Attachment 12

Reinterpretation of 2010/11 Baseline Surveys

Reinterpretation of Baseline Survey Results for the modified Chopin Wind Energy Facility Umatilla County, Oregon

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April 29, 2015

WEST Inc.

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BACKGROUND

In 2010 and 2011, Western EcoSystems Technology, Inc. (WEST) was contracted by WKN Chopin LLC to complete Baseline Wildlife Surveys for the proposed Chopin Wind Energy Facility (Proposed Facility) in Umatilla County, Oregon. The survey efforts included avian use, raptor nest, bat acoustic, sensitive species, and rare plant surveys. Furthermore, wetlands and streams were delineated, and general habitat availability was mapped. These studies were developed for the original boundary for the Facility (Original Facility), which was based on a 33 turbine, 99-megawatt (MW) project (Original Project Area; Figure 1). However, Chopin Wind, LLC (a subsidiary of BayWa r.e. Wind, LLC) now proposes a smaller footprint five turbine, 10-MW project in order to reach compliance with Umatilla County permitting requirements (Current Project Area; Figures 1-3). The Proposed Facility would occur only on agricultural lands and fall entirely within the Original Project Area (Figures 1-3). This report offers a reinterpretation of existing baseline data for the proposed Chopin Wind, LLC Facility plans. Additional details on baseline survey methodology and results can be found in the *Wildlife Baseline Studies for the Chopin Wind Resource Area, Umatilla County, Oregon* report prepared by WEST in 2011 (Enk et al. 2011a).

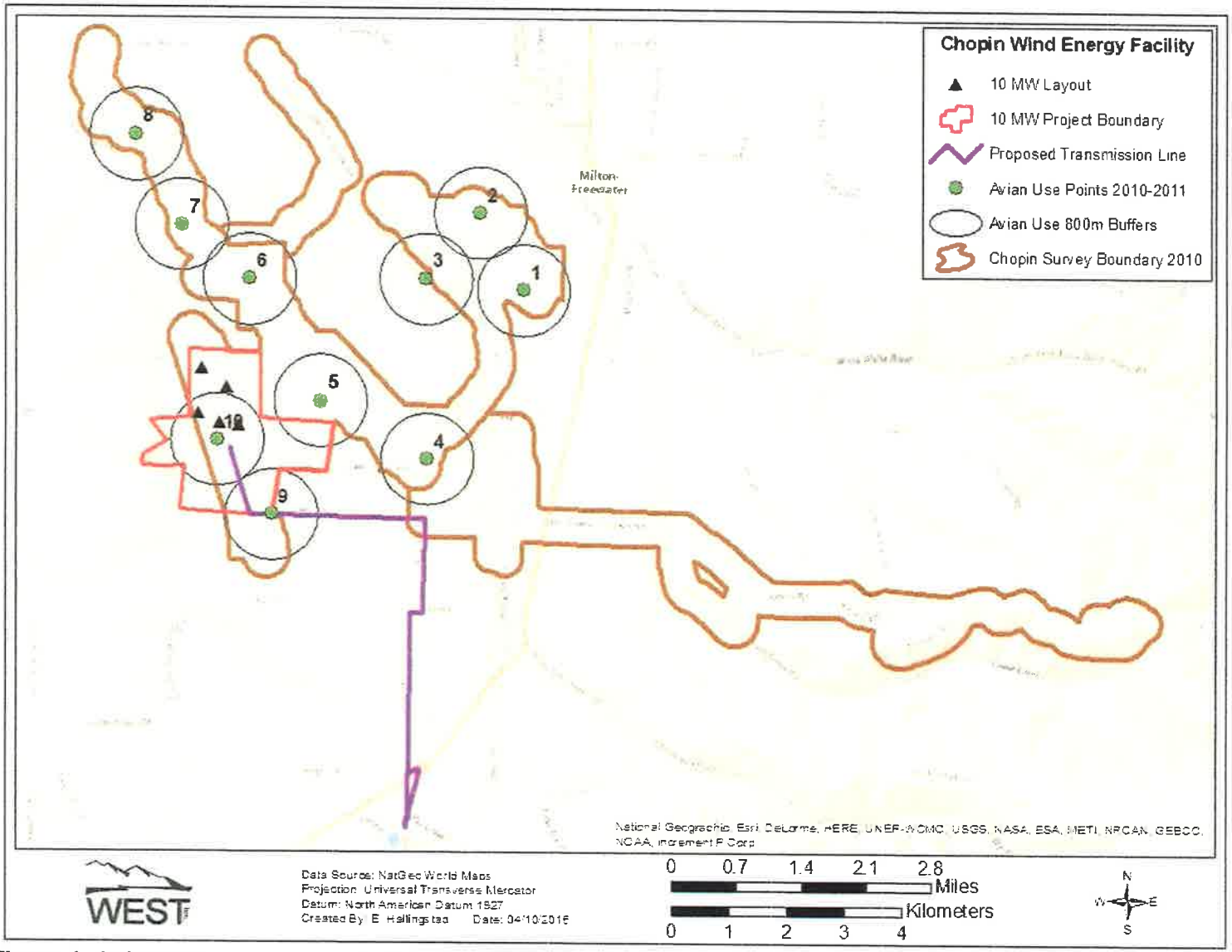

Figure 1. 2010-2011 survey areas and point count locations, based on the Original Project Area, for the proposed Chopin Wind Energy Facility. The current turbine and transmission line layout is also shown.

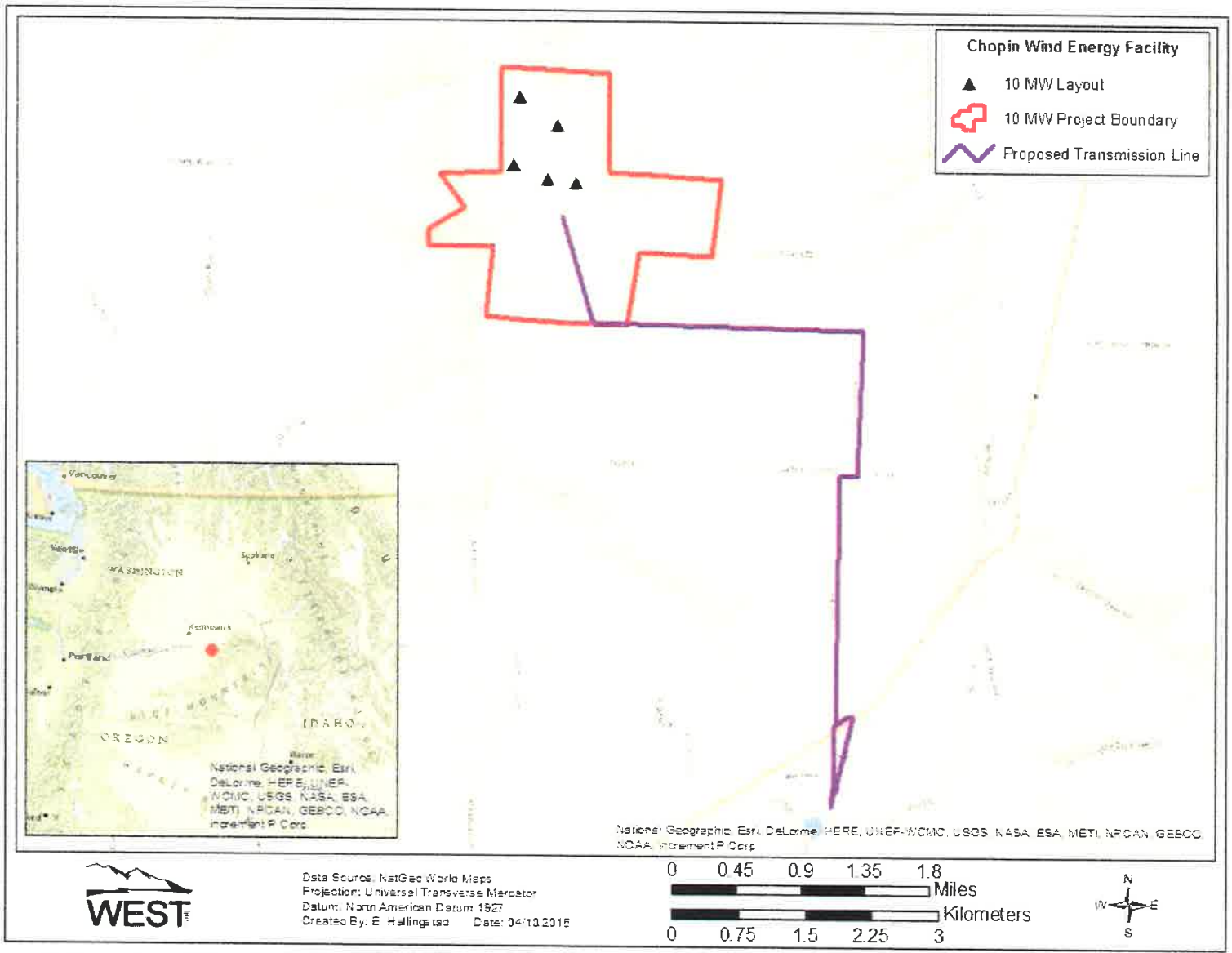

Figure 2. Overview of the currently proposed Chopin Wind Energy Facility.

