

**EAGLE CONSERVATION PLAN FOR THE PRYOR MOUNTAIN WIND  
ENERGY PROJECT**

**PacifiCorp**  
610 Antler Drive  
Casper, Wyoming 82601

January 15, 2024

**TABLE OF CONTENTS**

INTRODUCTION ..... 1

REQUESTED ITEMS/INFORMATION ..... 1

    1. Intent to Apply for a Permit..... 1

    2. Project Location ..... 1

    3. Permit Duration ..... 3

    4. Endangered Species Act Compliance..... 3

    5. Department of Defense and Federal Aviation Administration ..... 3

    6. Project Description ..... 4

    7. Eagle Data for the Project. .... 4

        Baseline Studies ..... 5

        Post-Construction Monitoring Studies..... 31

    8. Avoidance and Minimization Measures Implemented for the Project..... 36

        Project Siting..... 36

        Eagle Best Management Practices and Conservation Measures for the Project ..... 43

    9. Compensatory Mitigation ..... 46

    10. Adaptive Management ..... 46

    11. Other US Fish and Wildlife Service Permits..... 48

LITERATURE CITED ..... 48

**LIST OF TABLES**

Table 1. The number of active golden eagle and bald eagle nests identified and active nest density within the proposed Pryor Mountain Wind Energy Project and surrounding 10-mile survey area in 2016..... 6

Table 2. Nest success for occupied active eagle nests within the Project area and surrounding 10-mile survey area in 2016..... 8

Table 3. Nesting success and productivity for eagles within the Project area and surrounding the 10-mile survey area in 2016..... 9

Table 4a. Mean golden eagle use observed per survey hour per month at the Pryor Mountain Wind Energy Project during avian/eagle use surveys from June 2, 2015, to May 28, 2016. .... 17

Table 4b. Mean golden eagle use observed per survey hour per month at the Pryor Mountain Wind Energy Project during avian/eagle use surveys from June 16, 2016, to May 22, 2017. .... 17

Table 5a. Summary of survey minutes and percentage of minutes golden eagles were observed during fixed-point surveys at the Pryor Mountain Wind Energy Project from June 2, 2015 – May 28, 2016, and June 16, 2016 – May 22, 2017..... 19

Table 5b. Summary of survey minutes and percentage of minutes golden eagles were observed during fixed-point surveys at the Pryor Mountain Wind Energy Project from June 2, 2015 – May 28, 2016, and June 16, 2016 – May 22, 2017..... 19

Table 6. Summary of golden eagles per survey hour per month observed (regardless of distance from observer) at the Pryor Mountain Wind Energy Project during raptor migration surveys from September 21 and November 7, 2015.....25

Table 7. Summary of eagle use by hour of the day at the Pryor Mountain Wind Energy Project in Carbon County, Montana.....33

Table 8. Summary of Potential Conservation Measures to be implemented if a Threshold is reached using a Stepwise Approach.<sup>1</sup>.....47

**LIST OF FIGURES**

Figure 1. Location of the Pryor Mountain Wind Energy Project, Carbon County, Montana. ....2

Figure 2. Location of eagle nests identified during the 2016 raptor nest surveys within the proposed Pryor Mountain Wind Energy Project and surrounding 10-mile survey area.....7

Figure 3. Approximate golden eagle territories for the golden eagle nests that have been identified in the vicinity of the Pryor Mountain Wind Project, Carbon County, Montana. .... 10

Figure 4. Location of known eagle nests and a 2-mile (3.2-km) buffer in relation to final turbine locations at the Pryor Mountain Wind Energy Project in Carbon County, Montana. .... 11

Figure 5. Location of mapped golden eagle flight paths recorded during eagle nest observations in 2015 and 2016 at the proposed Pryor Mountain Wind Energy Project, Carbon County, Montana..... 13

Figure 6. Location of fixed-point survey plots for avian/eagle use surveys conducted at the proposed Pryor Mountain Wind Energy Project, Carbon County, Montana..... 15

Figure 7a. Summary of golden eagles observed per survey hour per month at the Pryor Mountain Wind Energy Project during avian/eagle use surveys from June 2, 2015 – May 28, 2016. .... 18

Figure 7b. Summary of golden eagles observed per survey hour per month at the Pryor Mountain Wind Energy Project during avian/eagle use surveys from June 16, 2016 – May 22, 2017..... 18

Figure 8. Eagle use (both bald and golden eagles combined) by point during eagle use surveys at the Pryor Mountain Wind Energy Project from June 2, 2015 – May 28, 2016, and June 16, 2016 – May 22, 2017.....20

Figure 9a. The 100 by 100-meter cells containing mapped golden eagle flight paths recorded during fixed-point large bird use surveys within the Pryor Mountain Wind Energy Project from June 2, 2015 – May 28, 2016, and June 16, 2016 – May 22, 2017. ....21

Figure 9b. The 100 by 100-meter cells containing mapped bald eagle flight paths recorded during fixed-point large bird use surveys within the Pryor Mountain Wind Energy Project from June 2, 2015 – May 28, 2016, and June 16, 2016 – May 22, 2017.....22

Figure 10. Location of the raptor migration survey point in 2015 at the Pryor Mountain Wind Energy Project, Carbon County, Montana. ....24

Figure 11. Total number of golden eagle observations by survey day during eagle migration surveys at the Pryor Mountain Wind Energy Project from September 21 – November 7, 2015.....26

Figure 12. Golden eagle flight paths recorded at the Pryor Mountain Wind Energy Project during eagle migration surveys from September 21 to November 7, 2015.....27

Figure 13. Location of prairie dog colonies mapped during pre-construction surveys (2016), post-construction surveys (2021), the current distribution of prairie dog colonies (2022), as well as known greater sage-grouse leks located within 0.5 miles, greater sage-grouse nest locations (Brown 2022, 2023), and eagle fatalities at the Pryor Mountain Wind Energy Project in Carbon County, Montana. ....30

Figure 14. Location of the eagle use and informed curtailment survey points at the Pryor Mountain Wind Energy Project in Carbon County, Montana.....32

Figure 15. Total eagle minutes recorded by survey hour at the Pryor Mountain Wind Energy Project in Carbon County, Montana. ....34

Figure 16. Eagle minutes observed by survey hour across months at the Pryor Mountain Wind Energy Project in Carbon County, Montana. ....34

Figure 17. Eagle flight paths standardized (meters of flight per 100 square meter grid), perch locations, and eagle fatalities at the Pryor Mountain Wind Energy Project in Carbon County, Montana. ....35

Figure 18a. Overview of PacifiCorp’s Original 120 Turbine Layout and Final 114 Turbine Layout in Relation to Identified Golden Eagle Nests and ½ the Mean Inter-nest Distance, Mapped Golden Eagle Flight paths, Sage-grouse Leks, and Mapped Prairie Dog Colonies for the Pryor Mountain Wind Project, Carbon County, Montana. ....38

Figure 18b. PacifiCorp’s Original 120 Turbine Layout and Final 114 Turbine Layout in Relation to Mapped Golden Eagle Flight Paths and Perch Locations, Identified Golden Eagle Nests and ½ the Mean Inter-nest Distance, Sage-grouse Leks, and Mapped Prairie Dog Colonies for the Northern Portion of the Pryor Mountain Wind Project, Carbon County, Montana.....39

Figure 18c. PacifiCorp’s Original 120 Turbine Layout and Final 114 Turbine Layout in Relation to Mapped Golden Eagle Flight Paths and Perch Locations, Identified Golden Eagle Nests and ½ the Mean Inter-nest Distance, Sage-grouse Leks, and Mapped Prairie Dog Colonies for the Central Portion of the Pryor Mountain Wind Project, Carbon County, Montana. ....40

Figure 18d. PacifiCorp's Original 120 Turbine Layout and Final 114 Turbine Layout in Relation to Mapped Golden Eagle Flight Paths and Perch Locations, Identified Golden Eagle Nests and ½ the Mean Inter-nest Distance, Sage-grouse Leks, and Mapped Prairie Dog Colonies for the Southern Portion of the Pryor Mountain Wind Project, Carbon County, Montana.....	41
---	----

## APPENDICES

Appendix A - Wenck Associates Nest Survey Report

Appendix B - WEST Nest Survey Report February 2016 to July 2016

Appendix C - WEST Baseline Avian Studies Report June 2015 to May 2016

Appendix D - WEST Baseline Avian Studies Report June 2016 to May 2017

Appendix E - WEST Eagle Migration Survey Report 2015

Appendix F - WEST Prey Base Mapping Report

Appendix G - WEST Post-Construction Mortality Monitoring Report January 2021 to December 2022

Appendix H - WEST Post-Construction Mortality Monitoring Report January 2022 to December 2022

Appendix I - WEST Eagle Use/Curtailment Report October 2021 to October 2022

Appendix J - WEST Post-Construction Prey Base Mapping Report 2021

Appendix K - WEST Post-Construction Prey Base Mapping Report 2022

## INTRODUCTION

On March 31, 2021, the United States Fish and Wildlife Service (USFWS) Region 6 Migratory Bird Management Office released a new guidance document for development of Eagle Conservation Plans (ECPs) titled “*U.S. Fish and Wildlife Service, Region 6, Migratory Bird Management Office, Recommended Approach for Development and Submission of Eagle Conservation Plans in support of an Eagle Incidental Take Permit Application for Wind Energy Projects*” (USFWS 2021). The following document has been prepared to address the items identified in the regional guidance and is intended to serve as an ECP in support of an Eagle Incidental Take Permit (EITP) application for the Pryor Mountain Wind Energy Project (Project). It is worth noting that the Project was under development as early as 2008 and the Project name changed over time, as such, some of the previous documents that were prepared for the Project may have been developed under a different Project name. The Project was previously known as the Bowler Flat Wind Project as well as the Mud Springs Wind Project at different times during development.

## REQUESTED ITEMS/INFORMATION

### 1. Intent to Apply for a Permit

Provide a statement that the ECP was prepared to support an application for an EITP for a wind energy facility, the name of the facility, and relevant company/subsidiary names of the applicant/owner/operator.

PacifiCorp has constructed, and currently owns and operates the Pryor Mountain Wind Energy Project (Project). This ECP has been prepared to support an application for an EITP for the Project. PacifiCorp submitted an application for an EITP in January 2020.

### 2. Project Location

Provide a map showing the location of the wind energy facility that USFWS can use for the NEPA document.

A map of the location of the Project is shown in Figure 1. The Project is in Carbon County, Montana approximately eight miles (13 kilometers [km]) southeast of Bridger, Montana (Figure 1).

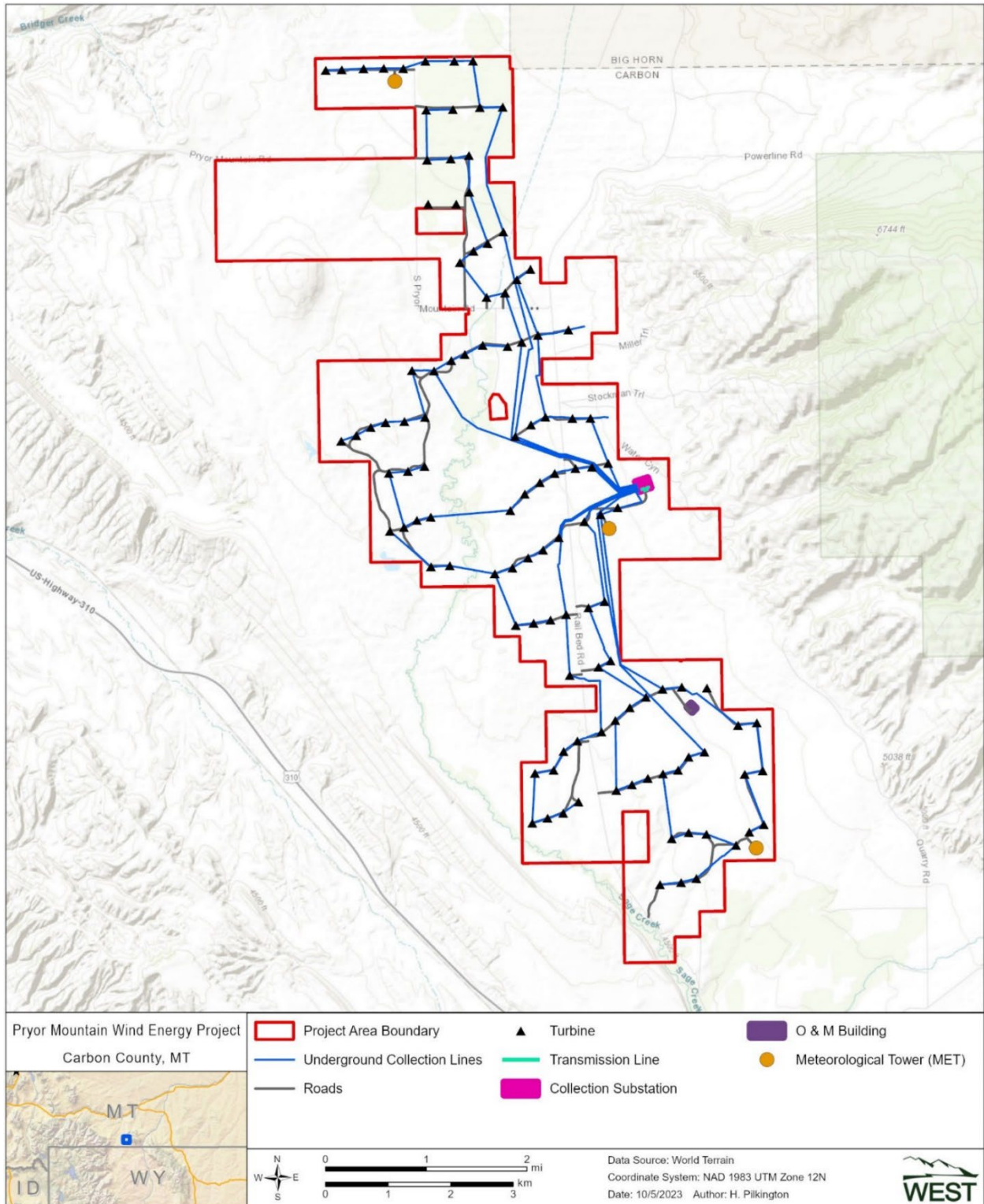


Figure 1. Location of the Pryor Mountain Wind Energy Project, Carbon County, Montana.

### 3. Permit Duration

Provide a statement indicating how many years the applicant is requesting eagle take for. Note that per the USFWS 2016 Revised Eagle Rule (FRN Vol 81, 91494) all applications for EITPs submitted after July 14, 2017, will be processed under the 2016 BGEPA regulations.

PacifiCorp, the applicant, is requesting eagle take coverage for bald (*Haliaeetus leucocephalus*) and golden (*Aquila chrysaetos*) eagles under a permit for the operating life of the Project or up to 30 years as allowed under the USFWS 2016 Revised Eagle Rule.

### 4. Endangered Species Act Compliance

Provide documentation which demonstrates that compliance with the Endangered Species Act (ESA), for federally listed species and critical habitat (designated or proposed), has already been completed for the wind energy project.

The USFWS Ecological Services Montana Field Office identifies the following listed, proposed, and candidate wildlife species as reasonably expected to occur in Carbon County, Montana: Grizzly Bear (*Ursus arctos horribilis*), Wolverine (*Gulo gulo luscus*), and Monarch Butterfly (*Danause plexippus*). However, suitable habitat is lacking for grizzly bear and wolverine in the Project area. The Project area contains generally flat to rolling topography (elevations in the Project area range from approximately 4,375 feet [1,334 meters] to 5,250 feet [1,600 meters] and is dominated by shrub/scrub and herbaceous landcover types which would not be considered suitable habitat for grizzly bear or wolverine. However, a grizzly bear was recently documented in the Pryor Mountains east of the Project area and grizzly bears could be occasional transients in the general area. The Project implements a number of Best Management Practices (BMPs) to reduce attractants (e.g. trash management and carcass/carrion removal) that will avoid/minimize any potential Project effects to grizzly bears. The Project area does not contain known populations of federally listed or proposed threatened or endangered species and does not contain designated or proposed critical habitat for federally listed or proposed species. Private individuals and companies are required to ensure that their actions do not result in “take” of federally listed animals; no such take is anticipated to result from the project. Any required Section 7 consultation in conjunction with EITP issuance would be conducted as an “Intra-Service” consultation between USFWS Division of Migratory Birds (Federal permitting entity) and USFWS Ecological Services Montana Field Office.

### 5. Department of Defense and Federal Aviation Administration

If the wind energy project that an EITP is being submitted for occurs in proximity to a Department of Defense (DoD) installation, or a civil or commercial airport, or both, include a statement that the permit applicant is coordinating with these entities regarding the wind project. Also in such cases the EITP applicant must provide documentation that DoD, Federal Aviation Administration (FAA), or both have reviewed the wind project and that they do not have any issues with the project design and layout relative to their radar systems and other infrastructure.

PacifiCorp provided all turbine locations to the FAA for review by the Agency and all locations received a “Determination of No Hazard to Air Navigation” from the FAA in October of 2019.



Turbine locations were also provided to the DoD through their clearing house review system and no issues were identified by DoD.

## **6. Project Description**

The Project is in Carbon County, Montana approximately eight miles (13 kilometers [km]) southeast of Bridger, Montana (Figure 1). The Project is located entirely on private land. It became operational on April 1, 2021. The nameplate capacity of the Project is 240 megawatts (MW) and of 114 turbines including two General Electric (GE) 2.7-116, two GE 2.3-116, 57 Vestas V110-2.0, and 53 Vestas V110-2.2 turbines. The Vestas turbines have a 55-meter (m) rotor radius and an 80 m hub height (total height of 135 m to fully extended blade tip), and the GE turbines have a 58 m rotor radius and a 80 m hub height (total height of 138 m to fully extended blade tip; Figure 2). The Project includes additional infrastructure (i.e., operations and maintenance facility, approximately 25 miles of access roads, approximately 49 miles of underground collector lines, three meteorological towers, two substations, and a short (~600 ft 230 kV slack span or strain bus to connect the two substations). The above ground power line has been constructed following APLIC guidelines (APLIC 2006 and 2012). The Project did not require construction of a new transmission line, as an existing line has been used for the Project.

The development of the Project by previous owners began in 2008. The Project layout and project boundary changed many times between 2008 and 2019. The 2019 Montana Legislature passed Senate Bill (SB) 299 and it was signed by the Governor in May 2019. SB 299 clarified existing land uses and activities not authorized by permit but not yet conducted by September 8, 2015 are not subject to Montana's conservation strategy. The Department of Environmental Quality (DEQ) issued a Storm Water Pollution Prevention Plan permit (SWPPP) for the Project on April 4, 2014. In May 2019 the Montana Sage Grouse Oversight Team (MSGOT) decided the DEQ 2014 SWPPP boundary was the defined project boundary. With the project boundary established prior to September 8, 2015, the area within the project boundary is grandfathered and not subject to sage grouse compensatory mitigation requirements of EO-12-2015 pursuant to SB 299.

Numerous meetings and coordination calls occurred with USFWS during development of the Project and have continued during operations. The Project also coordinated with Montana Fish Wildlife and Parks (MFWP) during the development of the Project and most recently met with USFWS and MFWP in May of 2023 to discuss golden eagle nest data in the vicinity of the Project. PacifiCorp intends to continue coordinating with USFWS and MFWP as needed throughout the operational life of the Project.

## **7. Eagle Data for the Project.**

Western EcoSystems Technology, Inc. (WEST) was contracted to conduct baseline eagle studies within the original Project area in May of 2015. Prior to work by WEST, Wenck Associates, Inc. (Wenck) was contracted to conduct aerial raptor nest surveys in 2014 and Powers Engineers (Powers) was contracted to conduct three months of avian/eagle use surveys from March through May of 2015. Protocols for the baseline eagle studies conducted by WEST were developed in communication with the USFWS and Montana Fish Wildlife and Parks (MFWP). Baseline eagle studies were initiated in March of 2015, with over two years (27 months) of eagle use surveys

completed through May of 2017 (see below for specific dates of the various studies). This section provides a summary of the baseline wildlife studies that apply to eagles including: 1) eagle nest surveys; 2) eagle nest observations; 3) avian/eagle use surveys; 4) eagle migration surveys; and 5) prey base surveys. In addition to the studies summarized below, WEST conducted searches for communal bald eagle roosts along the Clarks Fork of the Yellowstone River from public roads outside of the Project area in February of 2016. While biologists recorded limited observations of perched eagles, no communal roosts were identified in the vicinity of the Project during any surveys. The final baseline reports for the various survey efforts have been included as Appendices (A – F) and the baseline eagle data (eagle use, eagle nests, migration data, and prey resource data), maps, shapefiles, and reports were submitted to USFWS Mountain Prairie Region via digital submission in January 2020.

