having no raptor observations during this period (Table 4).

Table 4. June 24 to August 30, 2013 Raptor Data Summary.

WDA	Location	Survey Minutes	Number of Raptor Observations	Raptor Observations Per 1-Hour Period	Raptor Flight Minutes	Raptor Flight Minutes Per 1-Hour Period
Chokecherry	CC2	300	0	0	0	0
	CC3	300	1	0.2	1	0.2
	CC4	300	0	0	0	0
	CC5	300	1	0.2	1	0.2
	CC6	300	0	0	0	0
	CC7	300	0	0	0	0
	CC9	300	0	0	0	0
	CC10	300	0	0	0	0
	CC11	300	0	0	0	0
	CC12	300	0	0	0	0
	CC13	300	1	0.2	2	0.4
	RM 7	300	1	0.2	1	0.2
	RM 12	300	0	0	0	0
Sierra Madre	MH1	300	1	0.2	2	0.4
	MH2	300	0	0	0	0
	MH3	300	2	0.4	2	0.4
	MH4	300	1	0.2	3	0.6
	MH5	300	0	0	0	0
	MH6	300	1	0.2	1	0.2
	MH7	300	6	1.2	14	2.8
	MH8	300	0	0	0	0
	PG1	300	0	0	0	0
	PG2	300	0	0	0	0
	PG3	300	1	0.2	1	0.2
	PG4	300	1	0.2	1	0.2
	PG5	300	0	0	0	0
	PG6	300	0	0	0	0
	PG7	300	1	0.2	1	0.2
	PG8	300	0	0	0	0
	PG9	300	0	0	0	0
	PG10	300	1	0.2	4	0.8
RM 14	300	2	0.4	3	0.6	

3.3.2 Raptor Nest Surveys

The Phase I Wind Turbine Development is designed to avoid known raptor nests; however, in some locations, the Phase I Wind Turbine Development will be constructed in proximity to nests. Table 5 lists the species and location for nests identified since 2008 and any nests identified in the Rawlins RMP that fall within 825 feet (1,200 feet for ferruginous hawks) of the Phase I Wind Turbine Development Site. Habitat exists that could potentially support other, unknown accipiter or buteo nests. The portion of the Phase I Wind Turbine Development Site on the southern edge of the Chokecherry WDA will be constructed adjacent to cliff habitats that might support nesting raptors. Additionally, areas in and adjacent to aspen habitats in the southern portion of the Phase I Wind Turbine Development Site near Miller Hill could support tree nesting buteos and accipiters.

Table 5. Raptor Nests Identified Since 2008 Within 825 Feet (1,200 Feet for Ferruginous Hawks) of the Phase I Wind Turbine Development Site.

Common Name	Scientific Name	BLM Nest ID	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Project Location	Distance to Site (ft)	Years Monitored	Years Active
American Kestrel	<i>Falco sparverius</i>	--	4592178	312889	Lower Miller Hill Turbine Road	11	2013	2013
Ferruginous Hawk	<i>Buteo regalis</i>	FH20881301	4620081	312604	Nevins Ridge Water Main	360	2011, 2012, 2013, 2014	None
Golden Eagle	<i>Aquila chrysaetos</i>	GE20873601	4614839	321561	Lower Miller Hill Transmission Pad	334	2011, 2012, 2013, 2014	2014
Red-Tailed Hawk	<i>Buteo jamaicensis</i>	--	4594862	305478	Upper Miller Hill Arterial Road	765	2008, 2014	2008 (Common raven active in this nest in 2014)
Great Horned Owl (previously unknown raptor)	<i>Bubo virginianus</i>	--	4593306	310021	Lower Miller Hill Crane Path	0	2013, 2014	2014
Great Horned Owl	<i>Bubo virginianus</i>	GH18881801	4600683	303369	Lower Miller Hill Electrical Collection Pad	795	2011, 2013, 2014	Red-tailed hawk active in this nest in 2011
Unknown Raptor	--	--	4589471	312801	Upper Miller Hill Turbine Tag Line	702	2011, 2013, 2014	None

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Common Name	Scientific Name	BLM Nest ID	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Project Segment	Distance to Edge of Disturbance (ft)	Years Monitored	Years Active
Unknown Raptor	--	--	4590889	312401	Upper Miller Hill Turbine Road	459	2012, 2013, 2014	None
Unknown Raptor	--	--	4591367	311116	Upper Miller Hill Arterial Road	331	2014	None
Unknown Raptor	--	--	4595634	304688	Upper Miller Hill Turbine Road	668	2014	None
Unknown Raptor	--	--	4617630	312967	Nevins Ridge Turbine Pad	510	2012, 2013, 2014	None
Unknown Raptor	--	--	4619206	316104	Nevins Ridge Turbine Pad	455	2011, 2012, 2013, 2014	None
Unknown Raptor	--	--	4622655	320341	Pine Grove Transmission Pad	751	2011, 2012, 2013, 2014	None
Unknown Raptor	--	--	4614047	317122	Nevins Ridge Turbine Pad	757	2014	Common raven active in this nest in 2014
Unknown Raptor	--	--	4620575	320048	Nevins Ridge Turbine Road	88	2011, 2012, 2013, 2014	None

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