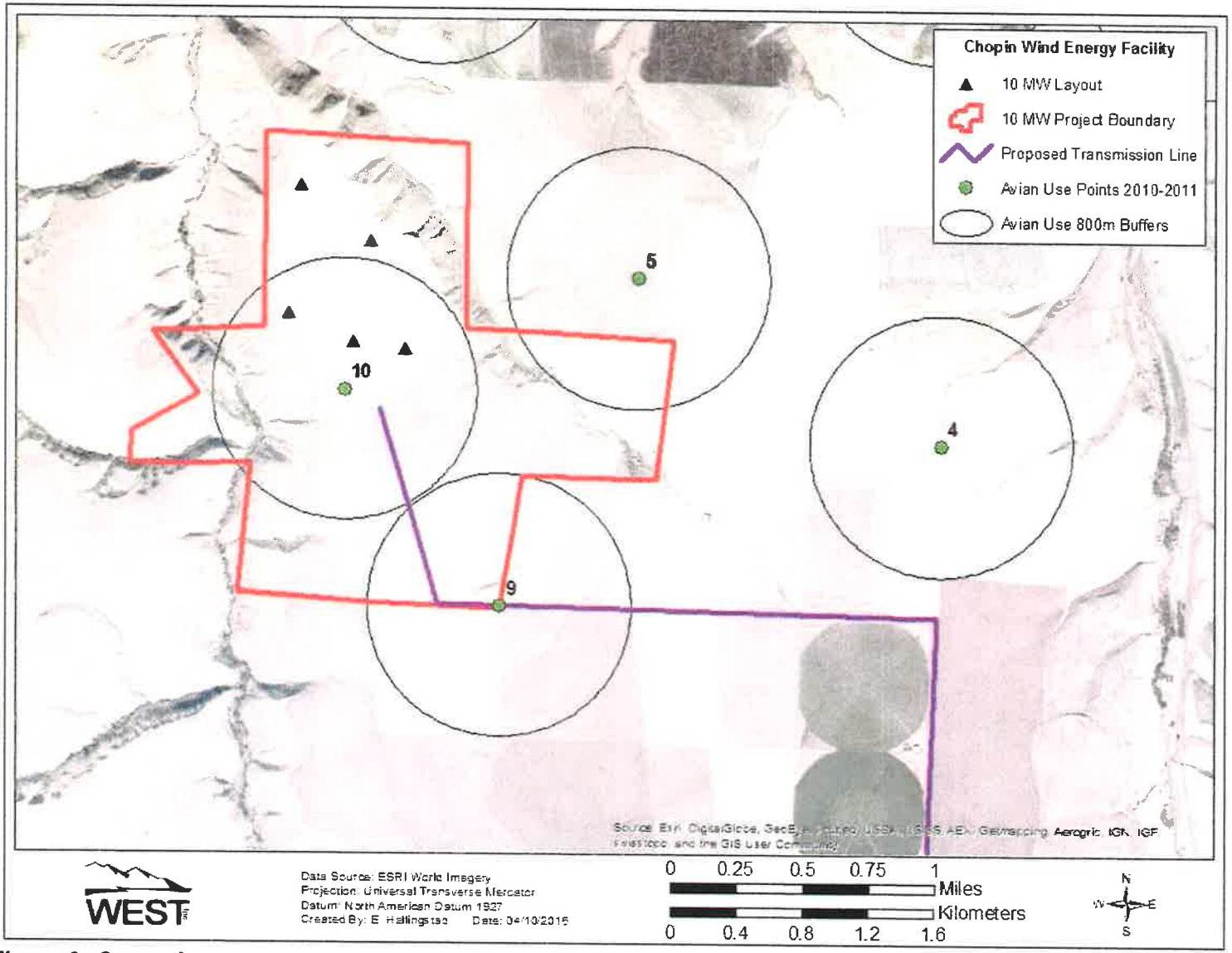

Figure 3. Currently proposed Chopin Wind Energy Facility with 2010-2011 avian use survey points and 800-meter survey buffers.

PROJECT AREA

The Current Project Area encompasses approximately 1,319 acres (5.3 square kilometers [km^2]) in northeastern Umatilla County, Oregon, downsized from the Original Project Area of 10,350 acres (41.9 km^2; Figures 1 and 2). The site is in the Columbia Plateau Ecoregion (CPE; Thorson et al. 2003), although native habitats have largely been converted to agricultural uses and the current turbine layout lies exclusively in dryland wheat fields (Figure 3). For the purposes of this evaluation, the Proposed Facility includes both the proposed wind farm site and an approximately 5.4 mile (8.6 km) transmission line (Transmission Corridor) that extends from the site to an existing substation to the south (Figure 2).

The Current Project Area is comprised of a small plateau that lies between two small forks of the Pine Creek drainage (Figure 2). All lands are privately-owned. The predominant habitat types are dry land wheat and Columbia Basin Grassland-steppe, which has been significantly degraded and is almost entirely comprised of non-native and invasive plant species. The entire Original Project Area was considered to have "limited value as wildlife habitat due to the absence of natural habitats and native vegetation communities, although the riparian corridors do support raptor nests and a variety of bird species" (Enk et al. 2011a). Elevations in the Current Project Area generally range between 1,200 and 1,900 feet (ft; 366 and 579 m) above mean sea level. The Transmission Corridor runs along an existing public right of way and does not cross any wetlands (Figure 3). The interconnection will occur at PacifiCorp's Weston substation.

METHODS

All survey protocols were based on WEST's experience studying wildlife at proposed wind energy facilities throughout the US as well as input from the Oregon Department of Fish and Wildlife (ODFW). The overall approach to the studies is consistent with past and current pre-construction studies of wind energy developments in Oregon as well as the Oregon Columbia Plateau Ecoregion Wind Energy Siting and Permitting Guidelines (ODFW 2008). These studies were designed to help predict potential impacts to bird (particularly diurnal raptors) and bat species and to compare baseline study results with operational wind energy facilities in the CPE to estimate avian and bat fatality rates.

Avian Use Surveys

The objective of the fixed-point bird use surveys was to estimate the seasonal and spatial use of the Original Project Area by birds, particularly diurnal raptors (defined here as kites, accipiters, buteos, harriers, eagles, falcons, and ospreys). Ten points were selected to survey representative habitats and topography within the Original Project Area, while achieving relatively even coverage of the area (Figure 1). Points 5, 9, and 10 were all within 1 mile (1.6 km) of the current turbine locations, with three turbines within the 800-m survey radius of Point

10. Furthermore, Point 4 was within 0.6 miles (1 km) of the current Transmission Corridor (Figure 3).

Surveys were conducted for 20 minutes (min) at each point to be consistent with methodologies utilized at other wind energy facilities in 2010 and 2011. The survey area for large birds was an 800-m radius around each point. The survey area for small birds was a 400-m (1,312-ft) radius around each point.

Raptor Nest Surveys

The objective of the raptor nest survey was to locate nests that may be subjected to disturbance and/or displacement effects from Facility construction and/or operation. In 2010, the raptor nest survey area included 1) a 2-mile (3.2-km) buffer associated with the Original Project Area and 2) a half-mile (0.80-km) buffer of the original transmission line route (Figure 4). The survey was conducted from a helicopter by a qualified raptor biologist. All suitable substrate was surveyed.

In 2010 and 2011, the US Fish and Wildlife Service (USFWS) released documents emphasizing concern over potential impacts of wind energy developments on bald and golden eagles (Pagel et al. 2010, USFWS 2011). In these documents, USFWS recommend a 10-mile (16.1-km) survey buffer for eagle nest surveys. To meet compliance with this recommendation, WEST conducted an eagle nest survey within a 10-mile buffer of the Original Project Area in May 2011 (Figure 5). The survey was conducted from a helicopter by a qualified raptor biologist.

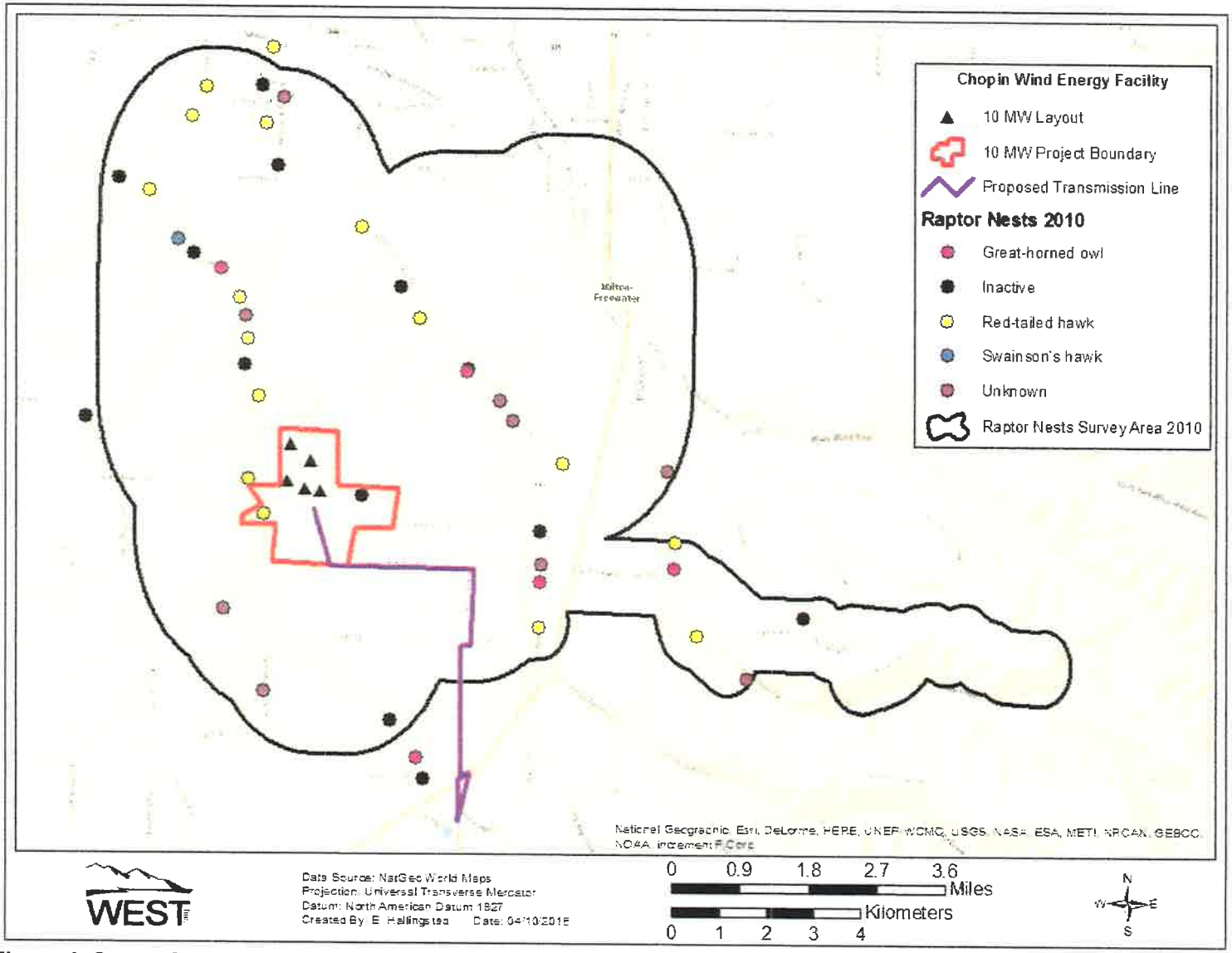

Figure 4. Currently proposed Chopin Wind Energy Facility with 2010 raptor nest survey area and nests.