In addition to the baseline studies, the following studies have been conducted during Project operations that provide additional eagle information: 1) prey base assessments; 2) eagle use and human-informed curtailment; and 3) eagle-focused mortality monitoring. These studies are also summarized below, and the final reports are included as Appendices (G – K). PacifiCorp, USFWS, and MFWP have discussed eagle nests in the general area surrounding the Project however, additional nest surveys beyond the 2016 baseline nest surveys have not been conducted for the Project to date.

## ***Baseline Studies***

### **Eagle Nest Surveys**

Wenck conducted two aerial fixed-wing nest surveys within the original Project and a surrounding 10-mile buffer in 2014 (Appendix A; Wenck 2014). The first survey was conducted in April and the second survey was conducted in May of 2014. There were no eagle nests identified during these surveys (Appendix A; Wenck 2014). However, the methods used for the 2014 nest surveys differed from the methods used for nest surveys in 2016 (described in further detail below) and as indicated by the 2016 survey results, the results of the 2014 survey are not representative of eagle nesting within a 10-mile buffer of the Project. Based on 2015 eagle nest information provided by MFWP in the vicinity of the Project and in communication with USFWS, additional eagle nest surveys were conducted in 2016. WEST conducted eagle and raptor nest surveys in and surrounding the original Project area in 2016 in accordance with a Project specific nest survey protocol provided by the USFWS on December 22, 2015 (Appendix B; WEST 2016a).

### ***Methods***

Surveys were conducted within the original Project area and a surrounding 10-mile buffer in 2016. The nest survey protocol consisted of conducting a total of six visits (four ground surveys and two aerial helicopter surveys) to determine nest occupancy status. The secondary objectives were to determine nest success and productivity. Ground-based surveys were conducted on public lands, on private lands where access was available, and when nests were visible from public lands/roads. To the greatest extent possible, care was taken to minimize disturbance to raptors at nest sites during surveys.

Nest status was categorized consistent with definitions in the ECPG (USFWS 2013). Nests were classified as occupied if any of the following were observed at the nest structure: (1) an adult in an incubating position; (2) eggs; (3) nestlings or fledglings; (4) occurrence of a pair of adults (or, sometimes sub-adults); (5) a newly constructed or refurbished stick nest in the area where territorial behavior was observed or had been observed early in the breeding season; or (6) a recently repaired nest with fresh sticks (clean breaks) or fresh boughs on top, and/or droppings and/or molted feathers on its rim or underneath. Occupied nests were further classified as active if an egg or eggs had been laid, or inactive if no eggs or chicks were present. A nest that did not meet the above criteria for “occupied” was classified as “unoccupied”.

The first two ground-based surveys consisted of conducting observations of four hours long to aid in the determination of occupancy status (i.e., occupied or unoccupied). Considerable effort was made to survey each eagle nest at least three times before classifying them as unoccupied. Occupied eagle nests were surveyed at least through the end of May before further classifying them as inactive. Occupied eagle nests that were determined to be active were surveyed until it was determined that the young fledged or it was determined that the nest had failed.

Four ground-based surveys were completed, with surveys occurring from February 6 through February 21, April 8 through April 30, June 27 through July 2, and July 19 through July 22. Two aerial helicopter surveys were completed with the first aerial survey occurring from March 18 through March 24 and the second aerial survey occurring from May 23 through May 25.

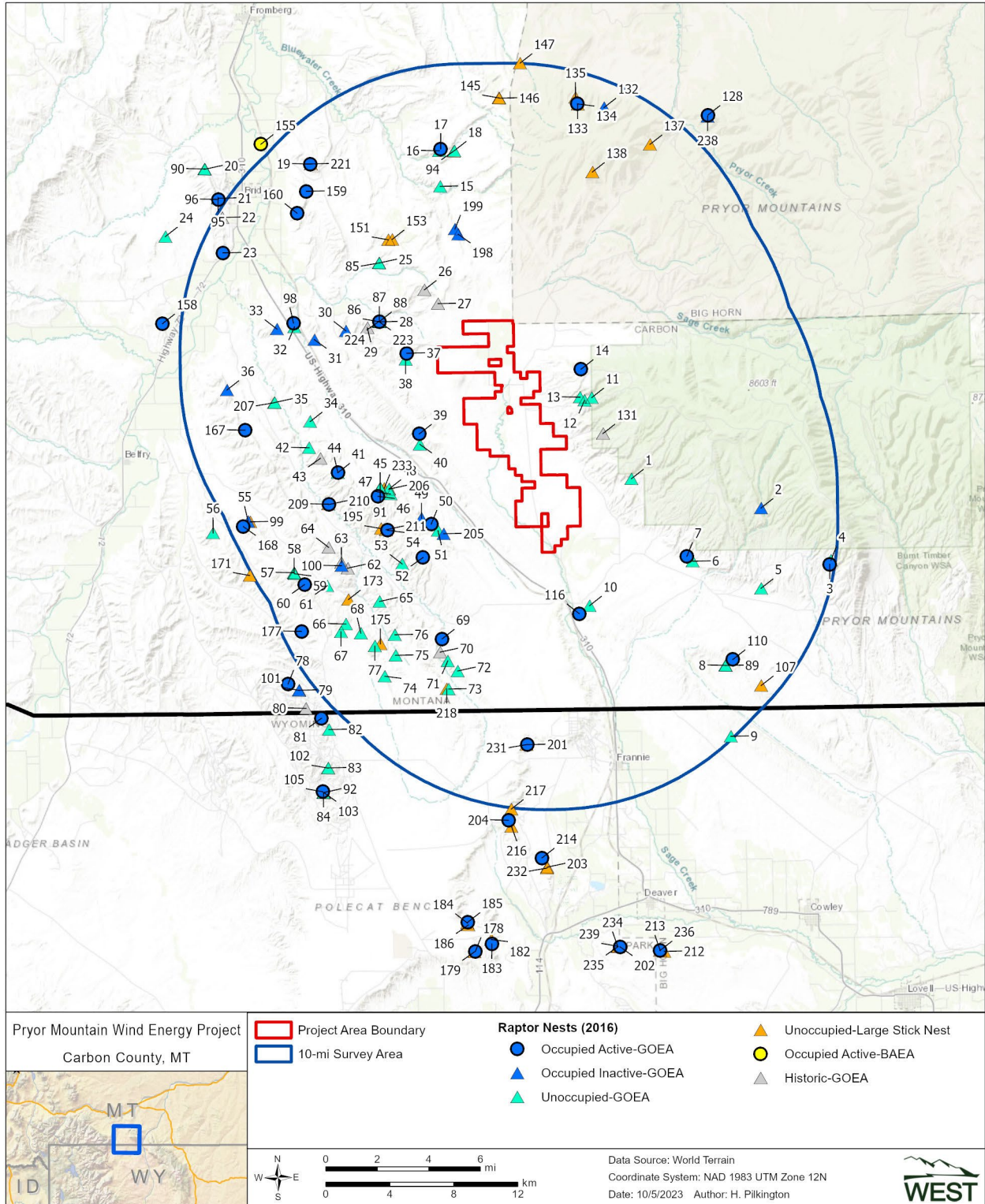
### *Eagle Nest Results*

There were no eagle nests identified within the Project area in 2016, however, there were 40 occupied active golden eagle nests and one occupied active bald eagle nest identified within the 10-mile survey area in 2016 (Table 1, Figure 2). To the extent possible, the occupied active eagle nests were revisited throughout the nesting season to determine nest success and productivity (Table 2). Of the 40 occupied active golden eagle nests identified in 2016, 20 of the nests were determined to be successful and seven nests were determined to be unsuccessful (Tables 2 and 3). Success and productivity were undetermined for the remaining 13 occupied active golden eagle nests. The 13 undetermined nests were nests that could not be accessed from the ground, or nests where the chicks may have fledged between surveys and nest fate was unknown. Thirty golden eagle chicks were determined to have fledged, resulting in 1.5 chicks/successful nest, and 1.1 chicks/occupied active nest (Table 3). The single occupied active bald eagle nest (nest ID #155; Table 2) was determined to be successful and two chicks were determined to have fledged from the nest in 2016 (Table 3).

**Table 1. The number of active golden eagle and bald eagle nests identified and active nest density within the proposed Pryor Mountain Wind Energy Project and surrounding 10-mile survey area in 2016.**

Species	# of occupied active nests within 10-mi Project buffer	# of occupied active nests within Project	Density	
			10-mi Project buffer (#/mi <sup>2</sup> )	Project (#/mi <sup>2</sup> )
golden eagle	40	0	0.0512	0.0
bald eagle	1	0	0.0013	0.0
<b>Total</b>	<b>41</b>	<b>0</b>	<b>0.0525</b>	<b>0.0</b>

mi = mile.



**Figure 2. Location of eagle nests identified during the 2016 raptor nest surveys within the proposed Pryor Mountain Wind Energy Project and surrounding 10-mile survey area.**

**Table 2. Nest success for occupied active eagle nests within the Project area and surrounding 10-mile survey area in 2016.**

<b>Nest ID</b>	<b>Species</b>	<b>Determination of Success</b>	<b>Minimum # of fledged chicks</b>
3	GOEA	Successful	2
7	GOEA	Undetermined	-
14	GOEA	Unsuccessful	0
17	GOEA	Undetermined	-
19	GOEA	Unsuccessful	0
23	GOEA	Unsuccessful	0
37	GOEA	Successful	2
39	GOEA	Successful	1
44	GOEA	Successful	2
46	GOEA	Undetermined	-
50	GOEA	Undetermined	-
52	GOEA	Successful	1
54	GOEA	Successful	2
60	GOEA	Undetermined	-
69	GOEA	Unsuccessful	0
78	GOEA	Successful	1
81	GOEA	Successful	2
88	GOEA	Unsuccessful	0
96	GOEA	Successful	1
98	GOEA	Successful	1
105	GOEA	Undetermined	-
110	GOEA	Successful	2
116	GOEA	Unsuccessful	0
128	GOEA	Undetermined	-
134	GOEA	Undetermined	-
155	BAEA	Successful	2
158	GOEA	Undetermined	-
159	GOEA	Successful	2
160	GOEA	Undetermined	-
167	GOEA	Successful	2
168	GOEA	Successful	1
177	GOEA	Successful	2
178	GOEA	Undetermined	-
183	GOEA	Successful	2
185	GOEA	Undetermined	-
201	GOEA	Successful	1
202	GOEA	Successful	1
204	GOEA	Undetermined	-
210	GOEA	Unsuccessful	0
213	GOEA	Successful	1
214	GOEA	Successful	1

**Table 3. Nesting success and productivity for eagles within the Project area and surrounding the 10-mile survey area in 2016.**

<b>Species</b>	<b># of identified successful nests</b>	<b># of identified unsuccessful nests</b>	<b># of undetermined nests*</b>	<b>Minimum # of fledged chicks</b>
golden eagle	20	7	13	30
bald eagle	1	0	0	2

\* excluded from success and productivity estimates.

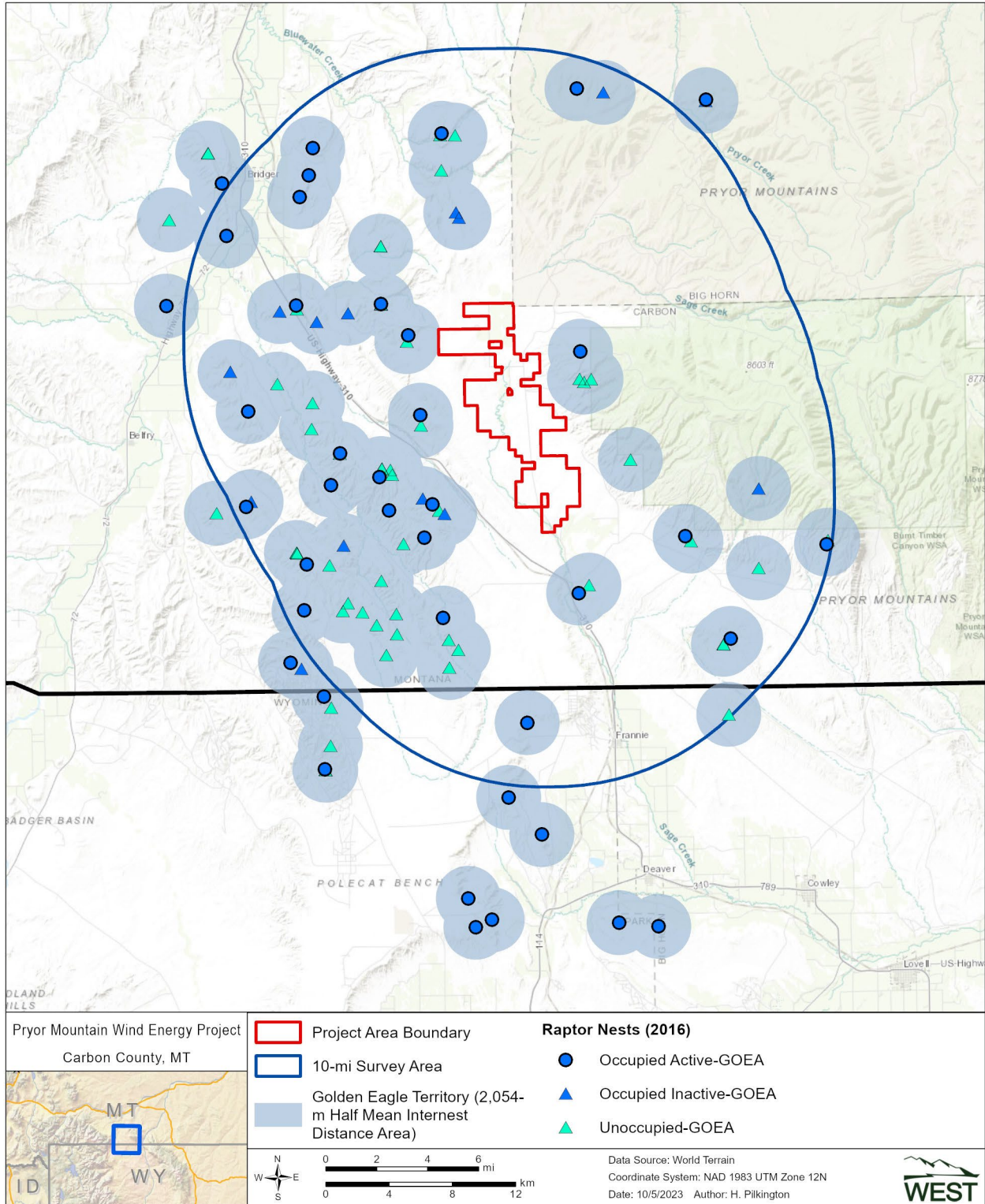
### *Inter-nest Distance*

The 2016 eagle nest data was used to estimate the mean inter-nest distance of occupied golden eagle nests for the Project. The mean inter-nest distance couldn't be calculated for bald eagles as only one bald eagle nest has been identified in the study area. Applying the recommendations in the 2013 USFWS ECPG to the survey data, the mean inter-nest distance for the 2016 occupied active golden eagle nests within 10 miles of the proposed Project was determined to be approximately 2.6 miles and half the mean inter-nest distance was approximately 1.3 miles (WEST 2016a; Appendix B). According to the 2013 USFWS ECPG, nests should be buffered by half the mean inter-nest distance to represent an approximated territory size surrounding the nest. Applying a 1.3-mile buffer to identified golden eagle nests suggests approximate territory overlap with three areas of the Project boundary although, there are no turbines located within  $\frac{1}{2}$  mean inter-nest distance of an identified golden eagle nest (Figure 3).

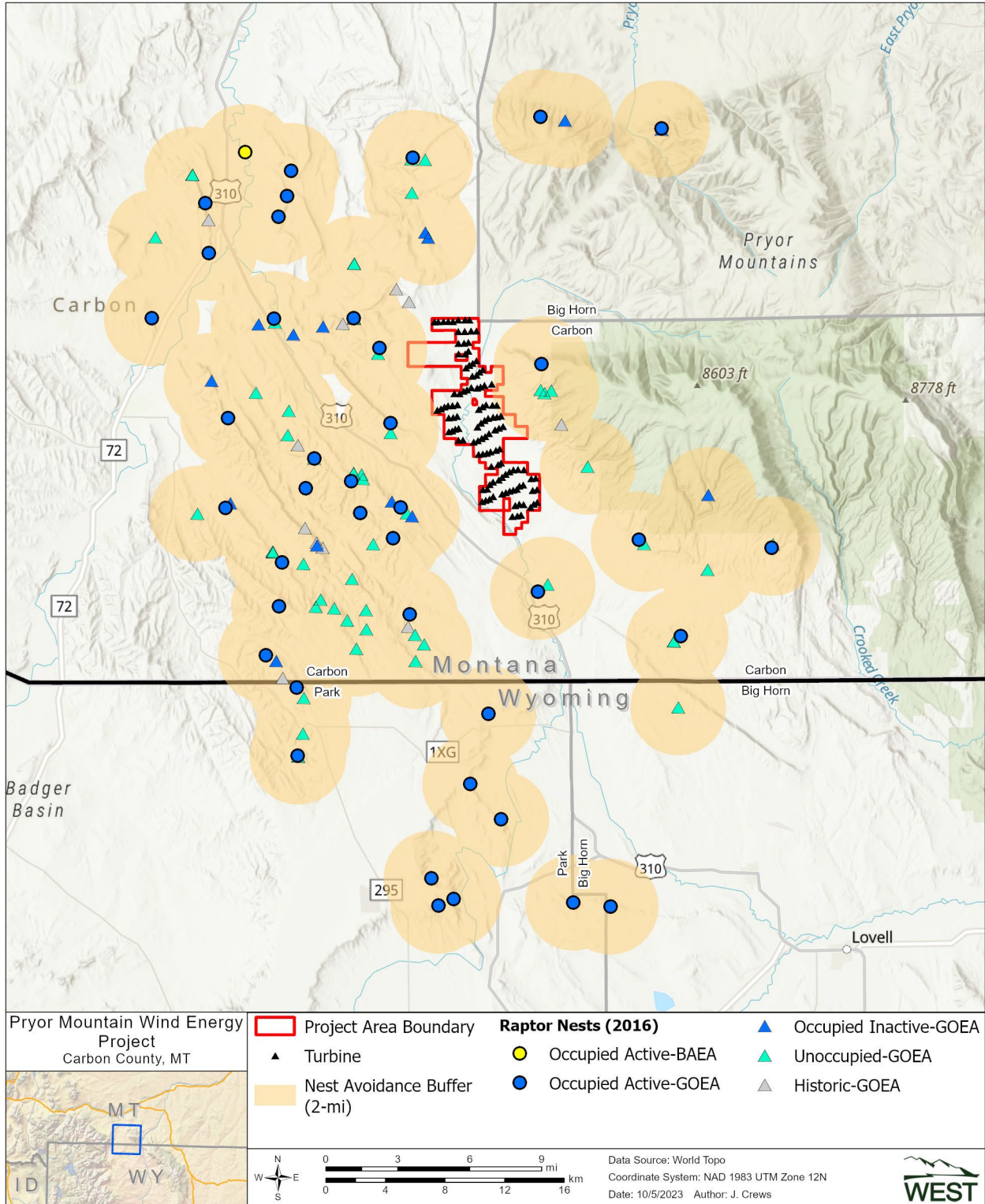
In 2020, USFWS Region 6 released new guidance that recommended turbines be sited greater than 2.0 miles from occupied eagle nests (USFWS 2020). Based on the 2016 nest data for the Project, there is one unoccupied eagle nests located within approximately 1.9 miles of turbines (Figure 4). There are no other known eagle nests within 2.0 miles of turbines.

### *Conclusions*

There were 40 occupied active golden eagle nests and one occupied active bald eagle nest identified within the 10-mile survey buffer in 2016, none of which were located within the Project area. The estimated  $\frac{1}{2}$  mean inter-nest distance was 1.3 miles based on the 2016 eagle nest surveys. Item #8 below discusses how the locations of nests and approximated eagle territories were taken into consideration during turbine siting.



**Figure 3. Approximate golden eagle territories for the golden eagle nests that have been identified in the vicinity of the Pryor Mountain Wind Project, Carbon County, Montana.**



**Figure 4. Location of known eagle nests and a 2-mile (3.2-km) buffer in relation to final turbine locations at the Pryor Mountain Wind Energy Project in Carbon County, Montana.**



### Eagle Nest Observations

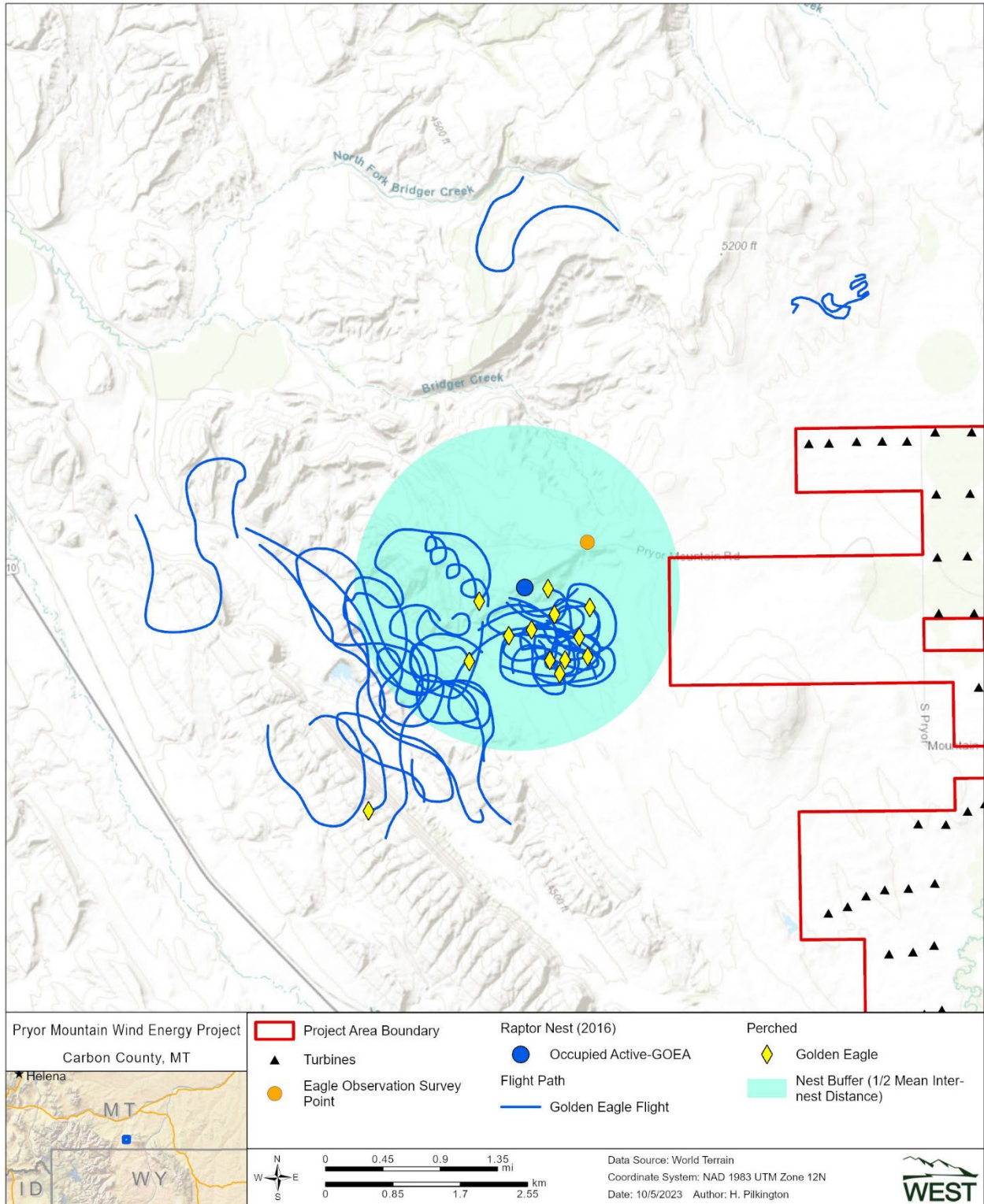
Based on the approximated eagle territories, one occupied golden eagle nest territory originally had overlap with areas proposed for turbine placement within the Project area and approximated eagle territories (Nest ID #37; Figures 2 and 3). Nest ID #37 was determined to be occupied active in both 2015 and 2016. As such, observations were conducted in the vicinity of this nest in 2015 and 2016 to identify and map eagle flight paths and activity to aid in understanding how eagles use the area in the vicinity of the nest.

### *Methods*

Four-hour eagle observations were conducted in the vicinity of the occupied golden eagle nest territory that overlapped proposed turbine locations in both 2015 and 2016. Bi-monthly observations were conducted from June through August in 2015 and from May through August in 2016. Observations were conducted from one location, established in an area where access was available, that provided maximum visibility of the area between the active nest and the Project boundary to enable data collection that informed eagle utilization in the area east of the nest location and within the Project boundary (Figure 5). The observation location was selected in the field to maximize coverage between the nest location and the Project area in the vicinity of the nest. By chance, the eagle nest observation location is relatively close to the eagle use survey station #3; however, they are not the same observation location. Observations were rotated throughout different times during the day to ensure data collection is representative of eagle use throughout the day. Data were recorded consistent with the eagle data recorded during the eagle use surveys. Mapped flight paths were digitized and a grid approach utilizing 100 X 100 m cells has been used to help visualize any concentrated areas of eagle use.

### *Results*

Six, four-hour eagle nest observations were conducted from June 4th, 2015, through August 18th, 2015 and eight four-hour eagle nest observations were conducted from May 13, 2016 through August 31, 2016. In 2015, golden eagles were observed during observations in June and July and no golden eagles were observed during the observations in August. Golden eagles were observed during all the nest observations in 2016 except for the survey conducted on August 31<sup>st</sup>. Mapped flight paths and perch locations from the observations are shown in Figure 5. Based on the mapped flight paths collected during 56 hours of observation during portions of the 2015 and 2016 nesting seasons, eagles in the vicinity of the nest appeared to be primarily utilizing the area to the southwest of the nest location and away from proposed turbine locations in both the summer of 2015 and the summer of 2016, although two eagle observations (which may not be associated with the nest/territory being observed) were recorded approximately 2.5 miles to the north and northeast of the observation location (Figure 5).



**Figure 5. Location of mapped golden eagle flight paths recorded during eagle nest observations in 2015 and 2016 at the proposed Pryor Mountain Wind Energy Project, Carbon County, Montana.**

## *Conclusions*

The results of the eagle nest observations can be used to help inform how eagles are utilizing the area in the vicinity of the nest and to inform Project planning to avoid and minimize potential impacts to eagles (refer to Item #8 below). It should be noted that the nest observations represent a sample of data collected during 56 hours of observation during portions of the 2015 and 2016 nesting seasons and it is acknowledged that it is possible that patterns in activity from this nesting pair may differ outside of the period during which the data were collected. In addition, the data should not be used to inform relative risk to eagles across the entire Project area as observations are being conducted in an area that is expected to have higher eagle use (due to the active eagle nest).

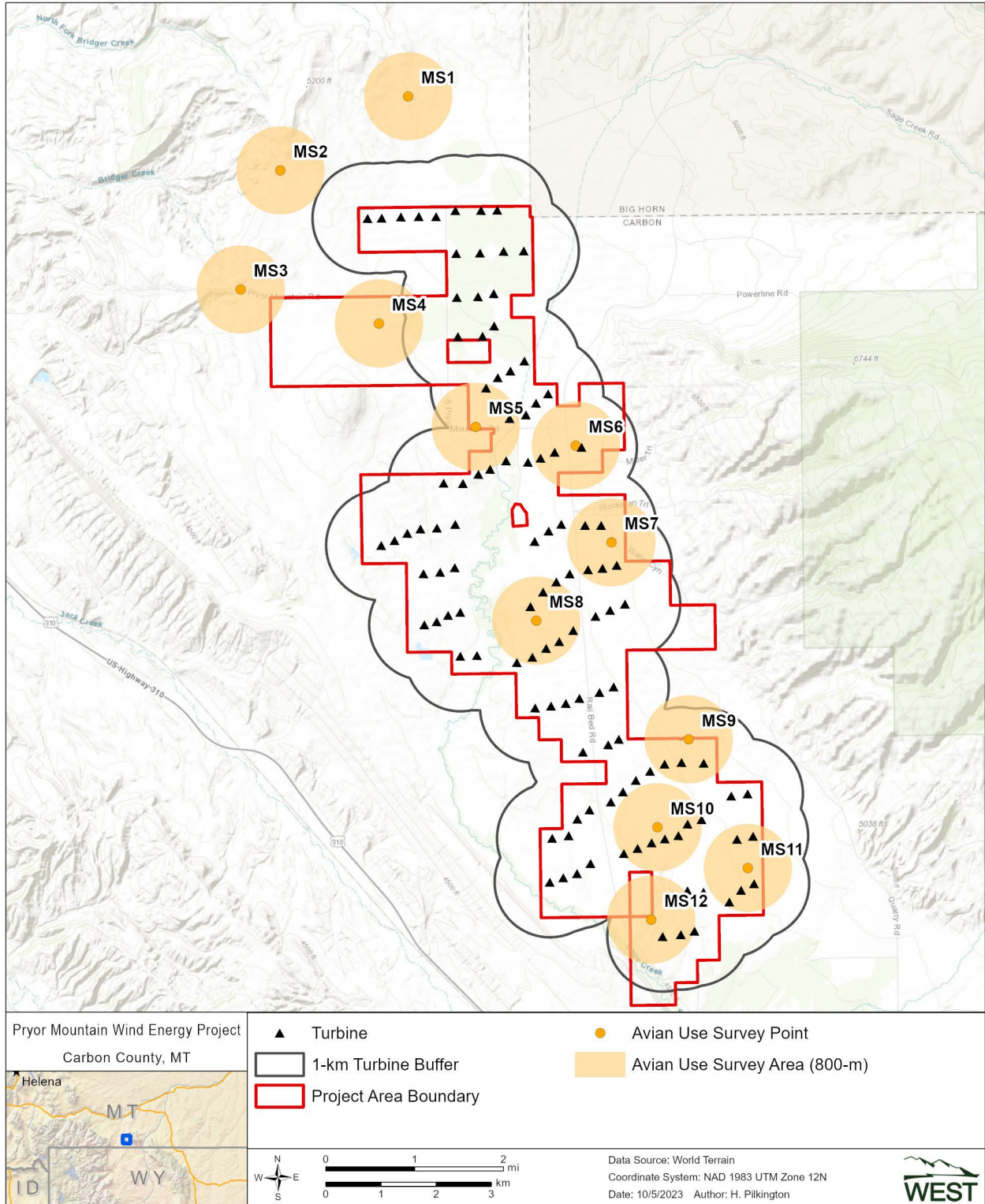
## Avian/Eagle Use Survey

Powers Engineers conducted monthly eagle use surveys in March, April and May of 2015 resulting in 36 hours of survey effort. The surveys were conducted for 60 minutes in duration, only large birds were recorded, and minute information below 200 m and within 800 m was recorded for eagle observations. There were three golden eagles observed within the 800 m survey plots during these eagle use surveys, resulting in a golden eagle use estimate during this period of approximately 0.08 golden eagles/800 m plot per hour. Golden eagles were observed during approximately 8.0% of the surveys and were observed on approximately 33.3% of the days during which surveys occurred. WEST initiated similar avian/eagle surveys twice a month in the original Project area beginning in June of 2015 and this section provides a summary of the methods and results of these efforts, the final reports have been included in Appendix C and D (WEST 2016b; WEST 2017).

## *Methods*

Fixed-point surveys consisted of conducting counts of birds within circular plots following methods established by Reynolds et al. (1980). The existing eagle observation stations previously established by Powers were utilized to conduct surveys with a few minor adjustments to maximize visibility and/or to facilitate access. Consistent with the ECPG, the twelve fixed-point survey plots (800-m viewshed) provided coverage of at least 30% of the area within one km of proposed turbine locations at the time of study design development however, the study plots provide approximately 24% of the area within one km of the final proposed turbine locations (Figure 6).

Protocols for the avian/eagle use surveys were developed in accordance with the recommendations outlined in the ECPG (USFWS 2013) and were provided to the USFWS for review and comment. For large birds, surveys were conducted for 60 minutes (min) in duration at each survey plot and each survey plot was surveyed twice a month, to the extent possible (weather conditions and accessibility influenced the ability to survey all plots in a few cases). Fixed-point surveys were scheduled to cover all daylight hours. The first year of fixed-point surveys were conducted from June 2, 2015 to May 28, 2016 (Appendix C) and the second year of surveys were conducted from June 16, 2016 to May 22, 2017 (Appendix D). All eagles that were observed outside of the standardized surveys were recorded as incidental wildlife observations.



**Figure 6. Location of fixed-point survey plots for avian/eagle use surveys conducted at the proposed Pryor Mountain Wind Energy Project, Carbon County, Montana.**

The date, start, and end time of each observation period, plot number, species or best possible identification, number of individuals, sex and age class, and location were recorded. The behavior of each eagle observed, flight path and height, and the habitat in which or over which the bird occurred was recorded. Eagle flight paths were recorded on field maps and eagle flight minutes were recorded.

#### *Eagle Results from Avian/eagle use surveys*

A total of 285, 60-min fixed-point surveys were conducted within the Project from June 2, 2015, through May 28, 2016. Each plot was surveyed for six hours in summer (June 1 to August 31, 2015), five hours in fall (September 1 to November 15, 2015), eight hours in the winter (with the exception that plots 1, 2, and 6 were only surveyed seven times due to weather and accessibility; November 16, 2015 to March 14, 2016), and five hours in the spring (March 15 to May 31, 2016). Irrespective of distance from the observer, 53 golden eagles within 46 groups and two individual bald eagles were observed during the 60-min surveys (Appendix C; WEST 2016b).

From June 16, 2016, through May 22, 2017, a total of 283 60-min fixed-point bird use surveys were conducted within the Project. Each plot was surveyed for six hours in summer (June 16 to September 1, 2016), five hours in fall (September 2 to November 17, 2016), eight hours in the winter (with the exception that plots 8 through 12 were only surveyed seven times due to weather and accessibility; November 18, 2016, to March 14, 2017), and five hours in the spring (March 15 to May 22, 2017). Irrespective of distance from the observer, 42 golden eagles within 36 groups and two individual bald eagles were observed during the 60-min surveys (Appendix D; WEST 2017).

With the two years combined, 568 60-min fixed-point bird use surveys were conducted and irrespective of distance from observer, a total of 95 golden eagles within 82 groups and four individual bald eagles were observed during the 60-min surveys.

During the first year of surveys, the average bald eagle use estimate at Project was less than 0.01 bald eagles/plot/60-min survey, and there were no bald eagles seen during the first 20 min of surveys. The average golden eagle use at the Project was estimated at 0.10 golden eagles/800-m plot/60-min survey and 0.03 golden eagles/800-m plot/20-min survey. Consistent with the first year of surveys, during the second year of surveys, the average bald eagle use estimate at the Project was less than 0.01 bald eagles/plot/60-min survey and there were no bald eagles seen during the first 20-min of the surveys. The average golden eagle use at the Project during the second year of study was estimated at 0.09 golden eagles/800-m plot/60-min survey and 0.03 golden eagles/800-m plot/20-min survey.

Bald eagles were observed during the spring and winter (0.02 and 0.01 birds/800-m plot/60-m survey, respectively) during the first year of surveys and were only observed during the winter (0.01) during the second year of surveys. During the first year of surveys, golden eagles were observed in all seasons and had the highest use in the spring (0.17 birds/800-m plot/60-m survey), followed by winter (0.08), fall (0.07) and summer (0.06). Golden eagles were also recorded across all seasons during the second year of surveys with the highest use recorded in the winter (0.15), followed by fall (0.1), summer (0.04), and spring (0.03). Irrespective of distance from observer,

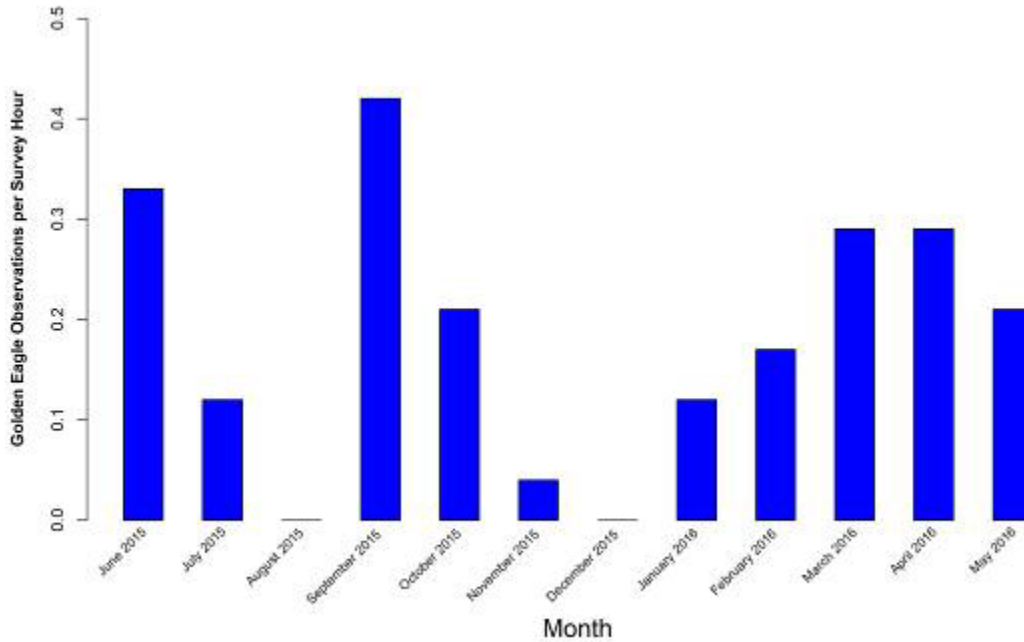
during the first year of surveys, golden eagle use was highest in September (0.42 observations per hour), followed by June (0.33), and was lowest in August and December when no eagles were observed (Table 4a, Figure 7a). During the second year, golden eagle use (irrespective of distance from observer) was highest again in September as well as in February (0.23 observations per hour), observations per hour were lowest in April and October (0.04; Table 4b, Figure 7b).