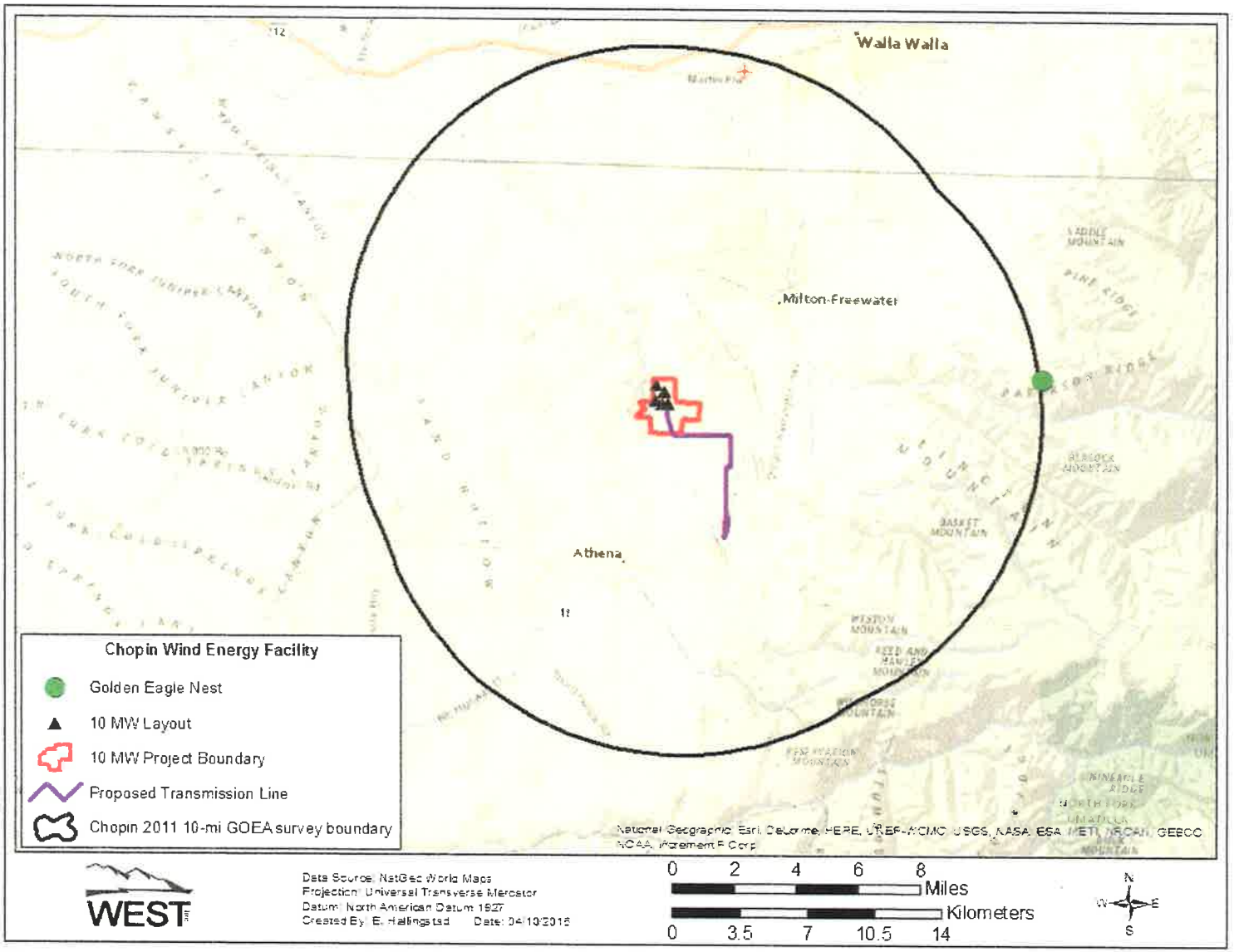

Figure 5. Currently proposed Chopin Wind Energy Facility with 2011 eagle nest survey area and nests.

Sensitive Species Surveys

The objective of the sensitive species surveys was to document presence and spatial occurrence of sensitive species in the Original Project Area (Figure 1). For the purpose of these surveys, sensitive species were defined as any species classified as 1) any federal or state endangered, threatened, candidate, or proposed species that have the potential to occur in Umatilla County, 2) Oregon state sensitive (Critical and Vulnerable) species in the CPE, and 3) bald and golden eagles which are protected under the federal Bald and Golden Eagle Protection Act (BGEPA; BGEPA 1940). A list of target species was compiled from the ODFW, USFWS, and Oregon Biodiversity Information Center (ORBIC) databases, and through consultation with the ODFW.

The survey area included all non-cultivated lands within the Original Project Area. Surveys consisted of field biologists walking transects spaced approximately 50 m (164 ft) apart (scanning 25 m [82 ft] to either side), and were conducted from dawn to no later than 1:00 PM. All observation locations were recorded using a GPS unit and later mapped using a GIS.

Bat Acoustic Surveys

The objective of the bat acoustic surveys was to estimate the seasonal and spatial patterns of bat activity in the Original Project Area. Bats surveys were conducted using Anabat™ SD2 bat detectors (Titley Scientific™, Australia). The use of bat detectors for calculating an index to bat impacts is a primary bat risk assessment tool for baseline wind development surveys (Arnett 2007, Kunz et al. 2007).

Detectors were placed at ground level at five fixed stations (Figure 6). At one of these stations (CH2), a second Anabat unit was raised approximately 80 m (262 ft) on a meteorological tower to compare bat activity at different heights and to provide information on bat activity in the rotor-swept zone. All units were programmed to turn on each night approximately 30 min before sunset and turn off approximately 30 min after sunrise.

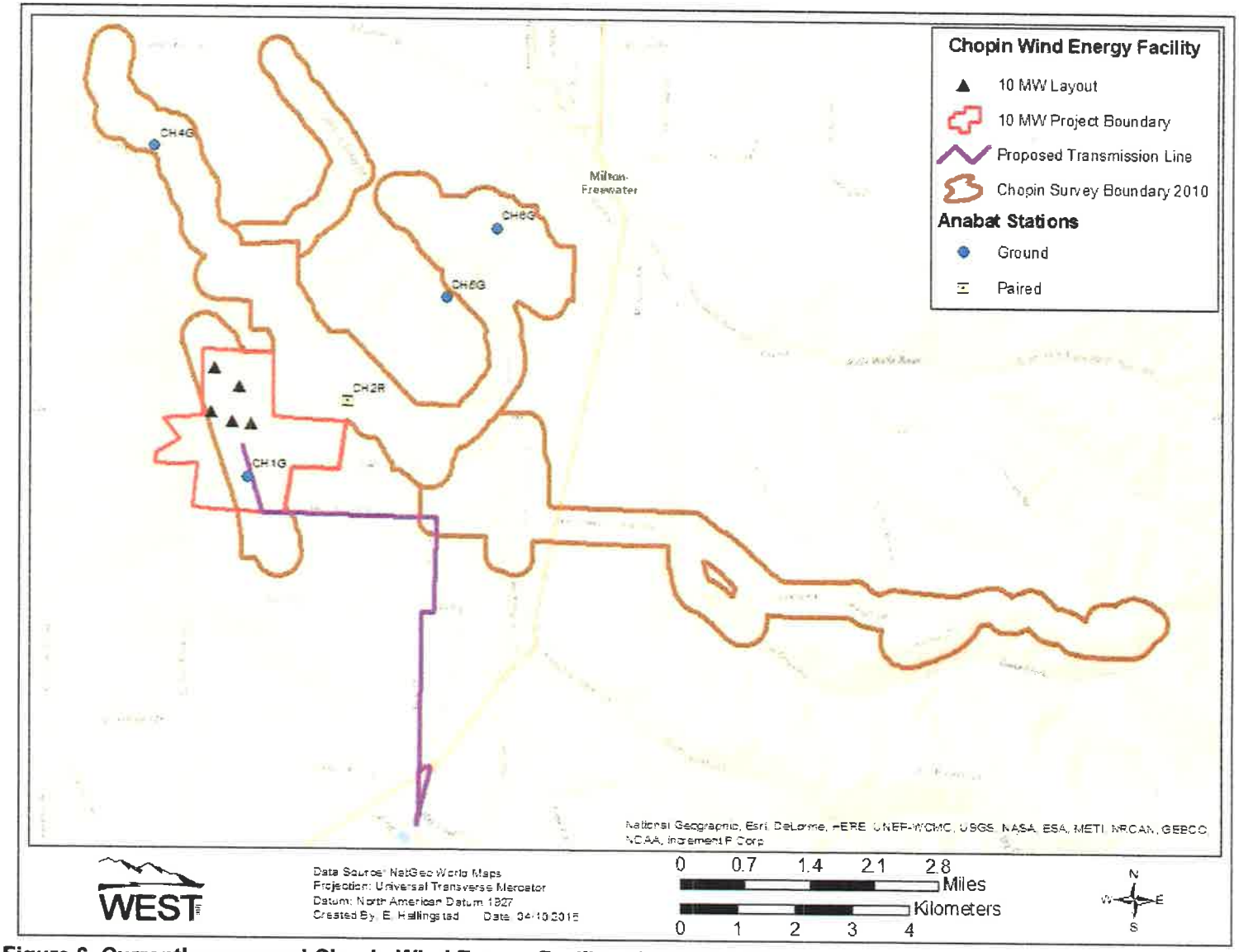

Figure 6. Currently proposed Chopin Wind Energy Facility with 2010 sensitive species survey area.

Rare Plant Surveys

The objective of these surveys was to document presence and locations by rare plant species within the Original Project Area (Figure 1). For the purposes of these surveys, rare plants were defined as species classified as 1) endangered, threatened, proposed or candidate by the USFWS or the Oregon Department of Agriculture and 2) Category 1, 2, and 3 by the ORNHIC.

Rare plant surveys were conducted by trained botanists during the peak flowering or fruiting periods of many target species. During the survey, botanists utilized meandering transects, effectively zigzagging back and forth across the survey corridor. Botanists maintained a list of all vascular plants encountered and made informal collections of unknown species for later identification using *Flora of the Pacific Northwest* (Hitchcock and Cronquist 1973).

Wetland and Stream Delineations

The objective of wetland and stream delineation was to determine those areas which need to be avoided and mitigated for during wind project construction activities. Delineation efforts were limited to the Dry Creek and Pine Creek transmission line crossings based on the original transmission line route. The current Transmission Corridor crosses Pine Creek further upstream than the area surveyed in 2010 (Figures 1 and 2) and runs along an existing transmission right-of-way; therefore, no impacts on wetlands or streams are anticipated for the Facility.

RESULTS

While baseline survey methodology was based on the Original Project Area, the data collected can be accurately reinterpreted for the Current Project Area for several reasons. The current footprint lies entirely within the original footprint; therefore, data collected during all surveys is directly applicable to the Current Project Area. Secondly, the baseline survey methodology is generally consistent with methods being used during current baseline studies at proposed wind facilities within the region (e.g., 10-mile eagle nest survey, 800-m radius point counts). Finally, baseline surveys for the Original Facility were comprehensive in addressing questions related to potential project risks posed on birds, bats, and sensitive species.