**Table 4a. Mean golden eagle use observed per survey hour per month at the Pryor Mountain Wind Energy Project during avian/eagle use surveys from June 2, 2015, to May 28, 2016.**

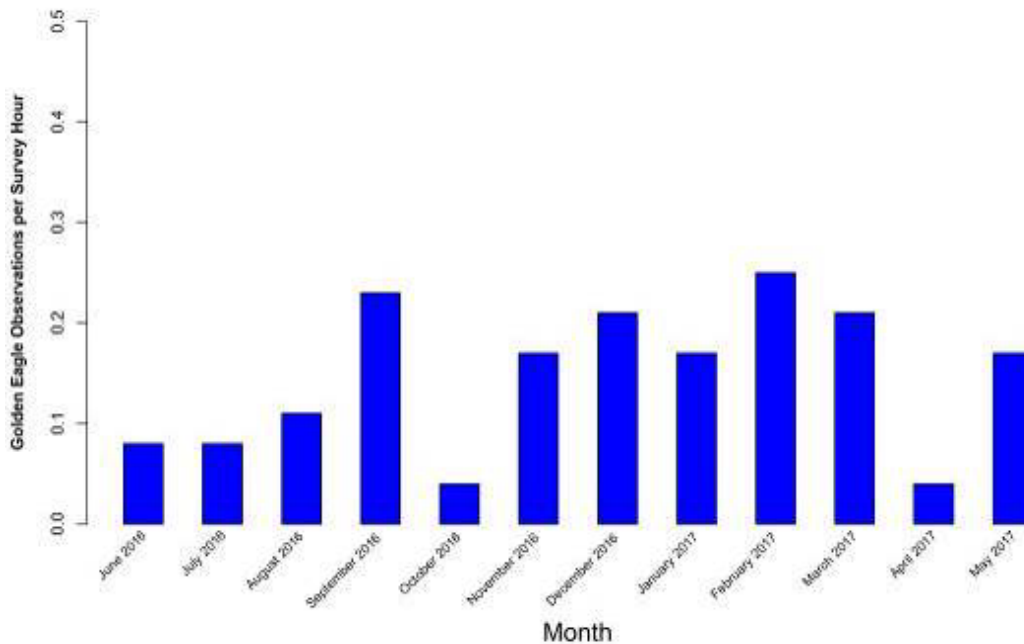
Month	Hours of Survey	Golden Eagles		Obs per hour
		Obs	Groups	
June	24	8	7	0.33
July	24	3	3	0.13
August	24	0	0	0
September	24	10	9	0.42
October	24	5	4	0.21
November	24	1	1	0.04
December	21	0	0	0
January	24	3	2	0.13
February	24	4	3	0.17
March	24	7	7	0.29
April	24	7	6	0.29
May	24	5	4	0.21
<b>Totals</b>	<b>285</b>	<b>53</b>	<b>46</b>	<b>0.19</b>

**Table 4b. Mean golden eagle use observed per survey hour per month at the Pryor Mountain Wind Energy Project during avian/eagle use surveys from June 16, 2016, to May 22, 2017.**

Month	Hours of Survey	Golden Eagles		Obs per hour
		Obs	Groups	
June	24	2	2	0.08
July	24	2	2	0.08
August	18	2	2	0.11
September	30	7	4	0.23
October	24	1	1	0.04
November	24	4	4	0.17
December	19	4	4	0.21
January	24	4	3	0.17
February	24	6	4	0.25
March	24	5	5	0.21
April	24	1	1	0.04
May	24	4	4	0.17
<b>Totals</b>	<b>283</b>	<b>42</b>	<b>36</b>	<b>0.15</b>



**Figure 7a. Summary of golden eagles observed per survey hour per month at the Pryor Mountain Wind Energy Project during avian/eagle use surveys from June 2, 2015 – May 28, 2016.**



**Figure 7b. Summary of golden eagles observed per survey hour per month at the Pryor Mountain Wind Energy Project during avian/eagle use surveys from June 16, 2016 – May 22, 2017.**

Golden eagle and bald eagle observations were recorded on a per min basis following the USFWS ECPG (2013). Irrespective of distance from observer, flight height, and including observations of perched birds, golden eagles were observed for 1,369 min during the two years of surveys (Table 5a). Golden eagles were observed for 477 min in the summer, followed by 345 min in the winter, 336 min in the fall and 211 min in the spring season (Table 5a). However, the number of minutes golden eagles were recorded flying within 800 m and below 200 m was 97 min during the two years of surveys (Table 5b). Golden eagles were observed flying within 800 m and below 200 m for 52 min during the winter, 21 min during the fall, 15 min in the spring, and nine min in the summer (Table 5b). Four bald eagles (two bald eagles in year 1 and two bald eagles in year 2) were observed and were observed for four min within the 800-m and below 200 m. The bald eagles were recorded at survey plot 1, 4 and 5 during the winter season and survey plot 8 during the spring season.

**Table 5a. Summary of survey minutes and percentage of minutes golden eagles were observed during fixed-point surveys at the Pryor Mountain Wind Energy Project from June 2, 2015 – May 28, 2016, and June 16, 2016 – May 22, 2017.**

Season <sup>1</sup>	Total Minutes of Eagle Obs	Total Survey Minutes	Golden Eagle Minutes per Obs Hour
Summer	477	8,640	3.31
Fall	336	7,200	2.80
Winter	345	11,040	1.88
Spring	211	7,200	1.76
<b>Overall</b>	<b>1,369</b>	<b>34,080</b>	<b>2.41</b>

<sup>1</sup> During Year 1, seasons were defined as follows: summer (June 1 to August 31, 2015), fall (September 1 to November 15, 2015), winter (November 16, 2015, to March 14, 2016), and spring (March 15 to May 31, 2016). During Year 2, seasons were defined as follows: summer (June 16 to September 1, 2016), fall (September 2 to November 17, 2016), winter (November 18, 2016, to March 14, 2017), and spring (March 15 to May 22, 2017).

**Table 5b. Summary of survey minutes and percentage of minutes golden eagles were observed during fixed-point surveys at the Pryor Mountain Wind Energy Project from June 2, 2015 – May 28, 2016, and June 16, 2016 – May 22, 2017.**

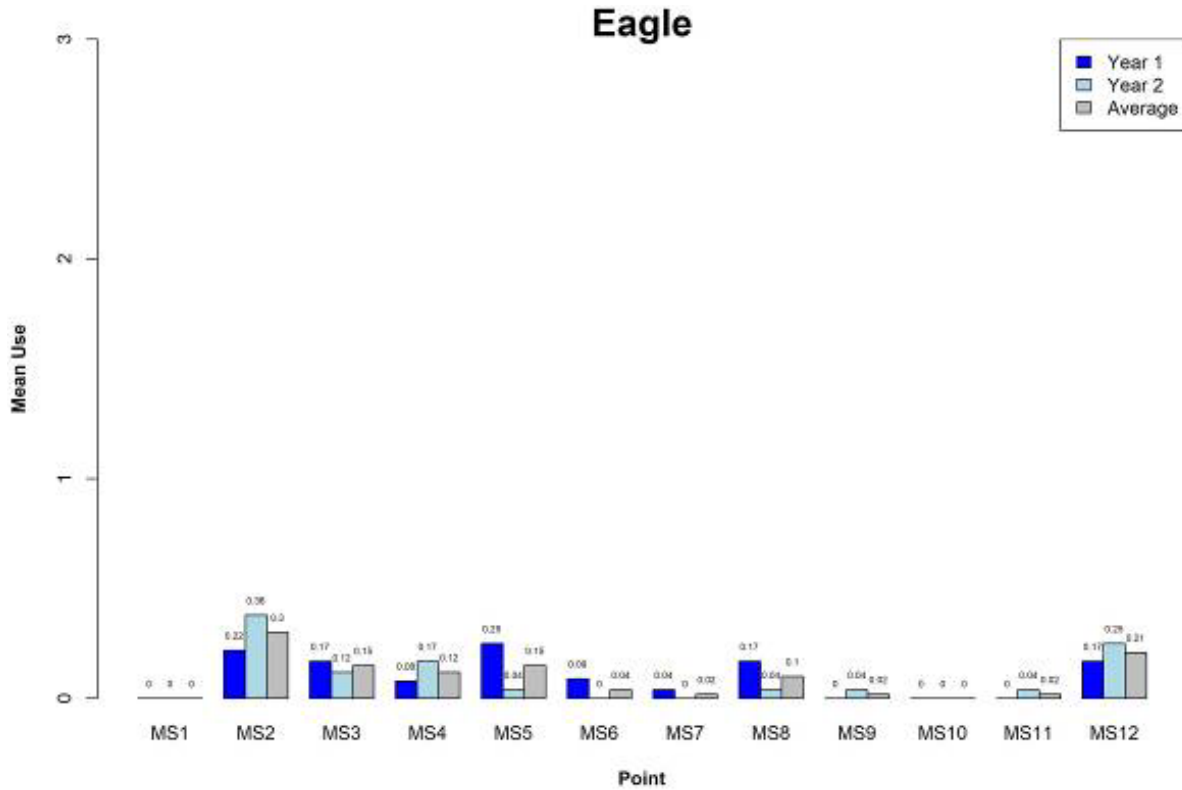
Season <sup>1</sup>	Total Minutes of Eagle Obs (excludes perched birds)	Total Survey Minutes	Golden Eagle Minutes per Obs Hour
Summer	9	8,640	0.06
Fall	21	7,200	0.18
Winter	52	11,040	0.28
Spring	15	7,200	0.13
<b>Overall</b>	<b>97</b>	<b>34,080</b>	<b>0.17</b>

<sup>1</sup> During Year 1, seasons were defined as follows: summer (June 1 to August 31, 2015), fall (September 1 to November 15, 2015), winter (November 16, 2015, to March 14, 2016), and spring (March 15 to May 31, 2016). During Year 2, seasons were defined as follows: summer (June 16 to September 1, 2016), fall (September 2 to November 17, 2016), winter (November 18, 2016, to March 14, 2017), and spring (March 15 to May 22, 2017).

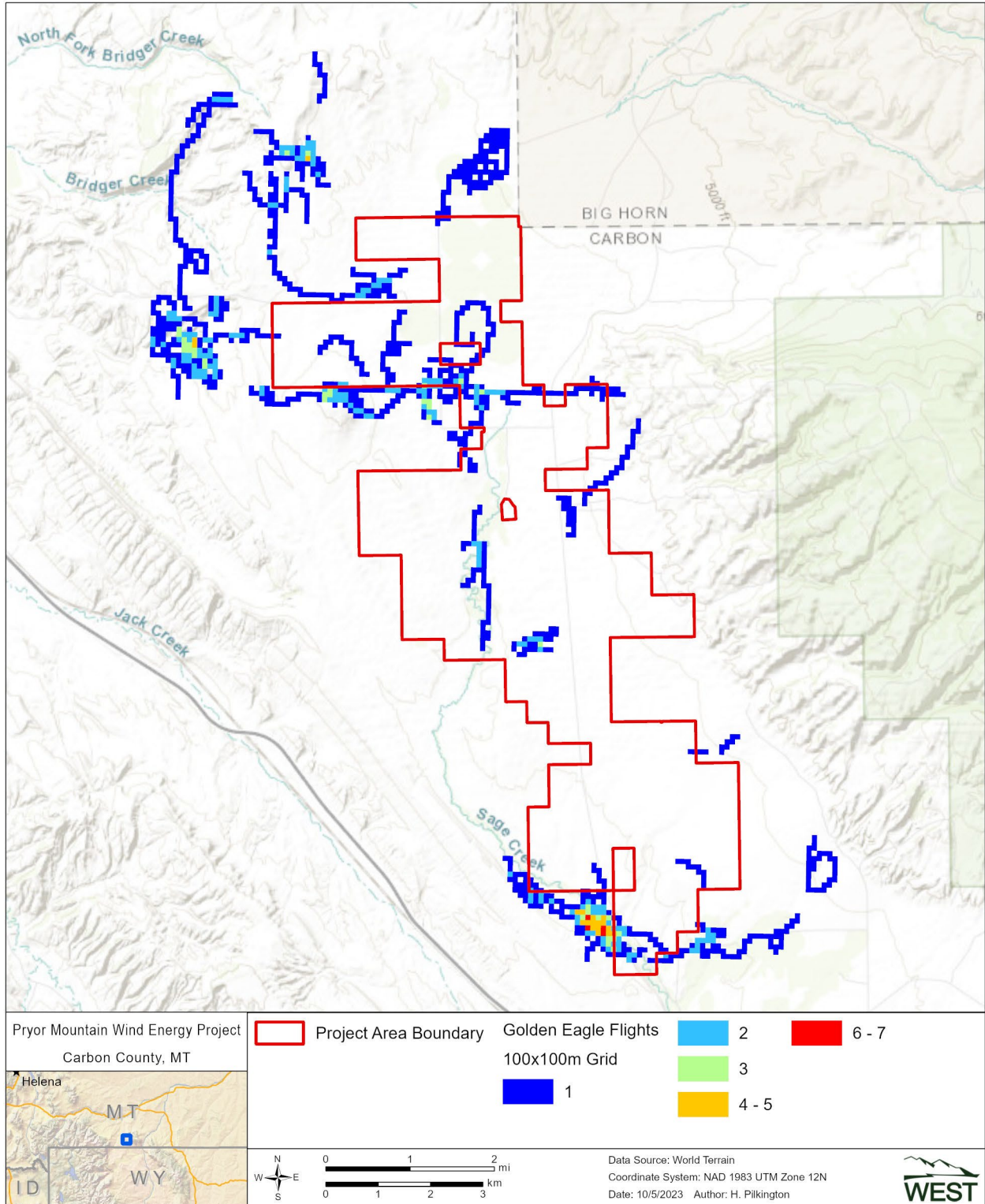
Over the two years of surveys, eagles (including both bald and golden eagles) were observed at 10 of the 12 survey plots with the highest eagle use across the two years recorded at survey plots 2 and 12 followed by survey plots 3 and 5 (Figure 8). Flight paths and perch locations for bald and golden eagles were digitized and mapped. Additionally, all flight paths for bald and golden eagles were depicted using a grid approach to illustrate the number of mapped flight paths



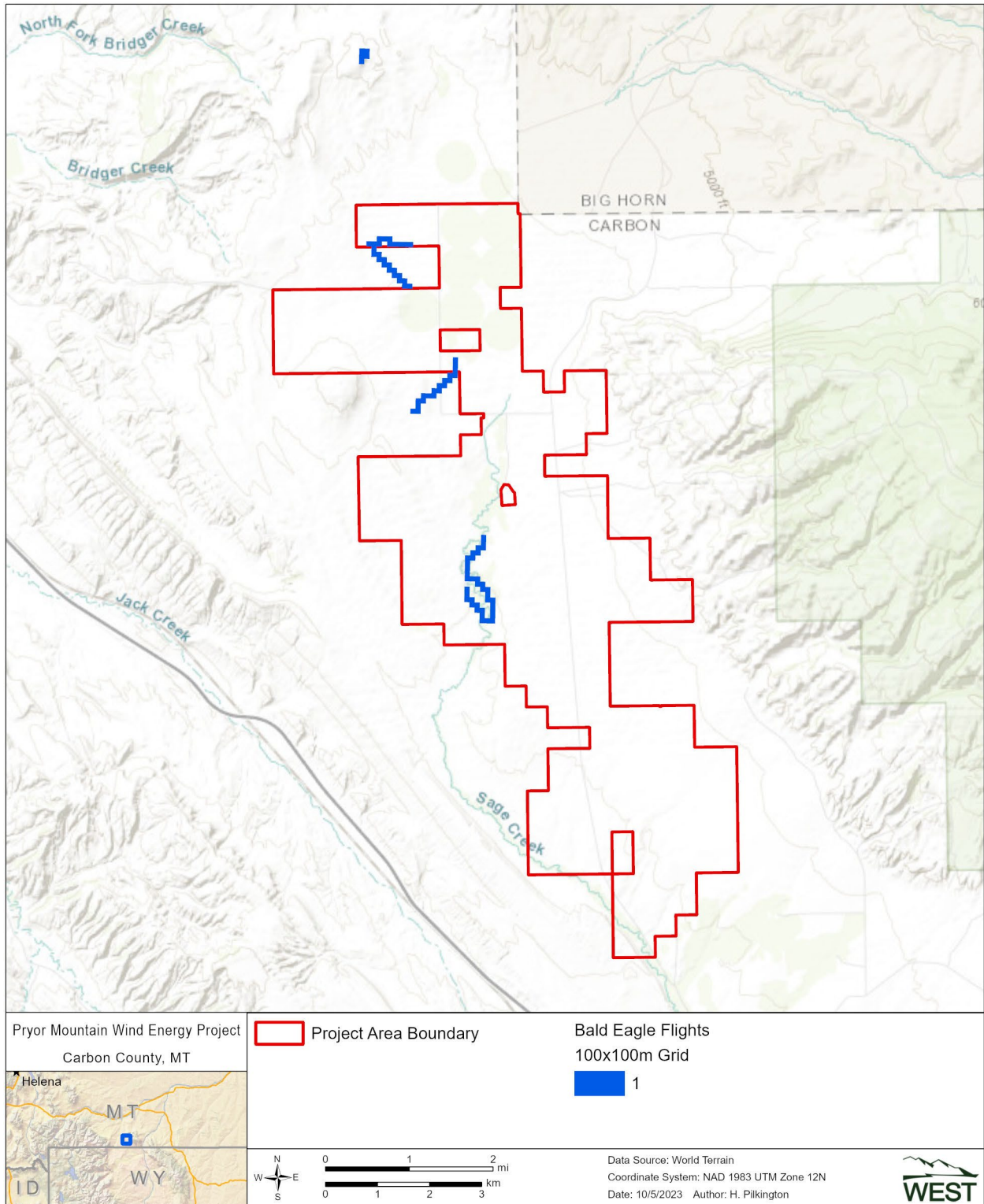
contained within each 100 by 100-m cell within the grid (Figures 9a and 9b). A geographic information system layer showing the viewshed within the 800-m survey plot and a 2-km buffer surrounding the fixed-point bird use point was overlain on the map and used to identify all areas greater than 25 m above ground level (AGL) that were visible from bird use plots.



**Figure 8. Eagle use (both bald and golden eagles combined) by point during eagle use surveys at the Pryor Mountain Wind Energy Project from June 2, 2015 – May 28, 2016, and June 16, 2016 – May 22, 2017.**



**Figure 9a. The 100 by 100-meter cells containing mapped golden eagle flight paths recorded during fixed-point large bird use surveys within the Pryor Mountain Wind Energy Project from June 2, 2015 – May 28, 2016, and June 16, 2016 – May 22, 2017.**



**Figure 9b. The 100 by 100-meter cells containing mapped bald eagle flight paths recorded during fixed-point large bird use surveys within the Pryor Mountain Wind Energy Project from June 2, 2015 – May 28, 2016, and June 16, 2016 – May 22, 2017.**

## *Conclusions*

Overall eagle use was relatively consistent across both years of surveys (0.10 golden eagles/800-m plot/60-min survey in year one and 0.09 in year two) and (less than 0.01 bald eagles/plot/60-min survey in both years). A total of 97 flight min were recorded within 800 m and below 200 m for golden eagles and four bald eagle flight mins were recorded within 800 m and below 200 m. However, based on the final turbine layout, only nine of the 12 survey plots have overlap with a 1 km buffer of turbine locations and there were 54 flight min recorded within 800 m and below 200 m for golden eagles and 4 bald eagle flight mins recorded within 800 m and below 200 m from the nine survey plots. Survey plots 1, 2, and 3 are no longer located within 1 km of turbine locations. Survey plots 2 and 12 had the highest golden eagle use when considering both years of studies, followed by plots 3 and 5 (Figure 8). Survey plot 2 is in an area that has more abrupt topography relative to other areas within the Project. Survey plot 12 is located at the southeastern end of a ridge, in the vicinity of a drainage feature, and near a location where golden eagles were commonly observed perching. Survey plot 3 also has relatively more topography than other portions of the Project and is the closest station to an occupied golden eagle nest. Survey plot 5 is in the vicinity of some ridges that extend to the east off of the Black Butte topographic feature and is also located south of some irrigated agricultural areas. In looking at the mapped flight paths, eagles appear to generally be utilizing areas with more abrupt topographic features, which are largely found on the periphery or outside of the Project boundary.

## Raptor Migration Survey

### *Methods*

Raptor migration surveys with a focus on migrating eagles were conducted at the Project in the fall of 2015 (Appendix E; WEST 2016c). The principal objective of this survey effort was to provide information regarding passage rates for eagles as well as other raptors at the Project during the peak of the 2015 fall migration season for comparison to other studies. The study was designed to follow those of typical raptor migration surveys developed by organizations such as the Hawk Migration Association of North America (HMANA). Protocols for the raptor migration surveys were provided to USFWS on September 9, 2015, and to MFWP on September 16, 2015. The migration study was also discussed at an in-person meeting with USFWS on September 24, 2015. No suggested revisions were provided by the agencies on the raptor migration survey plan.

Point counts using an unlimited viewshed were conducted from one survey point location selected to maximize visibility (Figure 10). Surveys were conducted by one observer per day for five days per week during the study period (September 21 to November 7, 2015). Survey periods were approximately eight hours per survey day, between approximately 9:00 am and 5:00 pm.

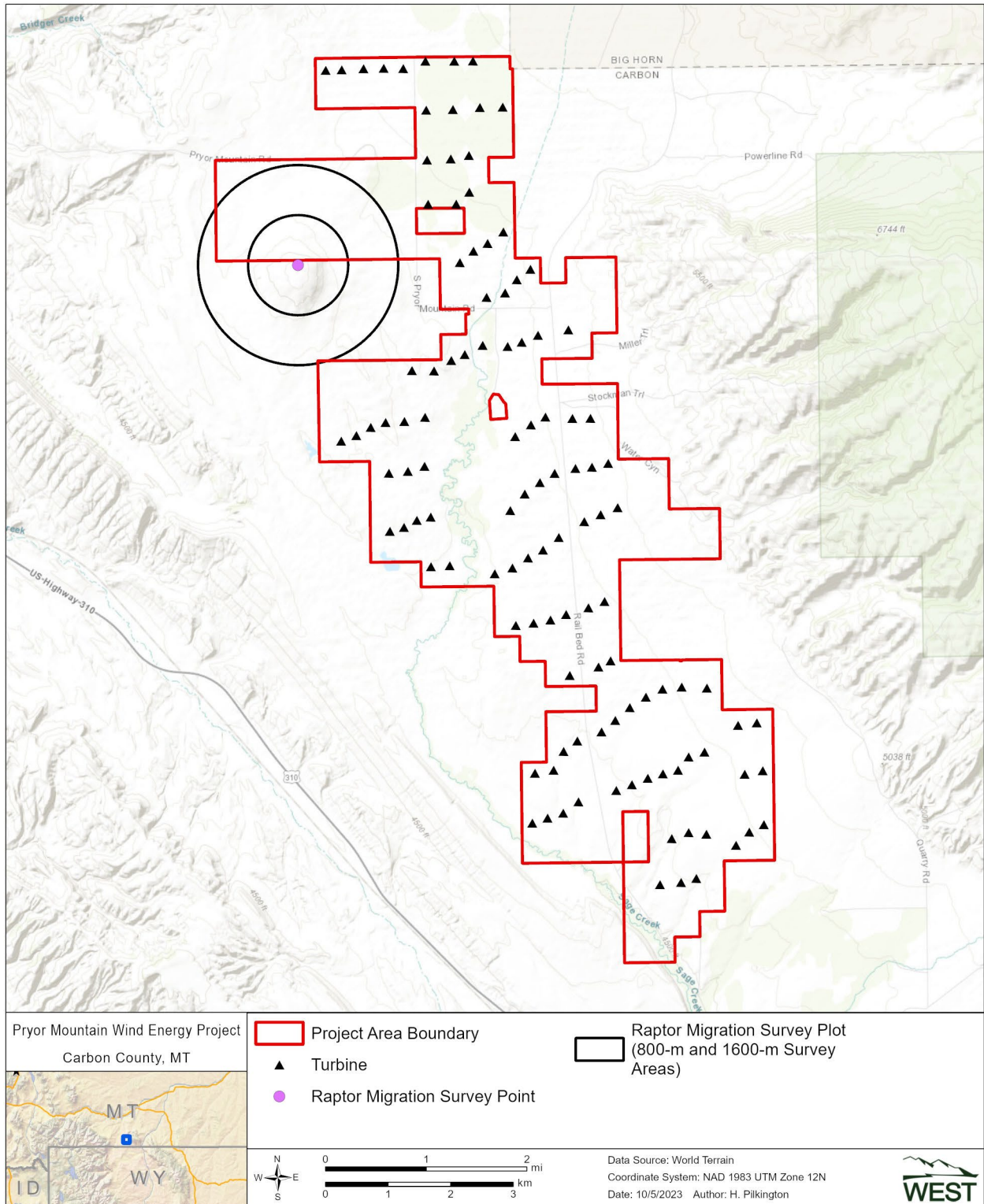


Figure 10. Location of the raptor migration survey point in 2015 at the Pryor Mountain Wind Energy Project, Carbon County, Montana.

### *Eagle Results*

Raptor migration surveys were conducted on 35 days between September 21 and November 7, 2015, resulting in nearly 280 hours of survey effort during the peak of the 2015 fall migration period (Appendix E; WEST 2016c). A total of 93 individual golden eagles within 77 groups were observed during the survey irrespective of distance from observer (Appendix E; WEST 2016c). It is possible that some of these observations may represent repeat observations of the same individuals. Golden eagle was the only species of eagle observed during the migration surveys. Overall, mean golden eagle use during the migration survey was approximately 0.33 golden eagles per hour (irrespective of distance from observer). Daily temporal activity patterns among golden eagles varied during the migration surveys (Appendix E; WEST 2016c). Most eagle observations occurred between the hours of 1100 and 1600 during the study period. Based on data from the migration survey, overall golden eagle use was highest on October 6 (n=12 observations) followed by October 7 and October 8 (n=7, both days respectively, Figure 11). The next highest days were September 21, October 15, October 21, October 30 and November 5 (n=5, all days respectively, Figure 12). The number of observations per hour, regardless of distance from the observer, was higher in October (0.37) compared to September and November (0.27 and 0.28, respectively; Table 6).

**Table 6. Summary of golden eagles per survey hour per month observed (regardless of distance from observer) at the Pryor Mountain Wind Energy Project during raptor migration surveys from September 21 and November 7, 2015.**

Month	Hours of Survey	Golden Eagles		Obs per hour
		Obs	Groups	
September	64	17	17	0.27
October	176	65	51	0.37
November	40	11	9	0.28

Flight paths were recorded for golden eagle observations (Figure 12). When first observed during the eagle migration surveys, golden eagles were recorded as flying in the rotor swept height (RSH; 25 m to 150 m above ground level) during approximately 57.8% of the observations (irrespective of distance from observer). Flight height was not recorded for two individual golden eagles within one group that were estimated to be 5,000 m away from the observers. During initial observation, golden eagles recorded during the eagle migration surveys exhibited a mean flight height of 130.61 meters (m) above ground level (AGL) and a median flight height of 75.00 m AGL.

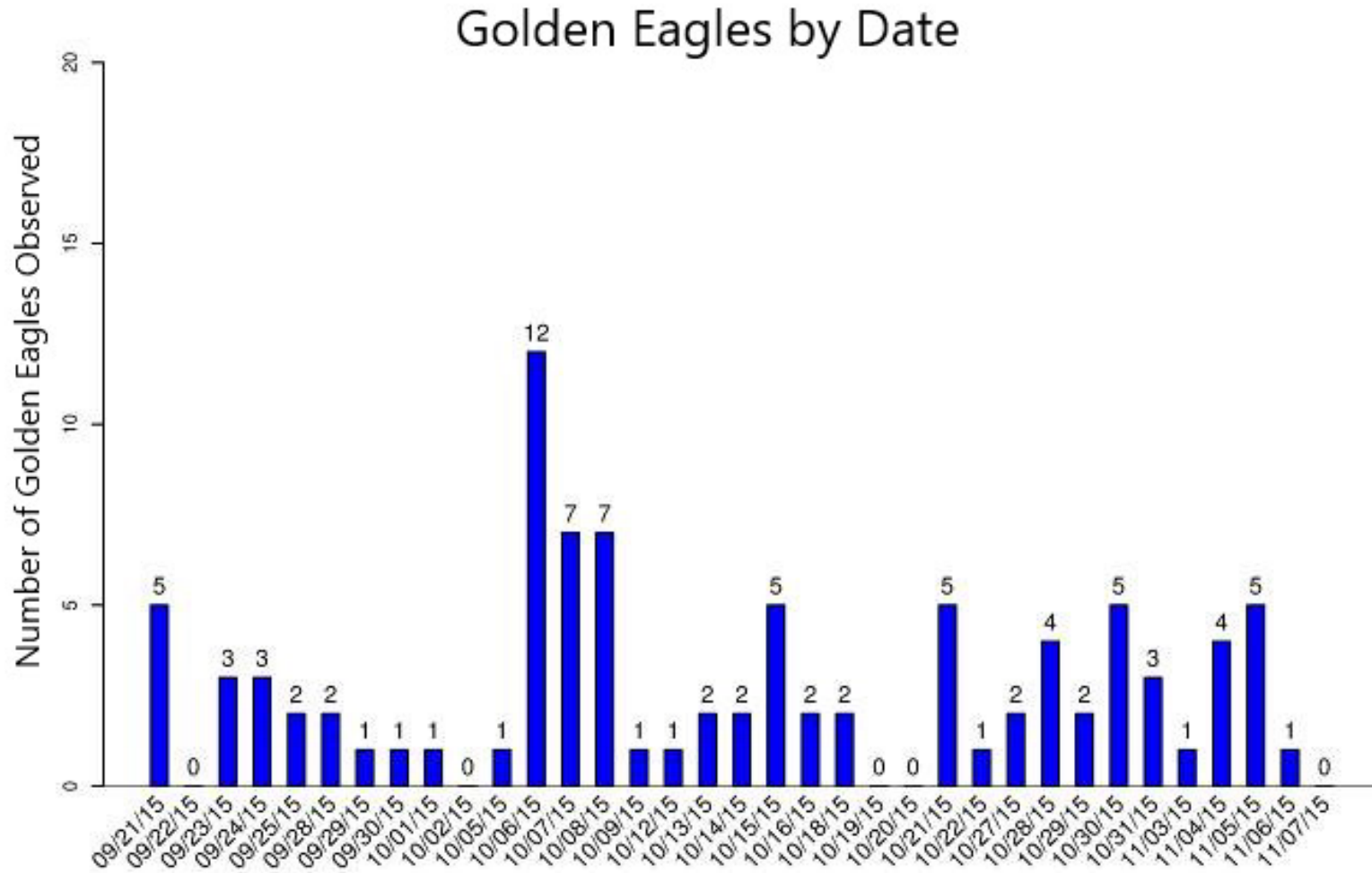
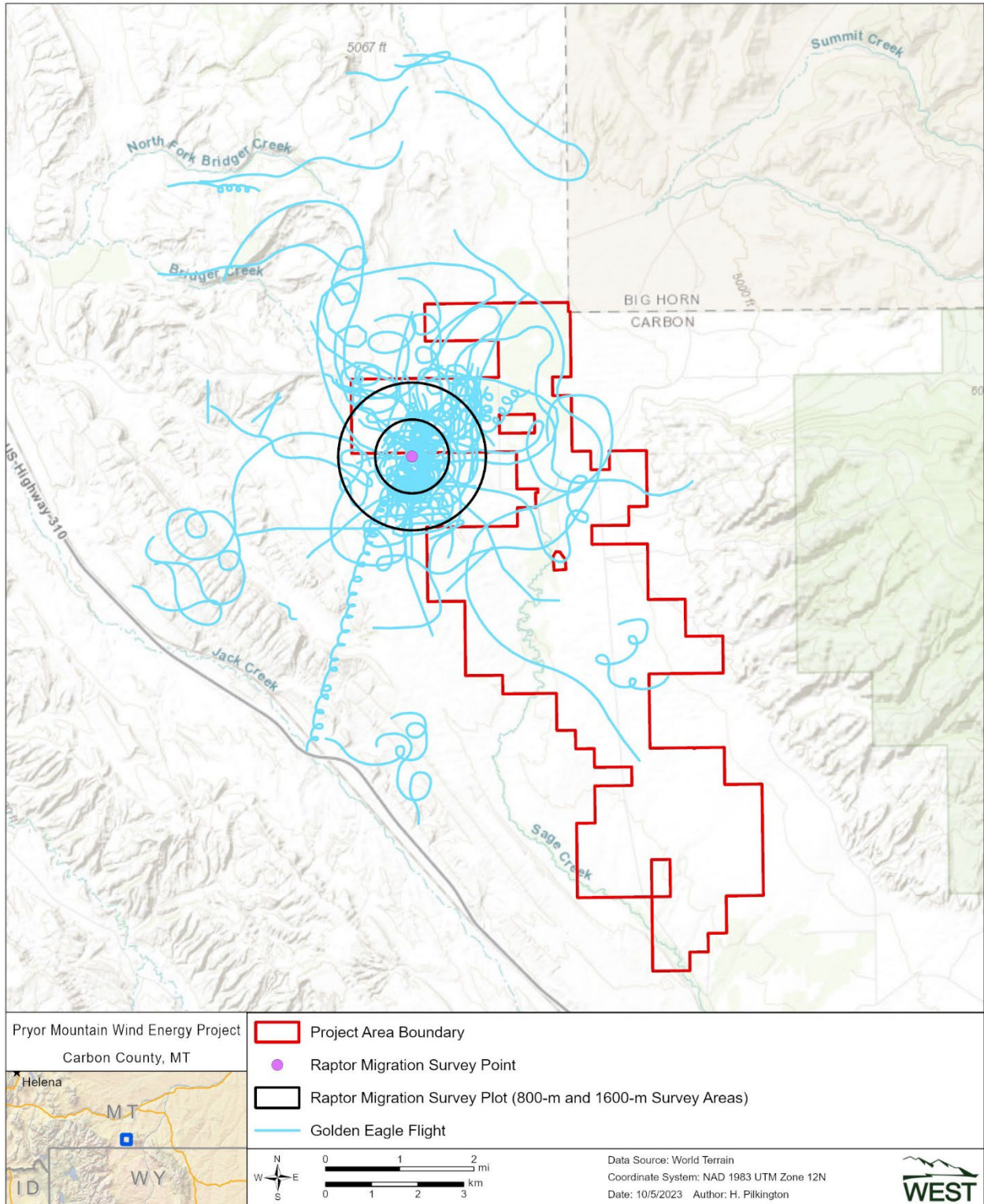


Figure 11. Total number of golden eagle observations by survey day during eagle migration surveys at the Pryor Mountain Wind Energy Project from September 21 – November 7, 2015.



**Figure 12. Golden eagle flight paths recorded at the Pryor Mountain Wind Energy Project during eagle migration surveys from September 21 to November 7, 2015.**



## Conclusions

The eagle migration surveys indicate that eagles do migrate within and in the vicinity of the Project area, which is consistent with GPS-telemetered golden eagle data from the USFWS (USFWS, Region 6, Migratory Bird Management Office pers com). Results of the eagle migration surveys conducted within the Project area in 2015 suggests that golden eagle use within the Project area during the peak of migration is moderate relative to other sites with comparable data in the Rocky Mountain and Desert Southwest Regions available through HMANA. The passage rates for golden eagles at the Project were considerably lower than the other sites in Montana (except for MPG Ranch) that are historically known to experience high levels of golden eagle migration as well as the Commissary Ridge site in Wyoming. It should be noted that the migration surveys represent a sample of data collected during the fall migration period of 2015 and it is acknowledged that it is possible that migration passage rates may differ during the spring migration season or across years.

The eagle migration survey location was on the top of the Black Butte topographic feature, which provides the greatest topographic relief in the Project area. Evaluation of spatial patterns from the eagle migration survey is limited given that only one observation location was sampled. Although mapped flight paths are scattered throughout the viewshed of the eagle migration survey location including areas within the Project, the mapped flight paths recorded during the eagle migration survey appear to support the conclusion from the eagle use surveys that in general, eagles appear to be utilizing areas with more abrupt topographic features.

## Prey Base Surveys

### *Baseline Prey Base Information*

Concentrated prey resources that were mapped within the Project area before construction include prairie dog colonies. Prairie dog colonies within the Project were mapped by visiting all areas within the proposed Project boundary and mapping the locations of colony boundaries in the field using a handheld Trimble GPS unit and then converting the data from the GPS into shapefiles. A total of five prairie dog colonies (four occupied and one unoccupied) were mapped in 2016 within an earlier version of the Project area (Figure 13). Of the four occupied colonies, the smallest colony (approx. 0.5 acres) was identified as a white-tailed prairie dog colony (*Cynomys leucurus*). The three remaining occupied colonies consisted of black-tailed prairie dogs (*Cynomys ludovicianus*) and were approximately 105.5 acres, 87.3 acres, and 11.0 acres in size. The white-tailed prairie dog colony was designated as containing a high density of burrows throughout the colony, and the black-tailed colonies were designed as having high burrow density for the 105.5-acre colony, medium burrow density for the 87.3-acre colony, and low density for the 11.0-acre colony. The unoccupied colony was approximately 1.6 acres in size and was identified as having a medium burrow density.

Aerial greater sage grouse lek surveys were completed for the Project in April of 2014 by Wenck and Associates, targeting known leks and a search for any new leks. No new leks were observed and two known leks located within 4-miles of a previous Project layout were determined to be active. The locations of confirmed active greater sage-grouse leks based on 2020 MFWP data

are shown in Figure 13. MFWP surveyed the leks in 2020. The maximum male count on the Bowler Lek was 14 males. The maximum male count on the Sage Creek Lek was 17 males.

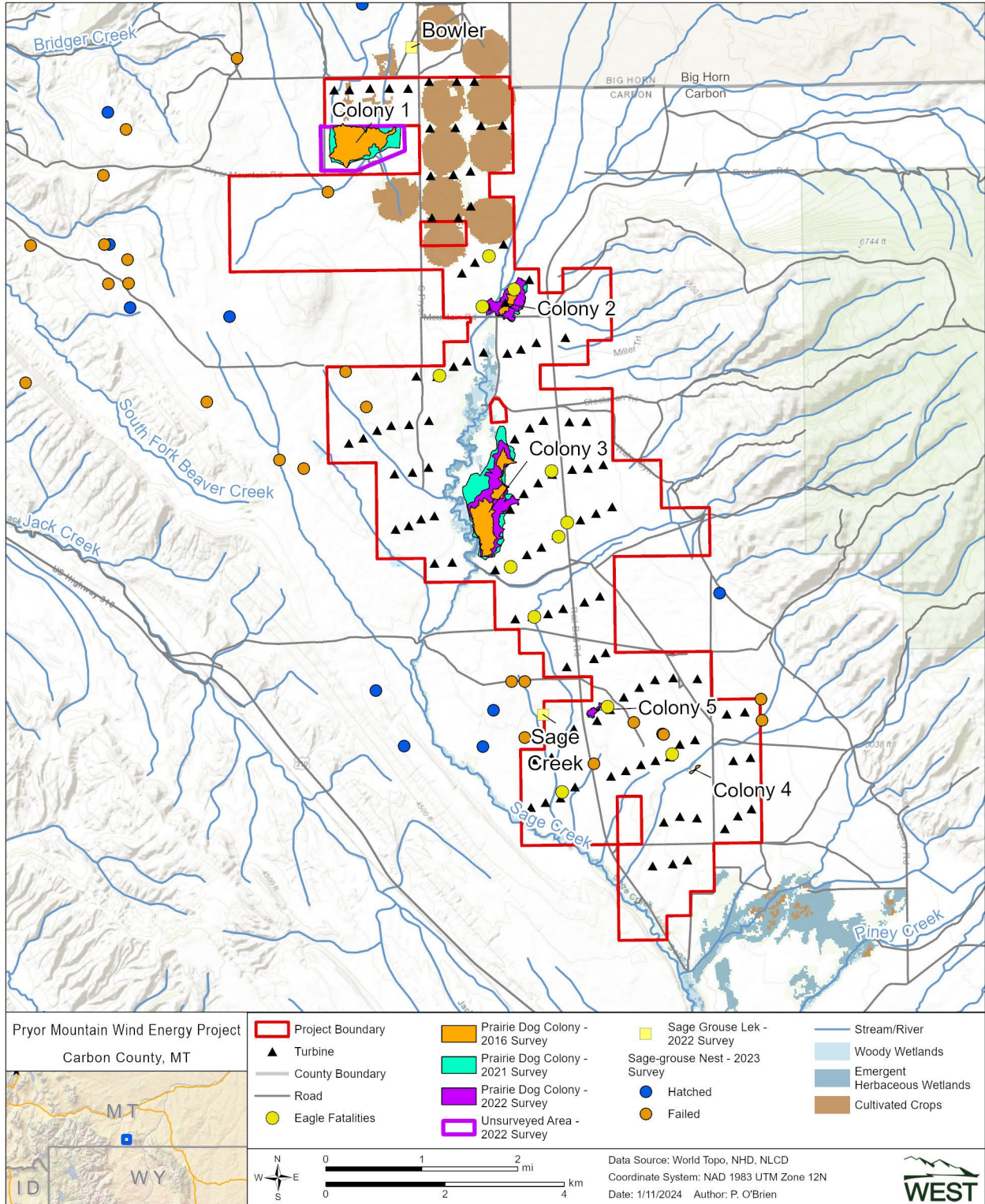
As an index to abundance, big game and domestic livestock species (which provide a potential prey source for eagles especially in the form of carrion) were counted as an instantaneous count in a standardized fashion prior to initiation of the small bird survey. Surveys were carried out year-round at all twelve bird use survey locations situated throughout the Project. Domestic livestock observations in the Project area included cattle and horses. Cattle are primarily present during the winter season and calving occurs outside the Project area. Big-game observations included mule deer and pronghorn antelope (Appendix F; WEST 2016b; WEST 2017). While big game occur within the Project area, we are not aware of any designated crucial ranges for big game within the Project area.

#### *Operational Prey Base Information*

WEST conducted post-construction prey base surveys for the Project in August 2021 and December 2022, in response to eagle mortalities documented at the Project. For the 2021 prey base surveys, a review of existing Project data (also summarized in baseline survey sections above), and a two-day site visit took place to further assess prey attractants throughout the Project, specifically at turbines with documented eagle fatalities. The 2021 and 2022 prey base assessments also included an updated prairie dog colony mapping effort.

Prairie dog colonies surveyed in 2016 were surveyed again in 2021 and 2022, and any new colonies were also documented. Colony 1 grew from 105.5 acres in 2016 to 148.0 acres in 2021 and was not surveyed in 2022. Colony 2 grew from 11.0 acres in 2016, to 54.3 acres in 2021, and to 60.0 acres in 2022. Colony 3 grew from 87.3 acres in 2016, to 250.7 acres in 2021, and shrank to 166.5 acres in 2022. Colony 5 was recorded as 1.6 acres in 2016 and was not active thereafter. Colony 4 was found in 2021 at 5.3 acres and had shrunk to 0.1 acres in 2022 (Figure 13).