Baseline surveys were conducted from April 27, 2010 through April 18, 2011. The following section presents the results of the fixed-point bird use surveys, raptor nest surveys, sensitive species surveys, acoustic bat surveys, and rare plant surveys from the Original Project Area in the context of the currently proposed, smaller Chopin Wind, LLC Facility footprint. A summary of incidental observations of sensitive species near the Current Project Area is also included.

Avian Use Surveys

Fixed-point bird use surveys were conducted from April 27, 2010 through April 18, 2011. A total of 75 unique species were observed over the course of 369 20-min fixed-point bird use surveys, with a mean of 1.83 large bird species/800-m plot/20-min survey and 1.50 small bird species/400-m plot/20-min survey (Enk et al. 2011a). Overall, two species accounted for 63.7%

of all bird observations: European starling (*Sturnus vulgaris*) and horned lark (*Eremophila alpestris*). A total of 857 individual raptors representing eleven species were recorded, with red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and northern harrier (*Circus cyaneus*) comprising 79.3% of all raptor observations. Waterbird, waterfowl, and shorebird numbers were generally very low, and few observations of owls occurred (Enk et al. 2011a). California quail (*Callipepla californica*), ring-necked pheasant (*Phasianus colchicus*), and gray partridge (*Perdix perdix*) were the most commonly recorded upland game birds.

Diurnal Raptors

For the entire Facility, diurnal raptor use was highest in the summer (2.23 birds/plot/20-min survey), followed by spring (1.68), fall (1.52) and winter (1.47). Buteos had the highest use of any raptor species in all seasons (1.15 in the spring, 1.32 in the summer, 0.69 in the fall, and 0.80 in the winter). Eight golden eagles (*Aquila chrysaetos*) were recorded during fixed-point surveys (four in the spring and four in the winter), as well as three bald eagles (*Haliaeetus leucocephalus*) observations (one in spring and two in winter); eagle use was relatively low during the spring (0.03) and winter (0.06). Red-tailed hawk (76.7%), Swainson's hawk (*Buteo swainsoni*; 88.9%), and rough-legged hawk (*Buteo lagopus*; 65.0%) were seen within the rotor swept height (RSH; 35 – 130 m AGL) at least 50% of the time (Enk et al. 2011a). Red-tailed hawk was the only raptor with a relatively high exposure index, as based on their high observation frequency and propensity for flying within the RSH. Swainson's hawk and bald eagle are both Sensitive—Vulnerable in Oregon (ORBIC 2013), and both eagle species are protected by the Bald and Golden Eagle Protection Act (BGEPA 1940).

The Current Project Area lies closest to Point 10, with Points 5 and 9 also within one mile of proposed turbine locations (Figure 3). Table 1 shows the mean use by point for all bird types recorded during baseline surveys. Average mean use values for Points 5, 9, and 10 were below the Facility-wide averages for the Diurnal Raptors group and all raptor subtypes. Diurnal raptor mean use values for each point are shown in Figure 7. Flight paths were digitized and mapped; while no distinct flyways were documented during the fixed-point bird use surveys, buteo and falcon activity was concentrated along the Pine Creek and Dry Creek corridors (Appendix A). Most flight paths recorded within the Current Project Area were of red-tailed hawks and northern harriers.

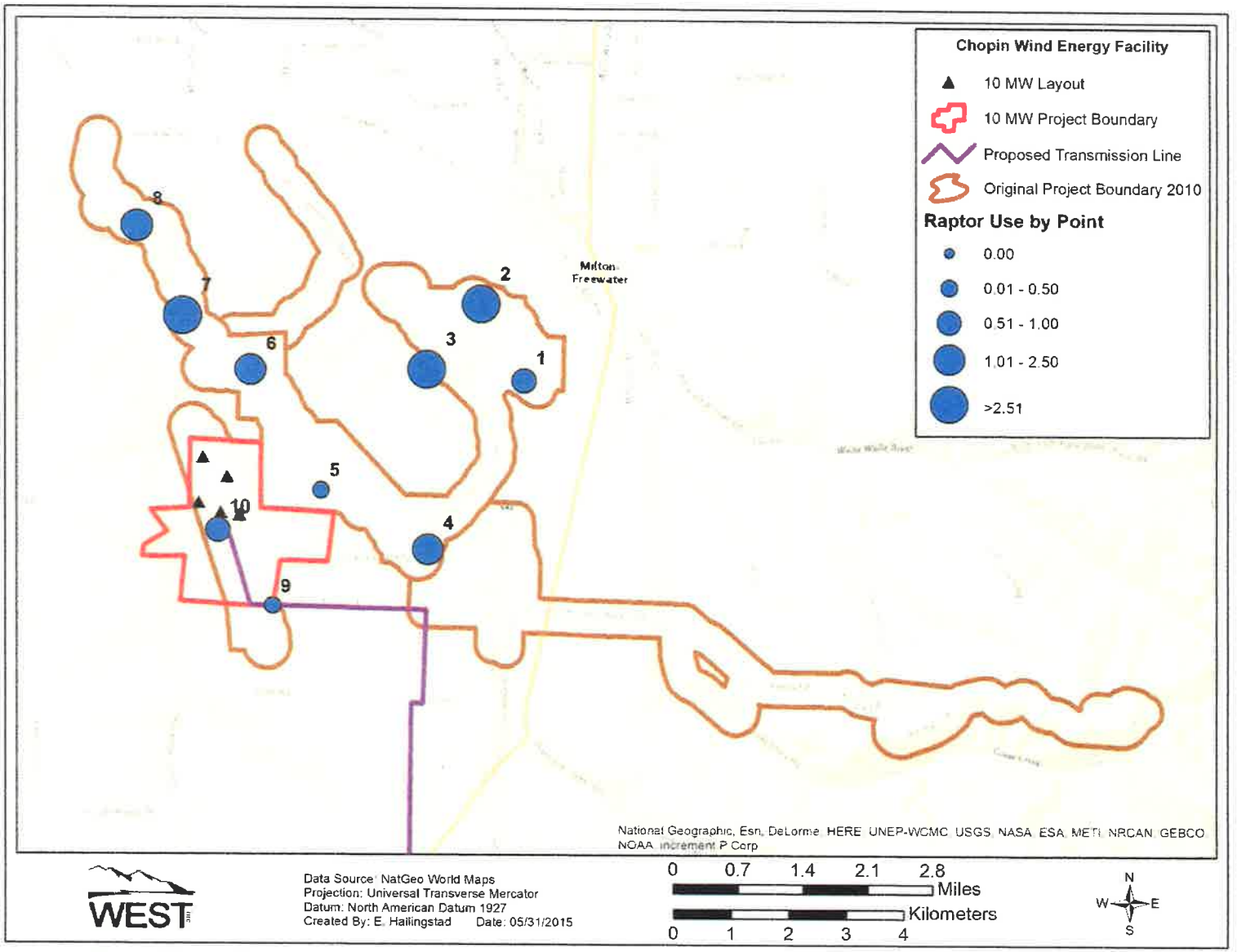

Figure 7. Mean Diurnal Raptor Use by Point during Fixed-point Bird Use Surveys from April 27, 2010 – April 18, 2011 at theChopin Wind Energy Facility.

Table 1. Mean use (number of birds/20-minute survey) by point for all birds[a], major bird types, and raptor subtypes observed at the Chopin Wind Energy Facility during fixed-point bird use surveys between April 27, 2010 – April 18, 2011. Points 5, 9, and 10 were within 0.5 mile of the Current Project Area, while Point 4 was within 0.5 mile of the current Transmission Corridor. All other points are more than 0.5 mile from proposed infrastructure.

	Survey Point									
Bird Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Waterbirds	0.03	0	0.03	0	0	0	0	0	0	0
Waterfowl	0	0.41	0.30	0	0.03	0.11	0	0	0	0
Shorebirds	0	0	0.03	0	0.03	0	0.03	0	0	0
Gulls/Terns	0	0	0	0	0	0	0	0	0	0.03
Diurnal Raptors	0.92	3.03	3.73	1.54	0.41	1.11	3.22	1.65	0.38	0.81
Accipiters	0	0.03	0.03	0	0	0.03	0	0	0	0
Buteos	0.59	1.41	2.62	0.86	0.22	0.56	1.43	1.27	0.14	0.54
Northern Harrier	0.14	1.16	0.19	0.54	0.19	0.28	0.57	0.05	0.22	0.16
Eagles	0	0	0.03	0	0	0.03	0.03	0.14	0	0
Falcons	0.19	0.43	0.86	0.14	0	0.22	1.14	0.16	0.03	0.11
Osprey	0	0	0	0	0	0	0.03	0	0	0
Other Raptors	0	0	0	0	0	0	0.03	0.03	0	0
Owls	0.03	0	0.46	0.08	0	0	0	0.19	0	0.03
Upland Game Birds	0	0.24	3.97	0.03	0.11	0.11	0.03	0.19	0.84	0.41
Doves/Pigeons	0.32	0	0.38	0.03	0.05	0	0	0.03	0	0.03
Large Corvids	0.76	0.84	2.00	0.68	0.51	0.69	2.38	2.65	0.16	0.41
Goatsuckers	0	0	0	0.03	0	0	0	0	0	0
All Large Birds	**2.05**	**4.51**	**10.89**	**2.38**	**1.14**	**2.03**	**5.65**	**4.70**	**1.38**	**1.70**
Passerines	10.81	5.00	32.54	9.95	1.46	3.14	6.19	6.59	16.00	7.32
Swifts/Hummingbirds	0.03	0.27	0.14	0	0	0.14	0.22	0.16	0	0
Woodpeckers	0	0.03	0.49	0.03	0	0	0	0	0	0
All Small Birds	**10.84**	**5.30**	**33.16**	**9.97**	**1.46**	**3.28**	**6.41**	**6.76**	**16.00**	**7.32**

a. 800-meter (m) radius plot for large birds, 400-m for small birds.
b.

Passerines and Small Birds

As a 400-m viewshed was used for small birds, use estimates calculated for small birds are not directly comparable to large bird estimates. For the entire Facility (Original Project Area), passerine use was highest in the winter (15.66 birds/plot/20-min survey) and fall (13.83), compared to the spring (4.65) and summer (5.88). Passerines were observed during 88.3% of summer surveys, 84.8% of spring surveys, 68.3% of fall surveys, and 60.0% of winter surveys (Enk et al. 2011a). The majority of passerines within the 400-m plot were observed below 35 m AGL (74.0%). Two sensitive small bird species were observed during fixed-point surveys (Table 2): one Lewis's woodpecker (*Melanerpes lewis*; Sensitive--Critical) and two grasshopper sparrows (*Ammodramus savannarum*; Sensitive--Vulnerable).