Greater sage-grouse research being conducted at the Project by WEST, the University of Wyoming, and others resulted in the identification of 54 sage-grouse nests in 2021 and 43 nests in 2022 (Brown 2022, Brown 2023). Nests were primarily concentrated on the western edge of the Project in 2021 and 2022, with additional concentrations of nests in the southeastern region of the Project during both years. Nesting locations generally corresponded to concentrations of lek locations. Sage-grouse females equipped with geolocation transponders were recorded in high concentration across, the northern, western, and southern regions of the Project in 2021, although use was recorded throughout all regions of the Project to a lesser degree. Tracking patterns were similar across the Project in 2022. Twenty-four avian predator monitoring points were selected for their proximity to sage-grouse lek and nest locations. Across the 24 predator points, six golden eagles were recorded in 2021, while one bald eagle and 25 golden eagles were recorded in 2022.



**Figure 13.** Location of prairie dog colonies mapped during pre-construction surveys (2016), post-construction surveys (2021), the current distribution of prairie dog colonies (2022), as well as known greater sage-grouse leks located within 0.5 miles, greater sage-grouse nest locations (Brown 2022, 2023), and eagle fatalities at the Pryor Mountain Wind Energy Project in Carbon County, Montana.

## ***Post-Construction Monitoring Studies***

### **Operational Eagle Use and Informed Curtailment**

To reduce the risk of eagle collisions at the Project, PacifiCorp decided to perform human-informed curtailment seven months after commercial operations began. At PacifiCorp's request, WEST conducted one year of eagle use and informed curtailment at the Project from October 2021 through September 2022. Curtailment activities are ongoing at the Project, with completion of a second year in October 2023.

### ***Methods***

The objective of the eagle use surveys is to collect data to inform spatial and temporal use by eagles throughout the Project. Three permanent monitoring points were established across the Project to maximize survey coverage (Figure 14). One point is surveyed every day, 7 days per week, for four hours. Points are rotated daily with the daily start time changing to account for varying degrees of eagle use throughout daylight hours. The survey area consisted of all flight paths and observations for eagles recorded within a visible distance and reported within a 2,500-m (16,400-ft) viewshed. Informed curtailment is conducted concurrently with the 4-hour eagle use surveys. Curtailment data are recorded daily by zone and total time curtailed. Turbines are grouped into 26 zones of two to seven turbines, and all turbines within the individual zones are curtailed simultaneously. The surveyors initiate zone curtailment if:

- Eagle(s) are observed within 800 m of a turbine or zone of turbines.
- Eagle(s) flight paths are reasonably likely to cross through or near turbine and/or zones based on observed heading or assumed trajectory.
- Eagle(s) are observed actively foraging within or near turbines or zones of turbines.
- Any other behavior is observed in which the surveyor believes it is reasonably likely that an eagle was moving toward a potential collision with a turbine.
- The surveyor monitors eagle activity while the bird is within sight or until a higher priority risk is observed. The surveyor releases the turbines from curtailment when the eagle risk is reduced to an acceptable level as determined by the biologist's professional judgement and after at least 15 minutes had passed.

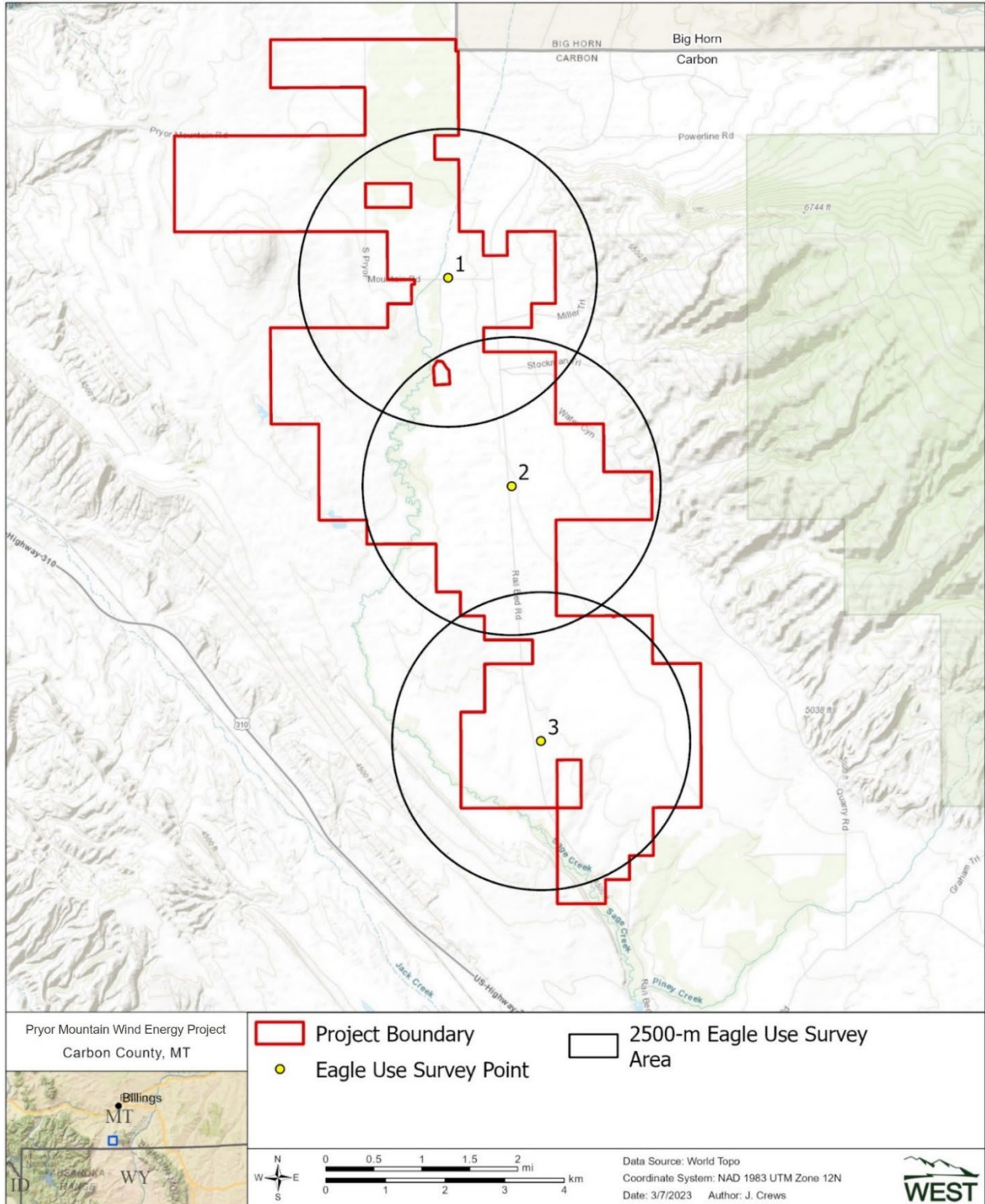


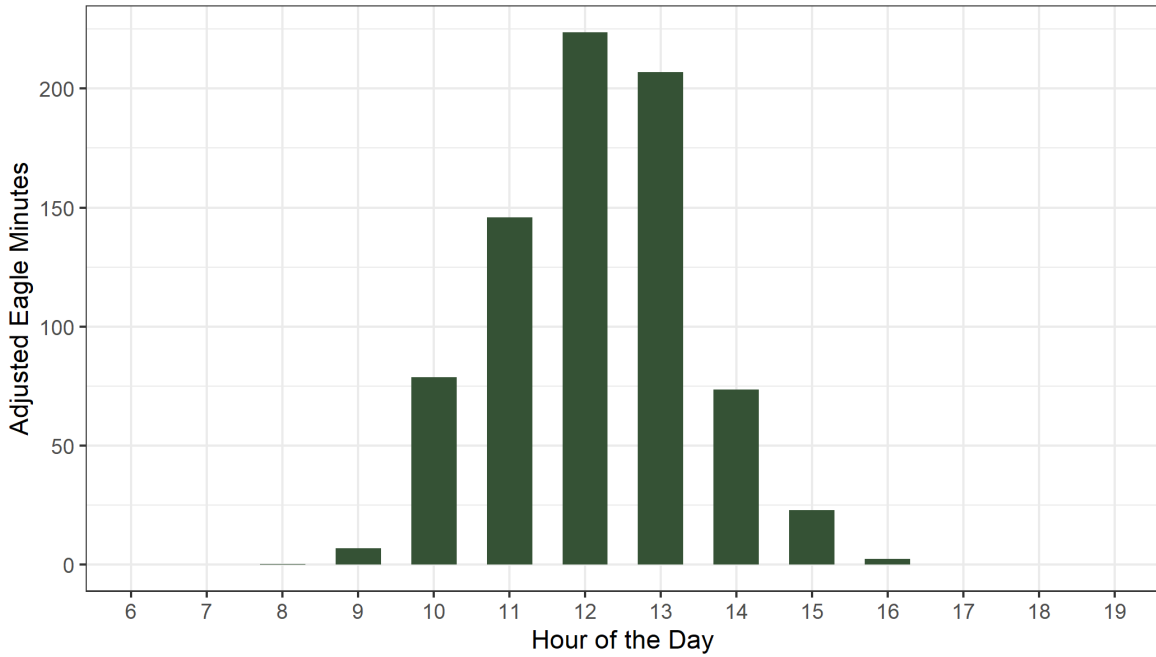
Figure 14. Location of the eagle use and informed curtailment survey points at the Pryor Mountain Wind Energy Project in Carbon County, Montana.

## Results

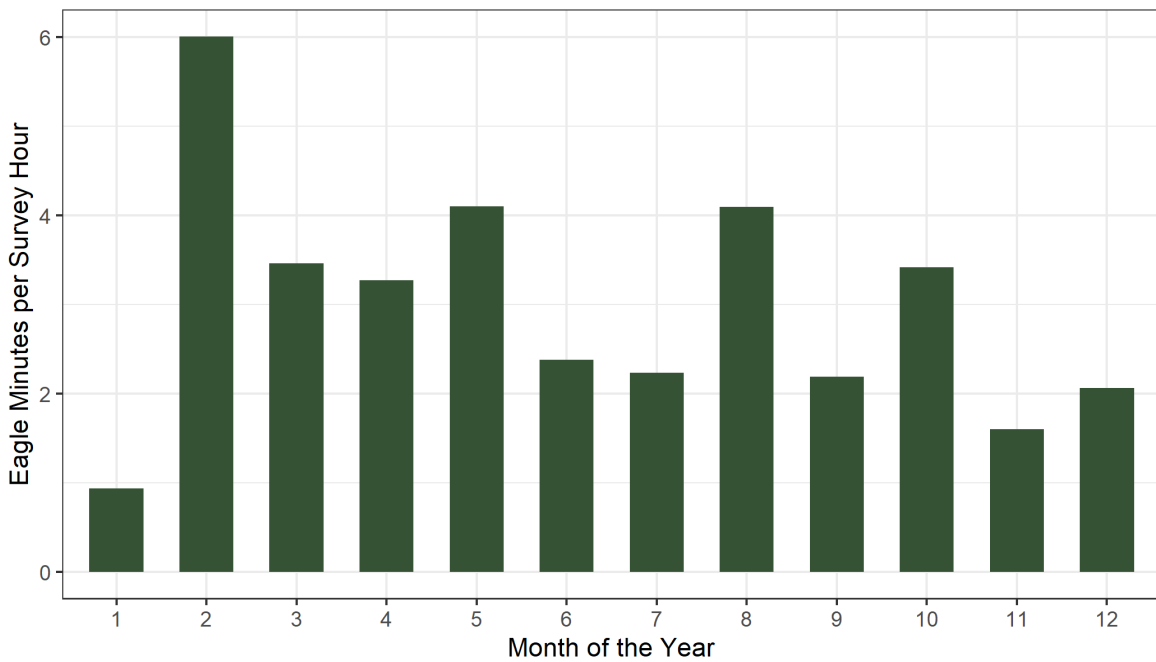
Surveyors conducted approximately 1,716 hours of eagle use survey, resulting in approximately 4,859 eagle observation minutes (i.e., 81 hours) and 581 hours of turbine curtailment. Eagle observations were spread throughout the survey period with peak eagle minutes occurring between 1200 hours and 1300 hours (Figure 15, Table 7). Eagle flying minutes followed a similar pattern with most flying minutes recorded between 1000 hours and 1500 hours. Standardized data demonstrates a similar pattern with most eagle minute and flight minutes per survey area recorded from 1000 through 1400 hours and peak minutes recorded between 1200 and 300 hours (Table 7). Eagle minutes per survey hours were relatively distributed across months with February recording the greatest number of eagle minutes per survey hour (Figure 16). Eagle flights paths were relatively distributed across the Project with a slightly greater density of eagle flights per square meter on the western edge of the Project (Figure 17).

**Table 7. Summary of eagle use by hour of the day at the Pryor Mountain Wind Energy Project in Carbon County, Montana.**

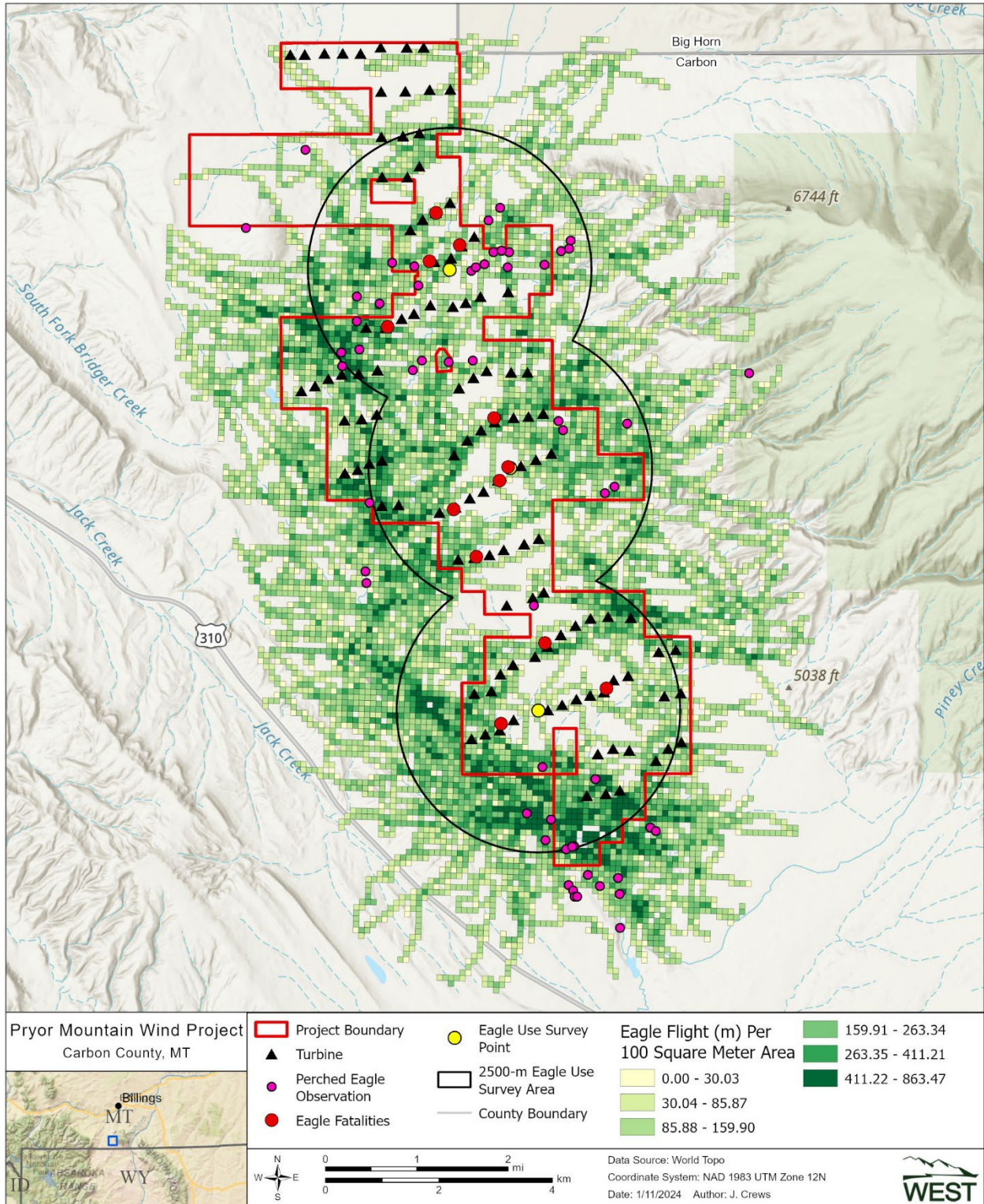
Hour of Day	Survey Hours	Eagle Observations	Eagle Observations/ Survey Hour	Eagle Minutes	Eagle Minutes/ Survey Hour	Eagle Minutes Flying	Eagle Minutes Flying/Survey Hour
0600	0.50	0	0	0	0	0	0
0700	1.45	0	0	0	0	0	0
0800	13.60	6	0.05	44	0.35	17	0.13
0900	80.33	12	0.56	149	6.98	40	1.87
1000	212.15	58	7.17	637	78.77	334	41.30
1100	317.38	96	17.76	789	145.96	551	101.93
1200	382.97	110	24.55	1,002	223.67	740	165.19
1300	344.57	117	23.50	1,030	206.87	832	167.10
1400	215.67	66	8.30	586	73.67	480	60.34
1500	109.92	35	2.24	357	22.87	246	15.76
1600	30.93	8	0.14	130	2.34	78	1.41
1700	4.82	0	0	60	0.17	4	0.01
1800	1.08	0	0	60	0.04	1	<0.01
1900	0.23	0	0	15	0	0	0
<b>Overall</b>	<b>1,715.60</b>	<b>508</b>		<b>4,859</b>		<b>3,323</b>	



**Figure 15. Total eagle minutes recorded by survey hour at the Pryor Mountain Wind Energy Project in Carbon County, Montana.**



**Figure 16. Eagle minutes observed by survey hour across months at the Pryor Mountain Wind Energy Project in Carbon County, Montana.**



**Figure 17. Eagle flight paths standardized (meters of flight per 100 square meter grid), perched locations, and eagle fatalities at the Pryor Mountain Wind Energy Project in Carbon County, Montana.**



### Post-Construction Eagle Mortality Monitoring

At PacifiCorp's request, WEST has conducted two years of post-construction eagle mortality monitoring (PCM) for the Project, from January 2021 through December 2022, with a third year of PCM ongoing with completion in December 2023.

#### *Methods*

Surveys included all of the turbines within the Project area (114 turbines). The search areas consisted of a 100-m circular design (328-ft) in 2021 and an 80-m (262-ft) circular design in 2022. All search areas were searched via an eagle scan methodology centered around the turbine base. Searches were conducted once per month, and searches were scattered throughout the day, so that search areas were surveyed throughout all daylight periods. Searches looked for eagle mortalities by establishing four unmarked points in the cardinal directions from the base of the turbine and proceeding to scan in each direction for approximately three minutes. The searcher scanned the maximum distance of the radius of the search area before moving on to the next cardinal direction.

Searcher efficiency trials (SEEF) were also conducted for the Project during each season to estimate the probability that searchers detected the eagle mortalities. This effort accounted for any biases associated with changes in conditions such as vegetation, topography, weather (e.g., rain and/or cloud cover, muddy search area), and searcher variability that could have affected SEEF. Up to 15 surrogate carcasses were placed in search areas each season. A bias trial administrator placed large bird surrogates ahead of scheduled mortality searches without informing the searcher. The large bird surrogates used for the trials were Turkey Skinz wrapped around turkey decoys.

#### *Results*

There have been 12 eagle mortalities recorded at the Project since commercial operation of the facility began (Figures 13 and 17). Seven eagles were found at the Project in 2021, five were found outside of scheduled searches and two were found during scheduled searches. Three eagles were found during the 2022 survey year with all three eagles being reported outside of scheduled searches. As of August 30, 2023, two eagles have been reported at the Project during the 2023 survey year, with both eagles being reported outside of scheduled searches. SEEF trials resulted in 81% searcher efficiency in 2021 and 90% in 2022.