Raptor Nest Surveys

A total of 29 active and 10 inactive raptor nests were recorded within the survey area during the 2010 aerial survey (Figure 4). Active nests were occupied by red-tailed hawk (15), great horned owl (*Bubo virginianus;* four), and Swainson's hawk (one). Nine nests could not be assigned to species because although there were eggs in the nest, no adults were ever observed on or near the nests.

Of the 39 raptor nests recorded in 2010, eight were within two miles of the currently proposed turbine locations. These include four active red-tailed hawk nests, two active nests for unidentified species, and two inactive nests. The nests were all located in mature, deciduous trees within the Pine Creek drainage. These nests could be used by other species, such as great horned owl or Swainson's hawk, in other years. The Swainson's hawk nest in 2010 was three miles (4.8 km) from currently proposed turbines. No other nests associated with golden eagle, ferruginous hawk (*Buteo regalis*), burrowing owl (*Athene cunicularia*), or other raptor species of concern were found within the survey area.

The eagle nest survey flight took place on May 18 and 20, 2011. No golden eagle nests were found within the survey area; one active golden eagle nest was found just outside the eastern edge of the survey area (Figure 5), over 10 miles away from the Current Project Area. Generally, habitat quality for bald and golden eagles (nesting and foraging habitat) is poor in the vicinity of the Facility; golden eagle habitat improves towards the eastern edge of the 10-mile survey area, which contained native grassland and sagebrush habitats that support primary prey species, including ground squirrels and rabbits (Enk 2011).

Sensitive Species Surveys

Sensitive species surveys were conducted on two separate occasions between April and May 2010 to coincide with the spring breeding season. No state or federal endangered, threatened, or candidate species were observed during sensitive species surveys. A total of four state sensitive species and the bald eagle (protected under BGEPA along with golden eagle) were observed during the sensitive species surveys; most of these species are also USFWS Birds of Conservation Concern (BCC; Table 2). Tallies for sensitive species in some cases may represent repeated observations of the same individual. Locations of all sensitive wildlife species observed during all survey types are shown in Appendix G of the *Baseline Wildlife Studies* report (Enk et al. 2011a).

Grasshopper sparrow was the most common sensitive species (161 individuals), and represented 85% of all sensitive species observed during sensitive species surveys (Table 2). Grasshopper sparrow observations were concentrated in grassland habitats. Twenty-three Swainson's hawks were observed, with most observations along Pine Creek and Dry Creek. This likely reflects the presence of foraging habitats in these areas as well as the nest site in lower Pine Creek canyon. Other species recorded during sensitive species surveys included three golden eagles, two Lewis's woodpeckers, and one long-billed curlew (*Numenius americanus*). The curlew is classified as Sensitive-Vulnerable in Oregon (ORBIC 2013). Only

grasshopper sparrow was observed within the Current Project Area, and in low numbers (Figure 8; see Appendix G of baseline report [Enk et al. 2011a]).

Table 2. Summary of sensitive species observed at the Chopin Wind Energy Facility during fixed-point bird use surveys (FP), sensitive species surveys (SenSpp), and as incidental wildlife observations (Inc.), April 27, 2010 – April 18, 2011.

			FP		SenSpp		Inc.		Total	
Common Name	**Scientific Name**	**Status[1]**	**# of grps**	**# of obs**	**# of grps**	**# of obs**	**# of grps**	**# of obs**	**# of grps**	**# of obs**
grasshopper sparrow	*Ammodramus savannarum*	SV, BCC	2	2	135	161	0	0	137	163
Swainson's hawk	*Buteo swainsoni*	SV	44	55	16	23	1	2	61	80
golden eagle	*Aquila chrysaetos*	EA, BCC	8	8	2	3	1	1	11	12
ferruginous hawk	*Buteo regalis*	SC, BCC	0	0	0	0	3	3	3	3
Lewis's woodpecker	*Melanerpes lewis*	SC, BCC	1	1	2	2	0	0	3	3
loggerhead shrike	*Lanius ludovicianus*	SV, BCC	0	0	0	0	2	2	2	2
long-billed curlew	*Numenius americanus*	SV, BCC	0	0	1	1	0	0	1	1
bald eagle	*Haliaeetus leucocephalus*	EA, BCC	3	3	0	0	0	0	3	3
Total	**8 Species**		**58**	**69**	**156**	**190**	**7**	**8**	**221**	**267**

EA = Federal Bald and Golden Eagle Protection Act (BGEPA 1940);[1] BCC = USFWS Bird of Conservation Concern (USFWS 2008); SV = State--Vulnerable (ORBIC 2013); SC = State Critical (ORBIC 2013); grps = groups; obs = observed.

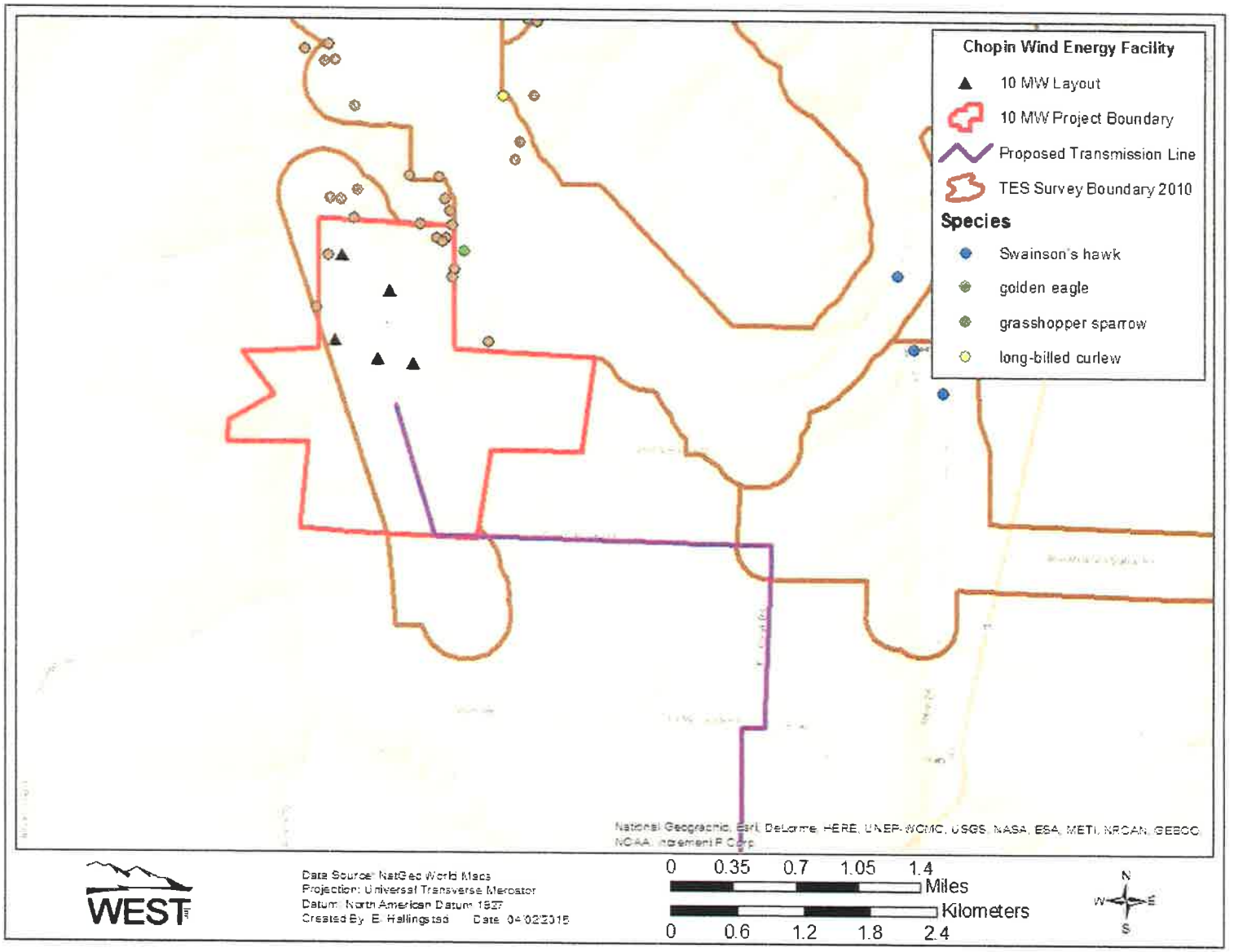

Figure 8. Sensitive species observations recorded during sensitive species surveys at the Chopin Wind Energy Facility.

Incidental Observations

Four sensitive species (golden eagle, ferruginous hawk, Swainson's hawk, and loggerhead shrike (*Lanius ludovicianus*]) were also recorded as incidental observations during baseline surveys (Table 2). The ferruginous hawk, Swainson's hawk, and loggerhead shrike are classified as state sensitive (ORBIC 2013); the golden eagle, ferruginous hawk, and loggerhead shrike are also BCC (USFWS 2008).

Bat Acoustic Surveys

Bat activity was monitored at six sampling locations for a total of 170 nights during the period May 10 to October 26, 2010. Bat stations CH1g, CH2g, and CH2r were closest to the Current Project Area (Figure 6). Average bat passes/detector-night at these stations ranged from 1.23 ± 0.14 to 1.63 ± 0.14 (Table 3). These averages are considerably lower than the bat activity observed at station CH5g, which was considered a bat feature station due to its proximity to Dry Creek. Weekly bat activity was relatively consistent throughout the study period (zero – three passes/detector-night (Figure 9), gradually increasing from early May through mid-July, and peaking during early August. Higher activity continued through September, with a gradual decline into October.

Overall, LF bats accounted for 95.1% of all passes recorded during the bat acoustic surveys (Table 3; Figure 9), and this pattern was consistent among non-feature ground stations and across seasons. LF bats accounted for about 99% of passes at the raised station (Table 3). Hoary bats accounted for 6.1% of total passes detected within the study area, and 6.4% of all LF passes (Table 3). The majority of hoary bat passes were detected at the raised unit CH2r. Hoary bats were recorded on 35 nights between mid-June and mid-October; the highest number of hoary bat passes in a single night was on August 10 (four passes). No spotted bats (very low-frequency calls [less than 15 kHz]) were detected during the study.