## **8. Avoidance and Minimization Measures Implemented for the Project**

### ***Project Siting***

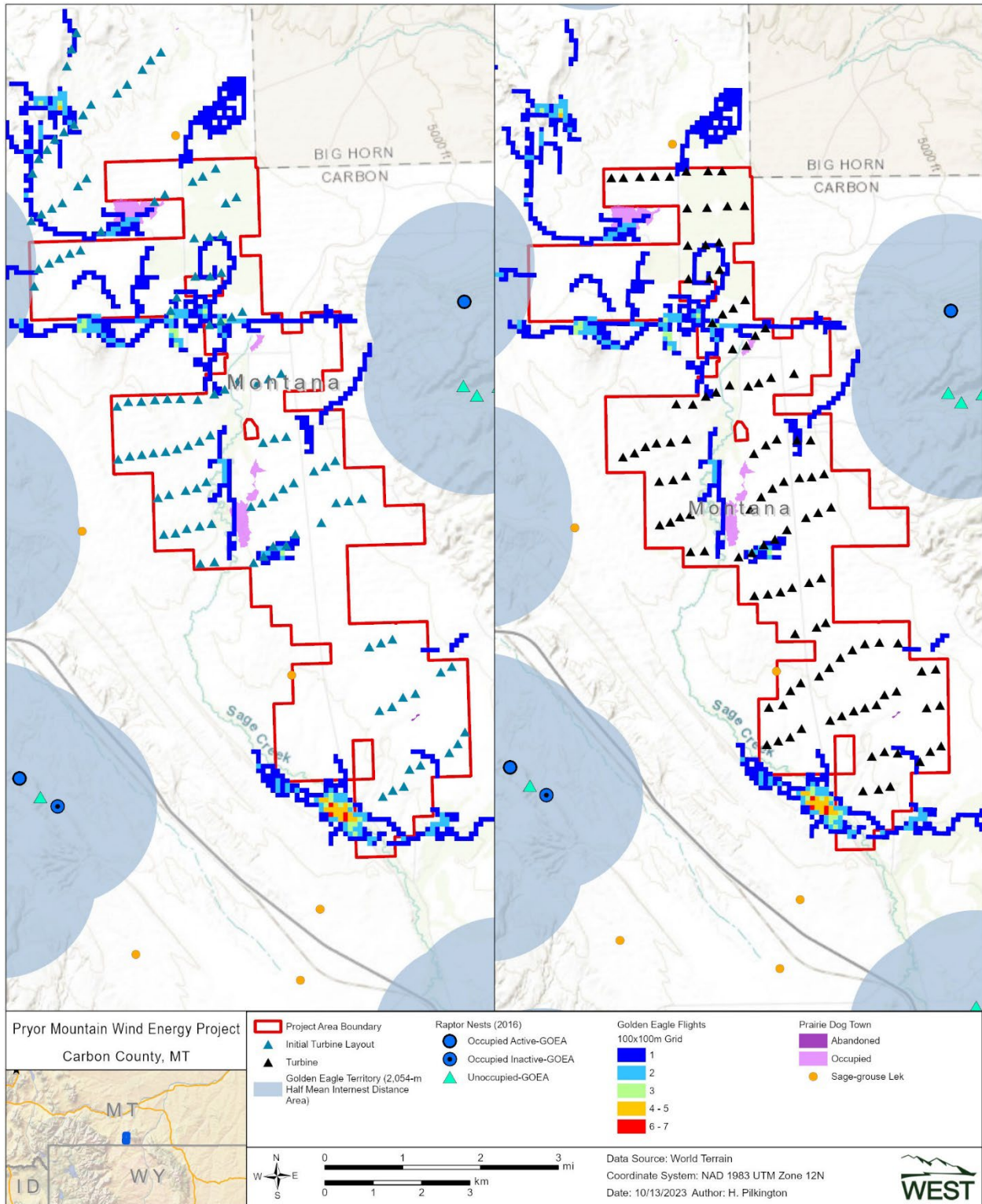
Potential impacts to wildlife were considered throughout development of the Project. Leases were initially obtained for the Project in 2008-2010, and the initial area under consideration for development overlapped with important habitats that contained high densities of breeding sage-grouse (LeBeau and Heath 2016). In consultation with the MFWP and the Wyoming Game and Fish Department (WGFD), the Project was moved away from these high-density sage-grouse breeding areas to the current location east of Highway 310. In general, the Project is in an area that contains little topographic relief compared to the surrounding areas, and there are relatively

little suitable nesting substrates for eagles in the Project area, this is supported by the lack of any eagle nests observed within the Project area.

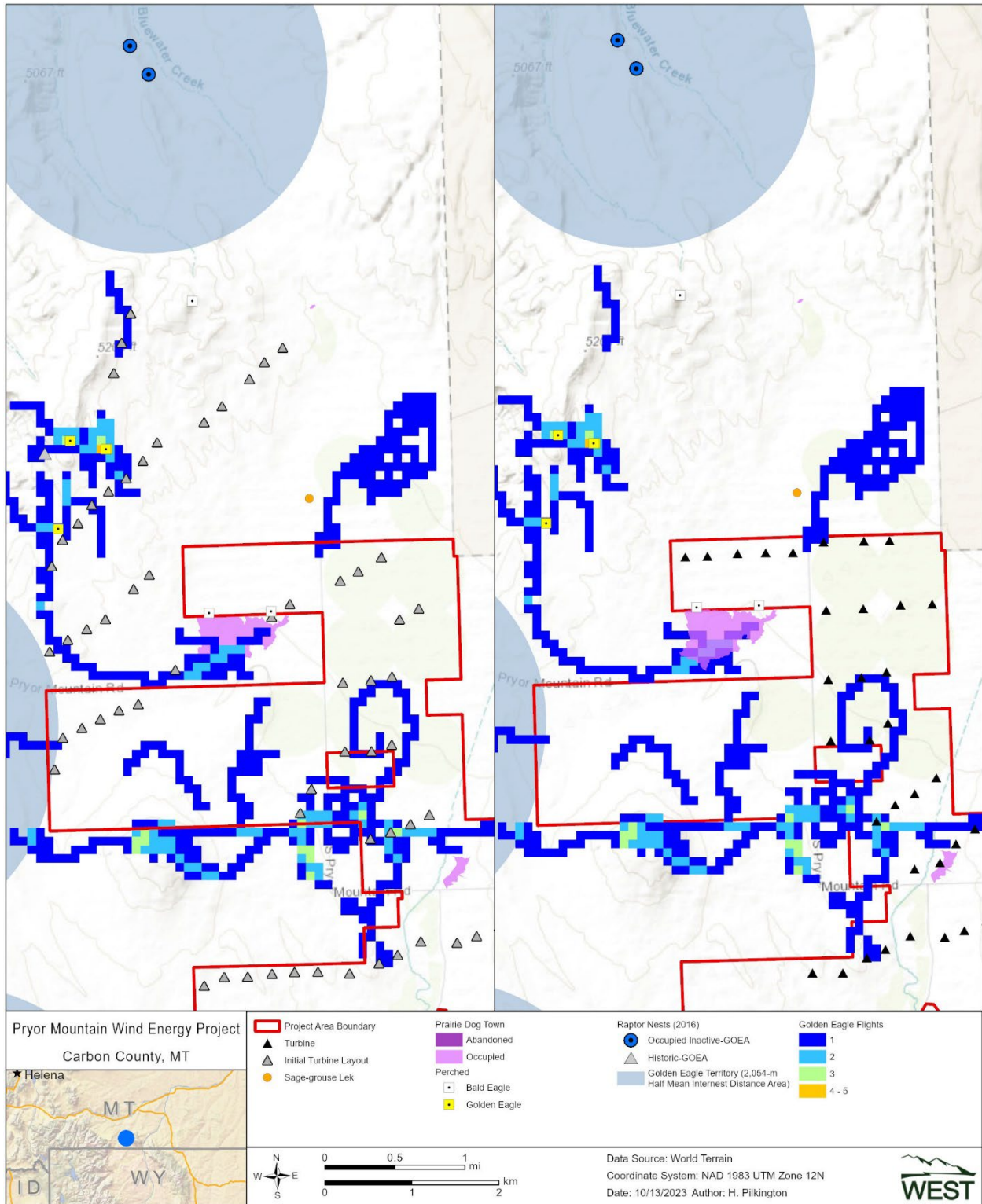
The Project was originally planned to have up to 120 wind turbines (Figures 18a – 18d). While the initially proposed Project included 120 wind turbines, subsequent commercially related factors, as well as identified resource concerns (including eagles), resulted in a reduction of six turbines, leaving 114 proposed turbines in total. Reducing the number of wind turbines at the Project has reduced the potential risk to eagles by decreasing the size of the Project's hazardous area, reduced the amount of habitat that will be impacted by the Project, and allowed for siting decisions to be made regarding the locations of the remaining turbines. In coordination with the USFWS, the locations for the final 114 turbine layout were informed based upon the results of the site-specific wildlife baseline surveys and specific areas identified as having a higher potential for risk to eagles (Figures 18a – 18d). While only partially illustrated by the depicted layout changes, during development of the initial turbine layout, PacifiCorp intentionally avoided placing turbines in the vicinity of Black Butte (which has the best wind resource in the area) as it was known that eagle activity was greater in the vicinity of the butte.

#### Eagle Nests

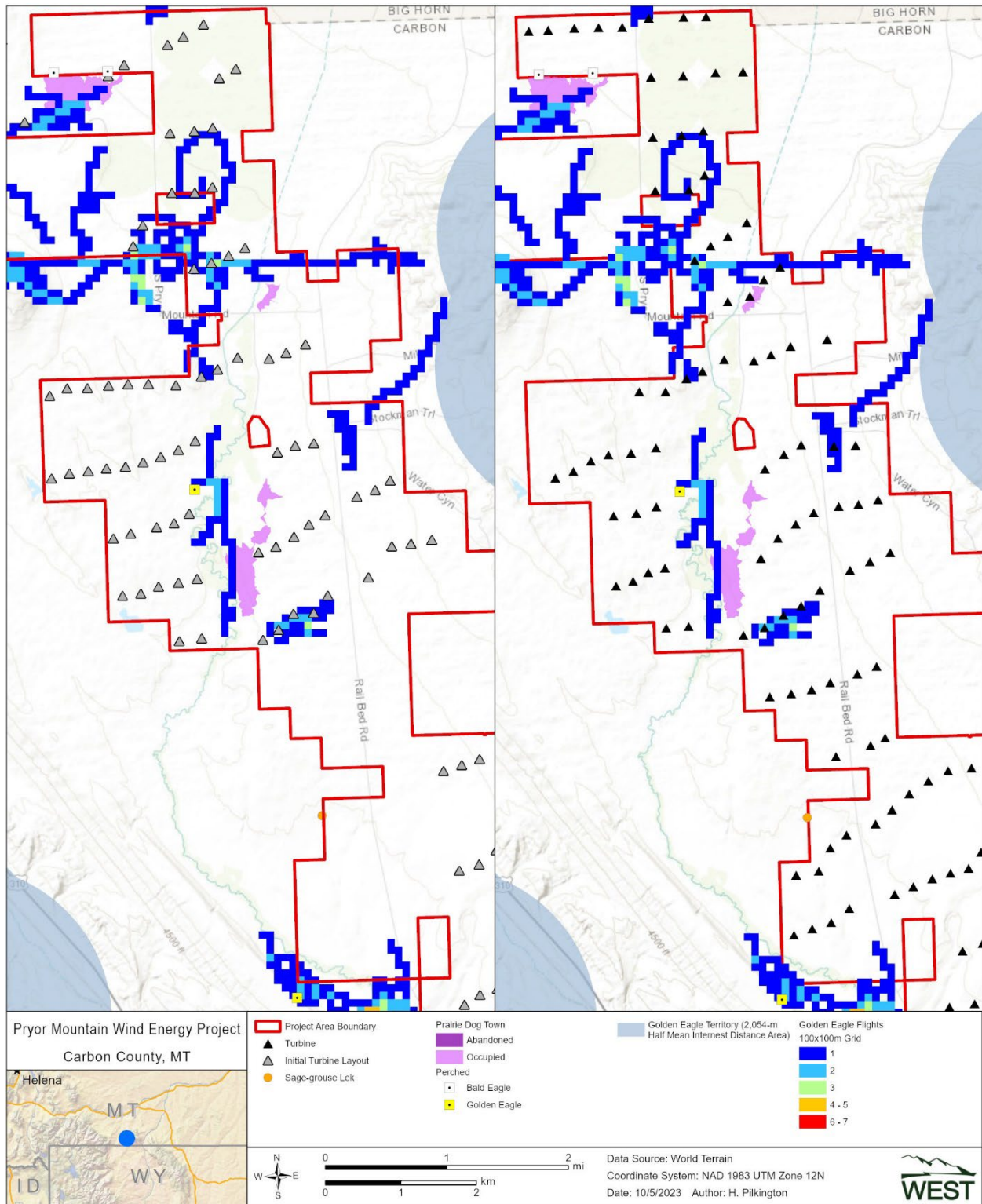
The locations of eagle nests in the vicinity of the Project were considered in relation to the turbine layout. In accordance with pre 2020 versions of the USFWS Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities guidance document, there are no turbines located within  $\frac{1}{2}$  mean inter-nest distance of an identified golden eagle nest based on the 2016 nest dataset for the Project. In May of 2020, the USFWS Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities guidance document, replaced the  $\frac{1}{2}$  mean inter-nest distance with a 2.0 siting recommendation from occupied eagle nests. There is one known/historic eagle nests located within 2.0 miles of turbines, the nearest historic unoccupied eagle nest is located approximately 1.9 miles from the nearest turbine (Figures 18a and 18d).



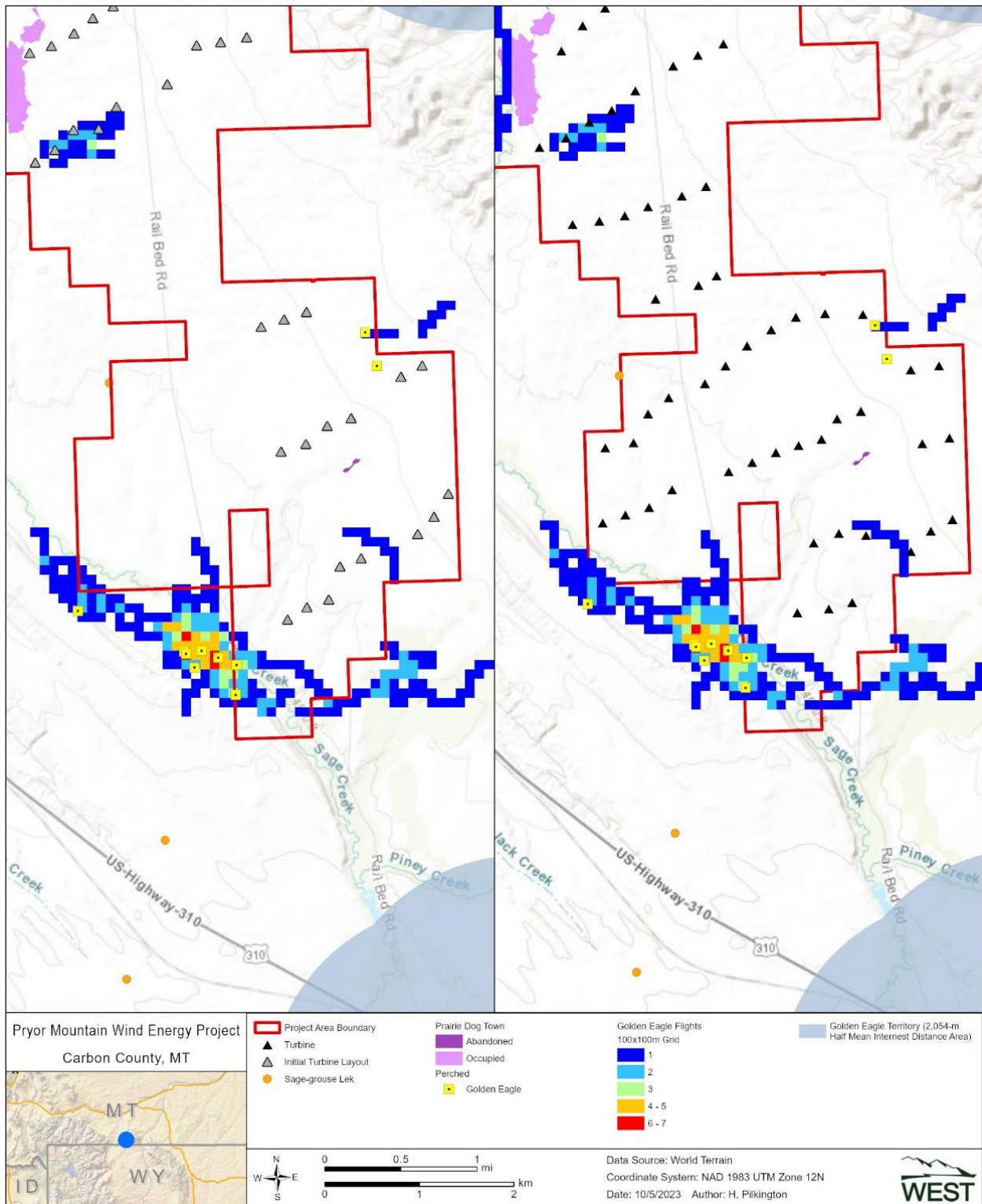
**Figure 18a. Overview of PacifiCorp’s Original 120 Turbine Layout and Final 114 Turbine Layout in Relation to Identified Golden Eagle Nests and ½ the Mean Inter-nest Distance, Mapped Golden Eagle Flight paths, Sage-grouse Leks, and Mapped Prairie Dog Colonies for the Pryor Mountain Wind Project, Carbon County, Montana.**



**Figure 18b. PacifiCorp’s Original 120 Turbine Layout and Final 114 Turbine Layout in Relation to Mapped Golden Eagle Flight Paths and Perch Locations, Identified Golden Eagle Nests and ½ the Mean Inter-nest Distance, Sage-grouse Leks, and Mapped Prairie Dog Colonies for the Northern Portion of the Pryor Mountain Wind Project, Carbon County, Montana.**



**Figure 18c. PacifiCorp’s Original 120 Turbine Layout and Final 114 Turbine Layout in Relation to Mapped Golden Eagle Flight Paths and Perch Locations, Identified Golden Eagle Nests and ½ the Mean Inter-nest Distance, Sage-grouse Leks, and Mapped Prairie Dog Colonies for the Central Portion of the Pryor Mountain Wind Project, Carbon County, Montana.**



**Figure 18d. PacifiCorp’s Original 120 Turbine Layout and Final 114 Turbine Layout in Relation to Mapped Golden Eagle Flight Paths and Perch Locations, Identified Golden Eagle Nests and ½ the Mean Inter-nest Distance, Sage-grouse Leks, and Mapped Prairie Dog Colonies for the Southern Portion of the Pryor Mountain Wind Project, Carbon County, Montana.**

### Mapped Prairie Dog Colonies

The locations of mapped prairie dog colonies were also considered in relation to turbine locations (Figures 18a – 18d). Prairie dog colonies were avoided to the extent possible, as they provide a concentrated prey resource for eagles, and there have been known eagle mortalities recorded near concentrated prey resources (including prairie dog colonies) at operating wind facilities. Given the degree of siting constraints under consideration, the limited space available to build the Project, and since PacifiCorp was unaware of available science or data that indicated the distance at which setbacks reduce risk to eagles foraging within prairie dog colonies, siting decisions for the Project focused on avoiding the placement of turbines within mapped colonies to the extent possible. Turbines were sited outside of all of the mapped prairie dog colonies with the nearest turbine located approximately 15 meters away from a prairie dog colony in the northcentral portion of the Project (Colony 2; this prairie dog colony was identified as having a low burrow density throughout the colony and is approximately 10.95 acres in size; Figures 18a – 18c; refer to Section 3.5 for information on the prey base surveys conducted within the Project area). Turbines were also sited to avoid another colony (approximately 87.26 acres in size) located in the southwestern portion of the central Project area (Colony 3; to minimize potential impacts to eagles and other raptors; Figure 18a and 18d). Turbines were also sited to avoid a larger prairie dog colony (approximately 105.49 acres in size, refer to Section 3.5 above) located in the northern Project area (Colony 1; Figures 18a and 18b). The small prairie dog colony located in the center of the southern Project area was identified as an abandoned colony although turbines were sited to avoid this colony as well (Colony 4; Figure 18a and 18d). In addition, the one mapped white-tail prairie dog colony (approximately 0.45 acres in size) is no longer within the area proposed for turbine placement. As described above in the Prey Base section under item #7, additional prairie dog colony mapping efforts have occurred during operations and the Project continues to evaluate changes in prey base relative to turbines and options to avoid and minimize impacts.