Table 3. Results of acoustic bat surveys conducted at the Chopin Wind Energy Facility by call frequency (HF = high frequency, MF = mid frequency, LF = low frequency). No very low frequency (VLF) bat passes were recorded.

Anabat Station	Location	# of HF Bat Passes	# of MF Bat Passes	# of LF Bat Passes	# of Hoary Bat Passes*	Total Bat Passes	Detector-Nights	Bat Passes/ Night**
CH1g	ground	4	4	183	13	191	155	1.23±0.14
CH2g	ground	6	5	176	9	187	115	1.63±0.20
CH2r	raised	0	1	220	15	221	147	1.50±0.17
CH4g	ground	7	5	103	7	115	147	0.78±0.10
CH6g	ground	10	4	208	13	222	162	1.37±0.15
Total Ground		**27**	**18**	**670**	**42**	**715**	**579**	**1.25±0.11**
Total Raised		**0**	**1**	**220**	**15**	**221**	**147**	**1.50±0.17**
Grand Total		**27**	**19**	**890**	**57**	**936**	**726**	**1.30±0.11**
CH5g	bat feature	4,900	352	910	59	6,162	83	74.24±6.18

*Passes by hoary bats included in LF numbers.
**± bootstrapped standard error.

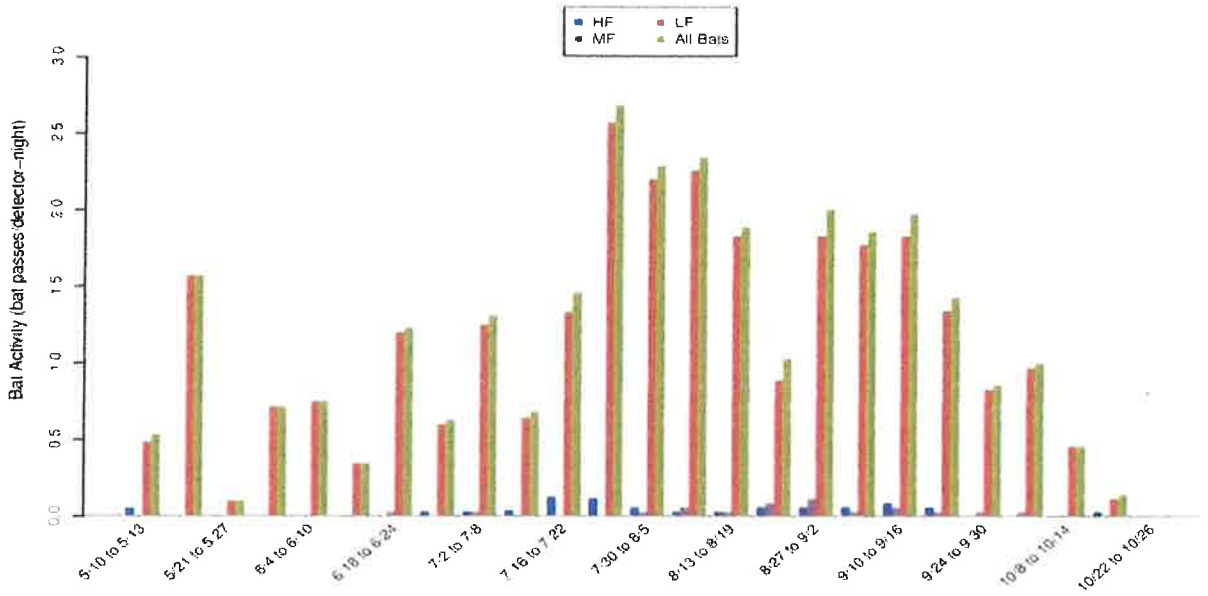

Figure 9. Weekly bat activity for high-frequency (HF), mid-frequency (MF), low-frequency (LF), and all bats at non-feature Anabat stations in the Chopin Wind Energy Facility.

Rare Plant Surveys

Rare plant surveys were conducted from June 25-30, 2010. No rare plant species were recorded during these surveys. Non-agricultural habitats consisted almost entirely of non-native and introduced plant species. The few small scattered patches of native habitat that were documented by the botanists supported extensive weed populations and a low diversity of native species. A complete list of plant species observed in the Original Project Area during the rare plant surveys is presented in Appendix H of the baseline report.

DISCUSSION AND IMPACT ASSESSMENT

The construction, operation, and decommissioning of wind energy facilities result in potential direct and indirect impacts to wildlife resources. Direct impacts include habitat loss and mortality resulting from construction, operation, and decommissioning activities. Indirect impacts include temporary and permanent displacement of wildlife as a result of the construction and operation of a wind energy facility and associated activities. A full evaluation of potential direct and indirect impacts predicted to result from the Original Facility (99-MW) was presented in the 2011 baseline report (Enk et al. 2011a). This section summarizes that discussion and updates the assessment for the Proposed Facility scope, focusing on potential impacts within the Current Project Area. No significant impacts are anticipated for the Transmission Corridor or substation area, as these features occur along a public right of way and within an already heavily fragmented and disturbed landscape, respectively.

Avian Species

Direct Effects

The original 99-MW facility was generally predicted to have minimal direct impacts on birds resulting from habitat loss, mortalities, and injuries. Passerines represented 78% of all birds observed during baseline surveys at the Facility, and are expected to make up the largest proportion of fatalities. Of these, horned lark was predicted to account for a high percentage based on this species having the highest exposure index of all passerine species at the Facility and other post-construction studies conducted within the region (Johnson and Erickson 2011). Based on abundance and flight behavior, other passerine species at risk of collision include European starling and cliff swallow (*Petrochelidon pyrrhonota*). All other small bird species had relatively low exposure indices.

Mean annual diurnal raptor use (1.70 raptors/plot/20-min survey) within the Original Project Area was ranked third highest of 42 other wind energy facilities for which similar data are available (see Enk et al. 2011a). However, raptor use was concentrated along Pine Creek and Dry Creek due to the occurrence of active nests and foraging habitats in these areas. At the three points closest to currently proposed turbines (Points 5, 9, and 10), mean annual diurnal raptor use averaged 0.53 raptors/plot/20-min survey. For the Original Project Area, the diurnal raptors with the highest exposure indices were red-tailed hawk (0.27) and Swainson's hawk (0.06), primarily due to relatively high use estimates for these species. Flight path maps show that few Swainson's hawks were observed within the Current Project Area during baseline surveys. Red-tailed hawks were shown to nest in close proximity (<1.0 mile) to the current turbine locations. For these reasons, red-tailed hawk is the diurnal raptor considered to be at relatively high risk of collision from the currently proposed Facility. The exposure indices for the golden eagle and bald eagle were less than 0.01 due to low use estimates.

Bird fatality rates at the Proposed Facility are expected to be similar or lower than those documented at other wind energy facilities in Umatilla County, which have averaged 2.23 birds/MW/year (Table 4). Raptor fatality rates at operational wind energy facilities are typically much lower than fatality rates for other avian species. Common species (e.g., horned lark) may have relatively higher mortality rates by virtue of their abundance, but it was considered unlikely that the original 99-MW facility would result in population-level impacts to any passerine species. Decreasing the facility size to the proposed 10 MW size eliminates the potential for population-level impacts resulting from the Facility.

Table 4. Estimated annual bird fatality rates at wind energy facilities in the Pacific Northwest.

Wind Energy Facility	Fatality Estimate[A]	No. of Turbines	Total MW
Pacific Northwest			
Leaning Juniper, OR	6.66	67	100.5
Stateline, OR/WA (2002) [B]	3.48	454	263
Klondike II, OR	3.14	50	75
Klondike III, OR	3.02	122	375
Hopkins Ridge, WA (2008)	2.99	83	150
Stateline, OR/WA (2003) [B]	2.95	454	263
Nine Canyon, WA	2.76	37	48
Combine Hills, OR [B]	2.56	41	41
Big Horn, WA	2.54	133	199.5
Biglow Canyon, OR (Phase I; 2009)	2.47	76	125.4
Biglow Canyon, OR (Phase I; 2008)	1.76	76	125.4
Wild Horse, WA	1.55	127	229
Stateline II, OR/WA (2006) [B]	1.23	454	263
Hopkins Ridge, WA (2006)	1.23	83	150
Vansycle, OR [B]	0.95	38	24.9
Klondike, OR	0.95	16	24
Elkhorn, OR	0.64 [B]	61	101
Marengo I, WA	0.27	78	140.4
Marengo II, WA	0.16	39	70.2

A=number of bird fatalities/MW/year

B=Located in Umatilla County, Oregon

Data from the following sources:

Wind Energy Facility	Fatality Estimate	Wind Energy Facility	Fatality Estimate
Leaning Juniper, OR	Gritski et al. 2008	Biglow Canyon, OR (Phase I; 08)	Jeffrey et al. 2009a
Stateline, OR/WA (02)	Erickson et al. 2004	Wild Horse, WA	Erickson et al. 2008
Klondike II, OR	NWC and WEST 2007	Stateline II, OR/WA	Erickson et al. 2007
Klondike III, OR	Gritski et al. 2010	Hopkins Ridge, WA (06)	Young et al. 2007
Hopkins Ridge, WA (08)	Young et al. 2009	Vansycle, OR	Erickson et al. 2000b
Stateline, OR/WA (03)	Erickson et al. 2004	Klondike, OR	Johnson et al. 2003b
Nine Canyon, WA	Erickson et al. 2003	Elkhorn, OR	Jeffrey et al. 2009c
Combine Hills, OR	Young et al. 2006	Marengo I, WA	URS Corporation 2010b
Big Horn, WA	Kronner et al. 2008	Marengo II, WA	URS Corporation 2010d
Biglow Canyon, OR (Phase I; 09)	Enk et al. 2010		

Indirect Effects

Construction activities may temporarily disturb and/or displace wildlife species in the vicinity of work areas, including nesting raptors. The long-term presence of wind turbines may also alter the landscape to such a degree that wildlife is permanently displaced from otherwise suitable habitats in the vicinity of project facilities. Birds displaced from wind energy facilities might move to lower quality habitat with fewer disturbances, with an overall effect of reducing breeding success.

In the Original Facility baseline report, concerns of grassland passerine displacement are discussed. For the Current Project Area, construction impacts will be limited to agricultural areas and disturbance of native habitats will be avoided. Therefore, reductions in habitat quality or in grassland-nesting passerine densities are not anticipated.