### Areas with Relatively Higher Eagle Activity

Turbine siting considered areas identified to have relatively higher eagle use based on the results of the avian/eagle use surveys and turbines were moved or removed from these areas to minimize potential impacts to eagles. As mentioned above, the first iteration of the turbine layout was designed to minimize placing turbines in the vicinity of Black Butte due to known eagle activity even though the area contains the best wind resource. The three closest turbines in PacifiCorp's original 120 turbine layout located to the east of the Black Butte topographic feature, which is an area of higher topographic relief and contained relatively higher eagle use in the vicinity of survey plot 5, were removed/moved away from Black Butte and the area of increased flight paths (Figure 18a and 18b). To the northwest of Black Butte, the original PacifiCorp layout had six turbines located between the Butte and golden eagle Nest #37. This area is also in the vicinity of survey plot 3 which had relatively higher eagle use. All these turbines were moved/removed in the final layout (Figure 18a and 18b). In addition, five turbines to the south of Black Butte in the original PacifiCorp layout were moved/removed in the final layout. While due in part to greater sage-grouse concerns and timing, 19 turbines in the northwestern portion of the original PacifiCorp turbine layout were moved to the southern portion of the Project area and east of Sage Creek (Figures 18a – 18c). The northwestern portion of the Project area has increased topographic relief and mapped flight paths and contained relatively higher eagle use at survey plot #2. Relatively

higher eagle use was also observed in the vicinity of survey plot 12, however turbines were sited to the east and away from the concentrated eagle use identified in this area (Figure 6, 18a and 18d).

USFWS expressed concern over turbine siting west of Sage Creek in the central portion of the Project for which there was no eagle use survey coverage (Figure 18a - 18c). Given the lack of survey coverage in this area, there is uncertainty regarding the level of eagle abundance in this area relative to other areas in the Project. The original PacifiCorp layout had 30 turbines located west of Sage Creek in the central portion of the Project. In response to USFWS concerns and to minimize potential impacts, the Project removed/moved the five turbines located closest to Black Butte (as discussed above) as well as an additional six turbines that were removed/moved east of Sage Creek to areas containing lower eagle activity based on the baseline eagle use survey. Siting decisions in this area considered topography and available baseline data including mapped flight paths and a perch location to move turbines further away from Black Butte and the Sage Creek drainage. Given other siting constraints that were incorporated into the turbine layout, 19 turbines remain in the area west of Sage Creek with the final turbine layout (Figures 18a – 18c).

#### Greater Sage-Grouse

Greater sage-grouse are relevant to the Project's ECP as lek locations may provide a potential concentrated prey resource for eagles. Turbine siting considered the location of greater sage-grouse leks to reduce impacts to greater sage-grouse as well as to avoid and minimize potential impacts to foraging eagles. The final turbine locations were sited greater than approximately 450 meters from the Bowler Lek and approximately 520 meters from the Sage Creek lek (Figures 18a -18c). Siting turbines away from greater sage-grouse leks should help to minimize potential impacts to foraging eagles. The Project considered potential impacts to greater sage-grouse during both macro and micro scale siting efforts. Several siting constraints (including siting decisions identified herein to minimize potential impacts to eagles) influenced the final turbine layout and the Project was unable to site turbines further away from these lek locations given the other constraints and the space available to build the Project.

#### Power Line Construction

Initial development plans for the Project included the construction of an up to 12-mile 230 kV transmission line to the point of interconnect. However, final plans for the Project included only a short (approximately 60 ft) 230 kV overhead line, as the Project interconnects onsite. All above-ground collection lines were constructed following the electrocution and collision prevention guidelines developed by the Avian Power Line Interaction Committee (APLIC 2006 and 2012). Elimination of the up to 12-mile transmission line aims to further minimize potential impacts to eagles and greater sage-grouse.

#### ***Eagle Best Management Practices and Conservation Measures for the Project***

This section includes Best Management Practices (BMPs) and Conservation Measures for eagles that have been or will be implemented at the Project during development, construction, and operations. Based on the Region 6 ECP guidance, general wildlife/biological resource BMPs and Conservation Measures that have been or will be implemented for the Project have not been included below but, have been included in the Project's Bird and Bat Conservation Strategy.



### During Development

In addition to the siting decisions that were made during the pre-construction/development phase of the Project, the following BMPs and conservation measures were implemented for the Project to reduce risk to eagles. Many of these were commitments or plans that were developed prior to construction that were implemented during construction and into operations when applicable:

- Existing roads and transmission corridors were incorporated into the site development plans, to the extent possible.
- Site development plans minimized the extent of the road network needed within the Project area.
- All collection lines were buried underground except for the collection lines that are collocated with the generator lead line that runs from the collection substation to the point of interconnection substation. Aboveground transmission line support structures were constructed following the practices suggested by the Avian Power Line Interaction Committee (2006, 2012). These practices are intended to mitigate electrocution and collision risk for birds and minimize any power outage and fire risk associated with bird use.
- Wind turbine towers are un-guyed to reduce the ability of birds to perch and to reduce the risk of collision.
- No guy wires were included on permanent MET towers.
- To the extent possible, turbines and other facilities were sited to avoid, or minimize impacts to, areas containing prey concentrations (e.g., mapped prairie dog towns and sage-grouse leks) to reduce risks to foraging eagles.
- PacifiCorp would have contacted USFWS if a new/additional occupied, or in-use eagle nests was documented within 2 miles of the Project.

### During Construction

The following BMPs and Conservation Measures were implemented during construction of the Project to avoid and minimize impacts to eagles:

- All employees and/or contractors working on site received worker awareness training for identifying and responding to encounters with sensitive biological resources, including eagles.
- Vehicle speeds were limited to 25 mi per hour (mph) to avoid wildlife collisions which helped to reduce carrion that could be an attractant to foraging eagles.
- Vehicle and equipment were restricted to designated access and service roads and temporary construction areas which helped to reduce carrion that could be an attractant to foraging eagles.
- Adequate on-site waste disposal was provided to reduce attracting eagles.
- The minimum number, type, and footprint of roads needed to construct and operate the facility (e.g., 2-track versus crown-and-ditch roads) were constructed. Any roads created for Project construction that were not needed for operation were reclaimed.
- Disturbed areas were reclaimed as soon as practical following construction.

- Any wildlife carcasses or livestock that could be foraging sources for raptors found within the Project were removed as quickly as possible.
- To the extent possible, Project construction minimized cutting into hill slopes, with an objective of achieving smooth, rounded terrain, rather than sudden berms or cuts. This measure is intended to reduce attracting burrowing mammals and to reduce prey abundance.
- Gravel will be placed at least 1.5 m around each turbine foundation to discourage small mammals and reptiles from burrowing under or near the turbine base, which could act as a prey source for eagles.

### During Operations

The following BMPs and conservation measures have been and/or are implemented during operation of the Project to provide additional avoidance and minimization of risks to eagles:

- Parts and equipment which may be used as cover by prey are not stored near wind turbines.
- All carcasses of livestock, big game, and other wildlife that may attract foraging eagles within the Project Area are removed and disposed of as quickly as possible.
- The Project will contact the USFWS should any new/additional occupied or in-use eagle nests are documented within 2 miles of the Project.
- Vehicle speeds are limited to 25 mi per hour (mph) to avoid wildlife collisions which will help to reduce carrion that could be an attractant to foraging eagles. Speed limits will be enforced on all roads within the facility.
- All employees and/or contractors working on site will receive worker awareness training annually for identifying and responding to encounters with sensitive biological resources, including eagles. This will include but not be limited to:
  - A review of any biological requirements, applicable environmental laws and regulations, and consequences of non-compliance.
  - Instructions to avoid harassing or disturbing wildlife.
  - Information specific to potential state and federal special-status species that might be discovered in the Project area.
  - An overview of the distribution, general behavior, and ecology of bald and golden eagles. Personnel will be informed they are not authorized to approach, handle, or otherwise move any eagles that might be encountered.
  - Project-specific documentation and reporting expectations.
- Personnel, contractors, and visitors are instructed to avoid disturbing wildlife, especially during the breeding seasons and seasonal periods of stress.
- Adequate on-site waste disposal is maintained to reduce attracting eagles. Additionally, all personnel are instructed to remove garbage promptly at the end of each day.
- Pests and weeds are controlled as specified by county, state, or federal requirements.
- PacifiCorp uses Wildlife Incident Reporting System (WIRS) to record all wildlife fatalities discovered at the Project.
- Temporary meteorological towers were removed within one year of the start of operations.

- Roads are plowed of snow so as not to impede ungulate movement. Snowbanks can cause ungulates to run along roads, increasing the risk of colliding with vehicles. Roadside carcasses attract eagles and other raptors, subjecting them to collision as well.
- PacifiCorp has and will continue to maintain a Special Purpose Utility Permit (SPUT) and MFWP Scientific Collector's Permit for the life of the Project. These permits are necessary to legally possess any dead migratory birds, excluding eagles and federally listed species, removed from the Project site, and used in bias trials as part of eagle fatality monitoring.
- Prairie dogs are being removed from the Project, in coordination with landowners, to reduce attracting foraging eagles.
- A post-construction monitoring program will be developed in conjunction with USFWS to support permit compliance evaluations at 5-year intervals, if/when a permit is issued.
- PacifiCorp has and will continue to notify the USFWS Office of Law Enforcement and Region 6 Migratory Bird Management Office immediately, if possible, but no later than 48 hours from when a dead or injured eagle is discovered at the Project. The initial notification will include, at a minimum, the date of the discovery, location within the Project site, suspected cause of death or injury, and the unique incident tracking number assigned to the eagle. A more report with more detail about the eagle discovery will be sent within 7 days of the discovery.
- All eagle fatalities will be entered into the USFWS Injury and Mortality Reporting system within 7 days from the date of the discovery of the eagle remains.
- PacifiCorp or its third-party contractor will submit annual monitoring reports with raw data obtained from monitoring and opportunistic discoveries within 30 days of January 1 of every year the permit is valid.
- At the USFWS Region 6 MBPO's request, PacifiCorp will purchase and deploy an automated detection and turbine curtailment system to minimize eagle fatalities at the Project. The number and location of the units will be discussed with the USFWS.

## 9. Compensatory Mitigation

Consistent with current regulations for issuance of EITPs, all predicted golden eagle take for the initial phase of the Project will be offset through required compensatory mitigation. PacifiCorp will also mitigate for all golden eagle fatalities documented at the Project prior to permit issuance. A power pole retrofit plan will be developed for the Project to meet the compensatory mitigation requirements. The USFWS will use information provided by PacifiCorp and their Resource Equivalency Analysis tool to calculate the power pole retrofits required under an EITP to offset the authorized golden eagle take in the permit and unauthorized take prior to permit issuance.

## 10. Adaptive Management

As stated in the USFWS ECP Guidance, "adaptive management is a component of every EITP issued by USFWS Region 6, to companies for wind energy facilities." Further, the USFWS recommends operators work with the USFWS to develop and apply appropriate adaptive management measures in the development and operation of wind energy facilities. PacifiCorp has communicated with the USFWS and Montana agencies to identify the need for adaptive

management actions recommended to support eagle risk reduction for the Project. PacifiCorp will continue to work with the USFWS to address adaptive management measures for the Project, as appropriate (this includes continual evaluation and adaptation of the methodologies for additional data collection, the results of new information, and decisions regarding the need for changes to the conservation measures that are implemented to further reduce risk to eagles). If an EITP is issued by USFWS for the Project, it will incorporate specific actions PacifiCorp will need to implement if eagle take authorization under the permit approaches or reaches the amount of take authorized. The information below is presented to recognize the current adaptive management plan used by PacifiCorp.

In communication with the USFWS, PacifiCorp will discuss the need for and implement mitigation or conservation measures if concerns arise about the rate of eagle take relative to the authorized take for bald and golden eagle for the Project. It is anticipated that a stepwise process will be used to guide the implementation of additional conservation measures as needed for the Project (Table 8). The adaptive management strategy presented in Table 8 will only apply to the first 5 years of a 30-year eagle incidental take permit, if one is issued by USFWS. If a permit is issued by USFWS the two parties will revisit the adaptive management table (Table 8) and revise it as necessary during the first 5-year review period required for all long-term eagle incidental take permits.

Because eagle mortalities have been documented at the Project since the start of commercial operations and an EITP for the Project has not been issued, PacifiCorp is currently conducting human observer-based informed curtailment to reduce the risk of eagle collisions at the Project, post-construction mortality monitoring (as described under item # 7 above), prey assessments and control. In addition, at the USFWS Region 6 MBPO’s request, PacifiCorp will purchase and deploy an automated detection and turbine curtailment system to minimize eagle fatalities at the Project. The number and location of the units will be discussed with the USFWS.

If appropriate and in coordination with the USFWS, PacifiCorp is willing to consider participating in local and regional eagle research such as DNA analysis and Teton Raptor Center’s Bighorn golden eagle center.

**Table 8. Summary of Potential Conservation Measures to be implemented if a Threshold is reached using a Stepwise Approach.<sup>1</sup>**

<b>Step</b>	<b>Conservation Measures</b>	<b>Threshold or Trigger</b>
Step I	Assess eagle fatalities to determine if cause or contributing risk factors can be determined (e.g., nest proximity, weather, presence of prey/carrion) and if management response is warranted and feasible. Consult with USFWS about findings from assessment. Of primary concern is whether common elements between eagle fatalities exist that indicate a more in-depth assessment of the cause of mortality should be performed. If so, perform this more in-depth assessment.	Any eagle is taken

**Table 8. Summary of Potential Conservation Measures to be implemented if a Threshold is reached using a Stepwise Approach.<sup>1</sup>**

<b>Step</b>	<b>Conservation Measures</b>	<b>Threshold or Trigger</b>
Step II	Implement observational/behavioral studies to further evaluate risk and inform potential conservation measures. Consult with USFWS about: 1) findings from evaluation; and 2) development and implementation of conservation measures if warranted.	To be determined based on authorized take levels. Take is within the authorized limit. Trigger will be determined based on a rate of take that could exceed the authorized take over a 5-year period if take continues at the rate identified.
Step III	<p>If threshold is exceeded, PacifiCorp will consult with the USFWS regarding information gained with respect to eagle take experienced to date, to identify causal factors and conservation measures to be implemented as soon as feasible to avoid and minimize further take. Additionally, PacifiCorp overall take avoidance and minimization program for the subsequent 5-year permit review period would be re-evaluated, based on actual results as compared with permitted levels of take, and this stepwise approach will start over with Step I. Examples of conservation measures that may be implemented in consultation with the Service include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Employ onsite biological monitor(s) during daylight hours at locations and/or times of suspected risk, to further refine the understanding of risk factors.</li> <li>• Implement a curtailment program (i.e. human-based or technology-based) specific to the area(s) and/or period(s) of highest collision risk.</li> <li>• If a Service-approved technology is available, deploy and evaluate a detection and deterrent system for eagles approaching area(s) of risk.</li> <li>• Other measures agreed upon in consultation with USFWS</li> </ul>	To be determined based on authorized take levels. Take is within the authorized limit. An additional take would meet the authorized amount under the permit over the 5-year period.

<sup>1</sup> Table 8 only applies to the first 5 years of an eagle incidental take permit, if a permit is issued by USFWS.

## 11. Other US Fish and Wildlife Service Permits

PacifiCorp has and will continue to maintain a Special Purpose Utility Permit (SPUT) and MFWP Scientific Collector’s Permit for the life of the Project. These permits are necessary to legally possess any dead migratory birds, excluding eagles and federally listed species, removed from the Project site, and used in bias trials as part of eagle fatality monitoring.

## LITERATURE CITED

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Public Interest Energy Research Program (PIER) Final Project Report CEC-500-2006-022. Edison Electric Institute, APLIC, and the California Energy Commission. Washington D.C. and Sacramento, California.

- Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC, Washington D.C.
- Brown, S.R., K. T. Smith, C. W. LeBeau, A. C. Pratt, and J. L. Beck. 2022. Evaluating effects of the Pryor Mountain Wind Project on a greater sage-grouse population. Annual Report, Pryor Mountain Wind Energy Project, Carbon County, Montana. Prepared for The Montana Bureau of Land Management and Montana Fish Wildlife and Parks. March 02, 2022.
- Brown, S.R., K. T. Smith, C. W. LeBeau, A. C. Pratt, and J. L. Beck. 2023. Evaluating effects of the Pryor Mountain Wind Project on a greater sage-grouse population. Annual Report. Pryor Mountain Wind Energy Project, Carbon County, Montana. Prepared for The Montana Bureau of Land Management and Montana Fish, Wildlife and Parks. Prepared by Western EcoSystems Technology, Inc. (WEST), Laramie, Wyoming; George Miksch Sutton Avian Research Center, Bartlesville, Oklahoma; University of Wyoming, Laramie, Wyoming. February 22, 2023.
- LeBeau, C. and B. Heath. 2016. Greater Sage-Grouse Assessment and Mitigation Plan for the Mud Springs Wind Project, Carbon County, Montana. Prepared by Western Ecosystems Technology, Inc. Prepared for EverPower Wind Holdings, Inc. August, 2016.
- Reynolds, R. T., J. M. Scott, and R. A. Nussbaum. 1980. A Variable Circular-Plot Method for Estimating Bird Numbers. *Condor* 82(3): 309-313.
- US Fish and Wildlife Service (USFWS). 2020. Region 6, Recommendations for Avoidance and Minimization of Impact to Golden Eagles at Winder Energy Facilities. Revised May 21, 2020, version 2.0.
- US Fish and Wildlife Service (USFWS). 2019. Region 6, Recommended Approach for Development and Submission of Eagle Conservation Plans submitted to Region 6, Migratory Management Office in support of an Eagle Incidental Take Permit Application for Wind Energy Projects. July 23, 2019.
- US Fish and Wildlife Service (USFWS). 2013. Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities. U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region. April 11, 2013.
- US Fish and Wildlife Service (USFWS). 2013. Eagle Conservation Plan Guidance. Module 1 - Land-Based Wind Energy. Version 2. Division of Migratory Bird Management, USFWS. April 2013. Available online at: [http://www.fws.gov/migratorybirds/Eagle\\_Conservation\\_Plan\\_Guidance-Module%201.pdf](http://www.fws.gov/migratorybirds/Eagle_Conservation_Plan_Guidance-Module%201.pdf)
- Wenck Associates, Inc (Wenck). 2014. Golden Eagle Nesting/Activity Aerial Survey. Mud Springs Wind Farm, Carbon County, Montana. May 2014. Prepared for Electrical Consultants Incorporated.
- Western Ecosystems Technology, Inc. (WEST). 2016a. 2016 Eagle and Raptor Nest Surveys for the Proposed Mud Springs Wind Energy Project, Carbon County, Montana. November 22, 2016. Prepared for Everpower Wind Holdings, Inc.
- Western Ecosystems Technology, Inc. (WEST). 2016b. Baseline Avian Studies for the Mud Springs Wind Energy Project, Carbon County, Montana. August 26, 2016. Prepared for Everpower Wind Holdings, Inc.
- Western Ecosystems Technology, Inc. (WEST). 2016c. 2015 Eagle Migration Survey Report for the Mud Springs Wind Energy Project, Carbon County, Montana. January 15, 2016. Prepared for EverPower Wind Holdings, Inc.

Western Ecosystems Technology, Inc. (WEST). 2016d. Prey Base Mapping/Assessment. Technical Memorandum from WEST, Inc. to EverPower Wind Holdings, Inc. August 25, 2016.

Western Ecosystems Technology, Inc. (WEST). 2017. Baseline Avian Studies for the Mud Springs Wind Energy Project, Carbon County, Montana. August 7, 2017. Prepared for Everpower Wind Holdings, Inc.

**Appendix A - Wenck Associates Nest Survey Report**



**Appendix B - WEST Nest Survey Report February 2016 to July 2016**

**Appendix C - WEST Baseline Avian Studies Report June 2015 to May 2016**

**Appendix D - WEST Baseline Avian Studies Report June 2016 to May 2017**

**Appendix E - WEST Eagle Migration Survey Report 2015**

## **Appendix F - WEST Prey Base Mapping Report**

**Appendix G - WEST Post-Construction Mortality Monitoring Report January 2021 to  
December 2022**

**Appendix H - WEST Post-Construction Mortality Monitoring Report January 2022 to  
December 2022**

**Appendix I - WEST Eagle Use/Curtailment Report October 2021 to October 2022**



**Appendix J - WEST Post-Construction Prey Base Mapping Report 2021**

**Appendix K - WEST Post-Construction Prey Base Mapping Report 2022**