Concerns regarding potential indirect effects of wind energy facilities on raptor species include displacement and reduced reproductive success as a result of human activities in primary foraging areas and/or near active nest. In 2010, active red-tailed hawk nests were documented within two miles of currently proposed turbine locations; other raptor species may also utilize these nests or nest areas in other years. Diurnal raptors and owls continued to nest at a wind energy facility in eastern Washington at approximately the same levels after construction, with several nests located within a half-mile of turbines (Erickson et al. 2004). In Oregon, a Swainson's hawk also nested within a quarter-mile of a turbine string at the Klondike I wind energy facility (Johnson et al. 2003b). These observations suggest that there may be limited displacement of nesting diurnal raptors at the Facility. The establishment of seasonal construction buffers around active nests during construction could minimize temporary displacement effects.

Sensitive Species

Grasshopper sparrow and Swainson's hawk were the most common sensitive species observed in the Original Project Area during baseline surveys or incidentally (163 and 80 observations, respectively). Other sensitive species recorded during these surveys included golden eagle (12), bald eagle (three), Lewis' woodpecker (three), ferruginous hawk (three), loggerhead shrike (two), and long-billed curlew (one).

Generally, sensitive species observations were uncommon within and near the Current Project Area (Figure 8). Grasshopper sparrows depend on grassland habitat and are rarely found as casualties at wind facilities in the Columbia Plateau (one fatality during studies at 23 facilities; Johnson and Erickson 2011). Swainson's hawk had the highest use (0.17 birds/plot/20-min survey) and exposure index (0.06) than the other sensitive species. This suggests some risk to Swainson's hawk;, however, the location of the Swainson's hawk nest was three miles away from the Current Project Area and there were few observations of this species on the plateau in the vicinity of proposed turbines. The baseline data suggest that actual risk to Swainson's hawks is relatively low. Golden eagle use was very low (0.01) and the associated exposure index was less than 0.01. Furthermore, no golden eagle nests were found within 10 miles of the Facility. Therefore, very low direct or indirect impacts are anticipated for this species. Loggerhead shrike and long-billed curlew have relatively low risk based upon habitat use and flight characteristics. To WEST's knowledge, no loggerhead shrikes and only one long-billed curlew have been documented as fatalities at CPE wind energy facilities (see Gritski and Kronner 2010b, Johnson and Erickson 2011). Finally, only three ferruginous hawk observations were made, and all incidentally. Four ferruginous hawk fatalities have been documented in the Pacific Northwest (Appendix B). For these reasons, this species is considered to have an extremely low risk of collision at the Facility.

Bats

The studies that have collected both pre- and post-construction data at wind energy facilities show a limited correlation between bat use and fatality rates (see Appendix J of baseline report [Enk et al. 2011a]). Bat activity recorded at the non-feature stations within the Original Project Area was 1.25 ± 0.11 bat passes/detector-night. The Proposed Facility is not located near any

known bat colonies or features that would attract large numbers of bats, and activity was uniformly low among all non-feature ground stations. These stations were located in agricultural and grassland-steppe habitats, and bat use at these stations is representative of the proposed turbine locations which are located exclusively in agricultural habitat. Low overall use and the reduced Facility size suggest limited risk of bat collisions. Based on bat use data (including seasonal and spatial patterns) during the baseline survey, and fatality data from existing facilities in Umatilla County and the CPE, the estimated range of bat fatality rates for the Proposed Facility is 0.4 – 2.5 bats/MW/year.

CONCLUSIONS AND RECOMMENDATIONS

The original 99-MW Chopin layout has been reduced to a smaller footprint 10-MW Facility. Like the Original Facility, the Proposed Facility is located in an agricultural-dominated landscape and all proposed turbines will be located in wheat fields. This turbine siting greatly minimizes potential adverse effects to wildlife, including habitat loss and displacement. The location of turbines in cultivated fields also greatly reduces the potential risk of bird fatalities as most avian species of concern do not forage or nest in agricultural habitats. The riparian corridors, which will not be disturbed by the project, represent the primary native habitat in the area. While the riparian areas are used for nesting and foraging by raptors, the turbines will be sited on the plateau. No rare plants or jurisdictional wetlands occur within the Current Project Area.

Data collected during the baseline studies for the Original Facility indicated slightly lower general bird use and slightly higher diurnal raptor use in the Original Project Area compared to other wind resource areas in the CPE. Bat activity levels were similar to other regional projects. Based on the results of the baseline studies, general bird and bat fatality rates for the original 99-MW layout were anticipated to be similar to those documented at existing wind energy facilities in the region. Diurnal raptor use estimates and nest densities suggested raptor fatality rates at the Original Facility might have been somewhat higher than other CPE projects. However, these estimates are likely to be biased due to the concentration of diurnal raptor activity along the riparian corridors. An assessment of data from points near where the turbines will be sited indicated raptor use in the vicinity of turbines is similar to other CPE wind energy facilities. Therefore, raptor fatality rates are anticipated to be similar to the regional average. The reduced size of the Proposed Facility decreases the potential for impacts on bird and bat populations.

As stated earlier, baseline surveys for the Original Facility were comprehensive in addressing questions related to potential Original (and, therefore, Current) Facility impacts on birds, bats, and sensitive species. However, WEST recommends that Chopin Wind, LLC complete another raptor nest study for the Proposed Facility close to the proposed construction period in order to minimize and avoid construction impacts to locally nesting raptors (e.g., through seasonal construction restrictions). In following the Wind Energy Guidelines, Chopin Wind, LLC should also plan to complete a Tier IV avian and bat post-construction monitoring study once the Facility is built in order to document the anticipated low impacts from Facility operations (USFWS 2012). An Avian Impact Plan for the current Facility layout is in preparation.

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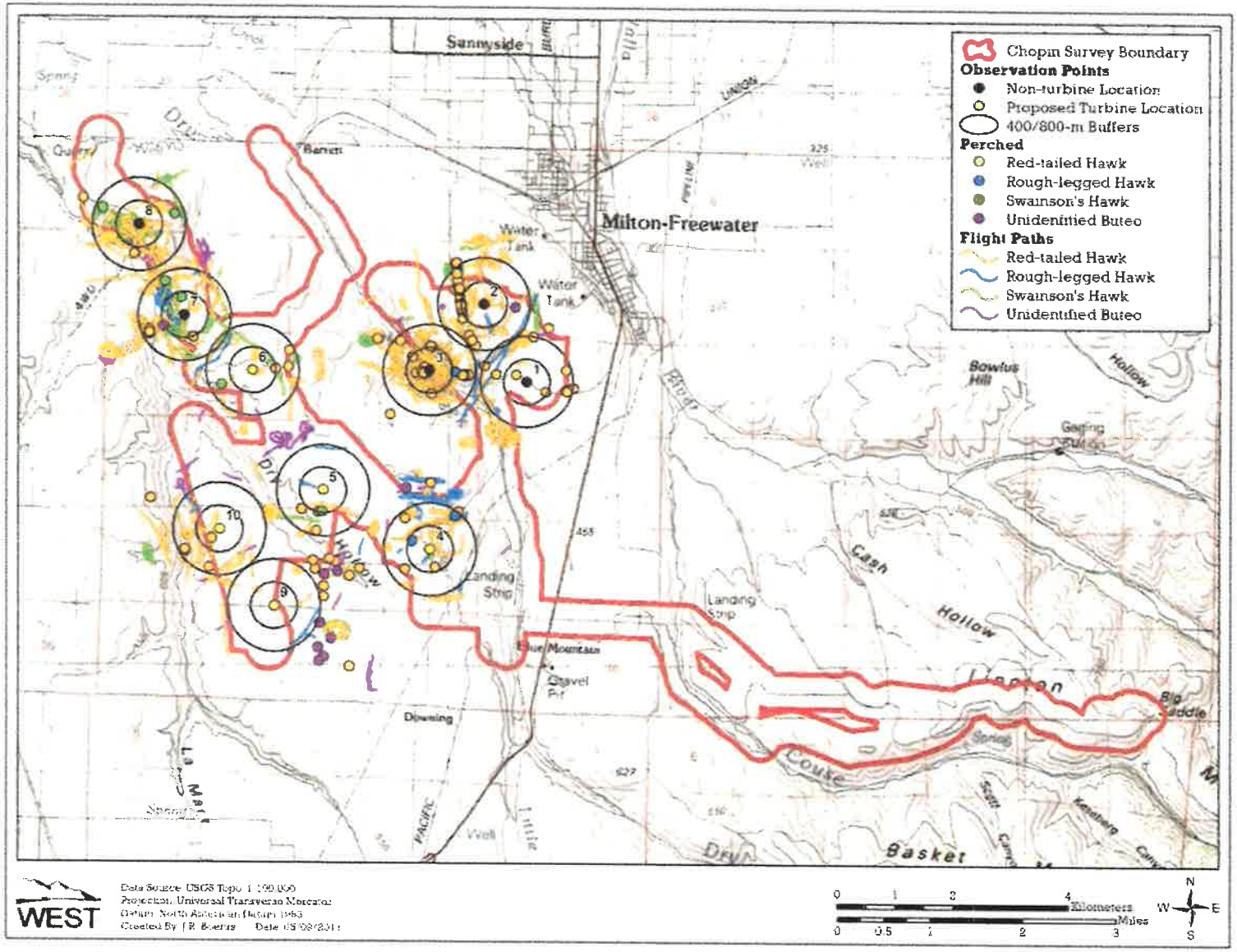
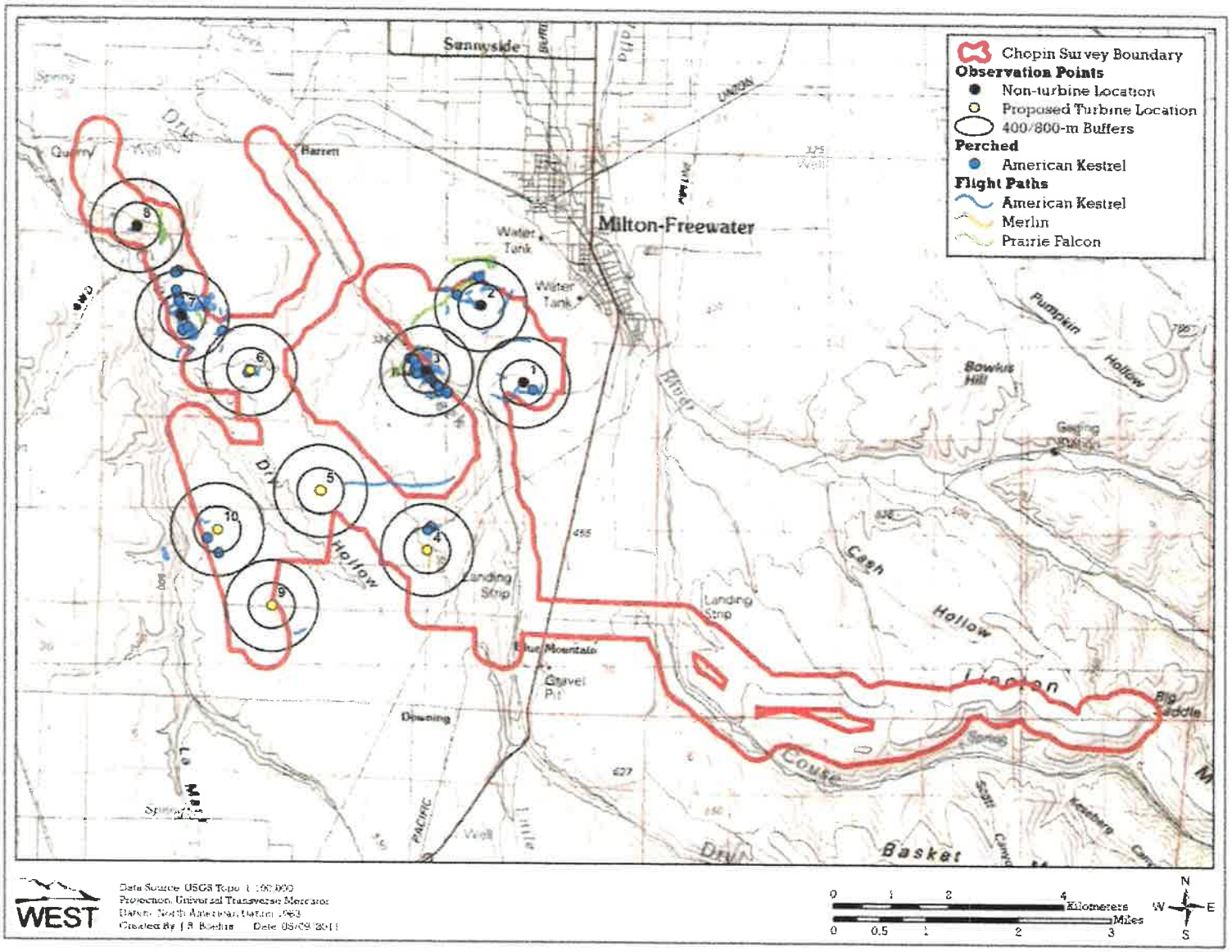
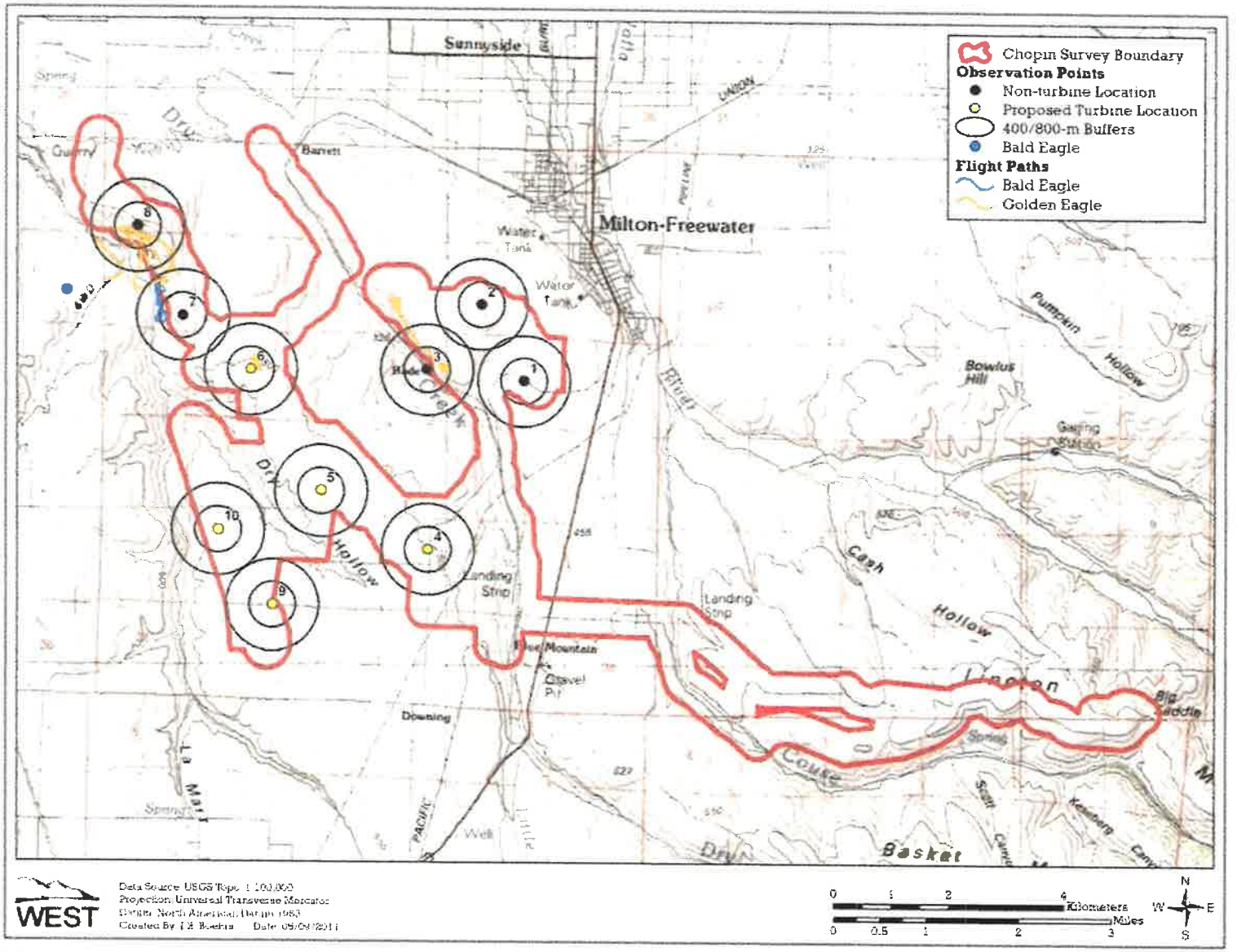
Appendix A: Raptor Flight Paths during Fixed-point Bird Use Surveys from April 27, 2010 – April 18, 2011 at the Chopin Wind Energy Facility



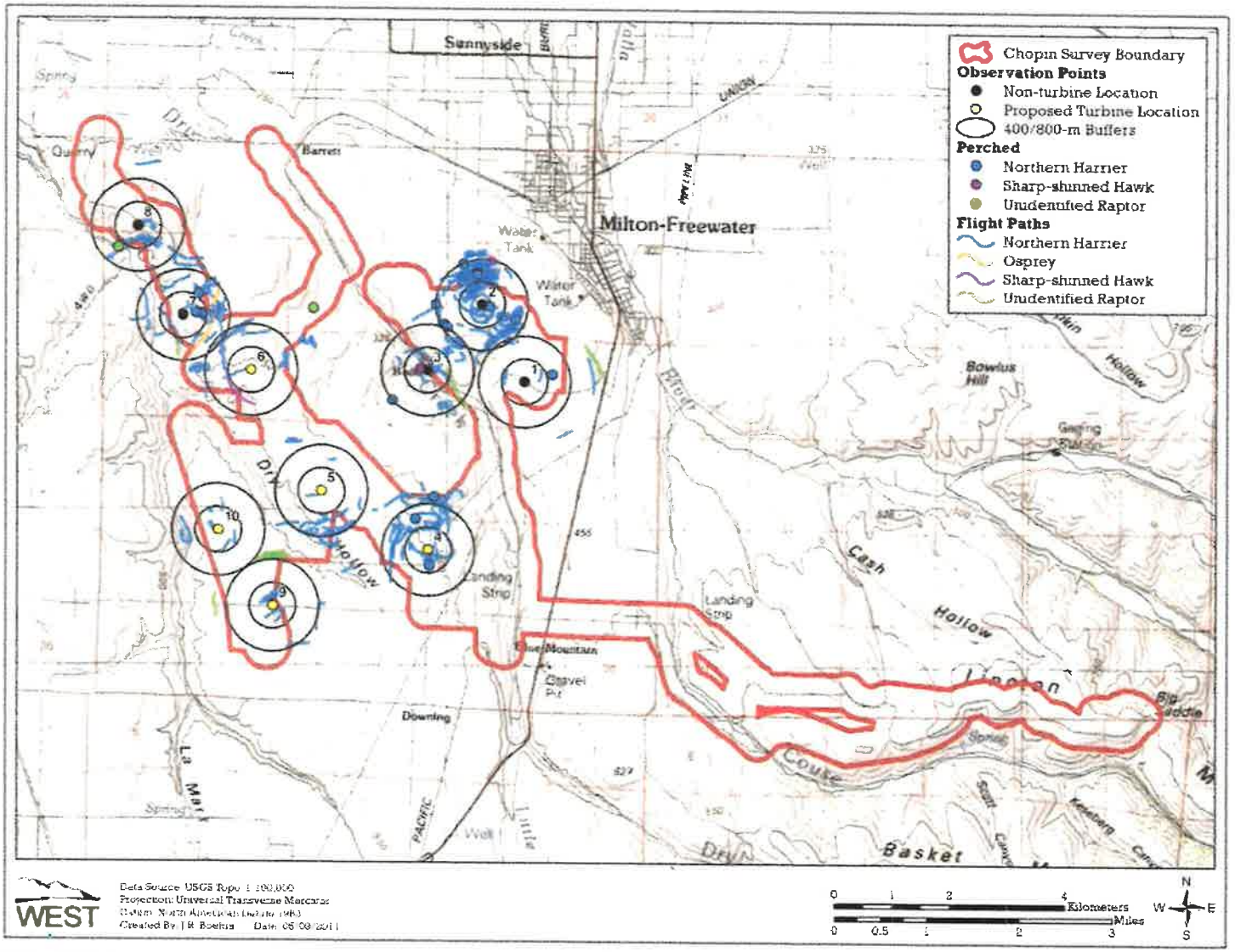
Appendix A. Flight paths of buteos at the Chopin Wind Energy Facility.



Appendix A (*continued*). Flight paths of falcons at the Chopin Wind Energy Facility.



Appendix A (*continued*). Flight paths of eagles at the Chopin Wind Energy Facility.



Appendix A (*continued*). Flight paths of other raptors at the Chopin Wind Energy Facility.

Appendix B: Publicly available studies at wind energy facilities in the Pacific Northwest

Appendix B. Publicly available studies at wind energy facilities in the Pacific Northwest.

Project	Study Reference	Project	Study Reference
Big Horn, WA (06-07)	Kronner et al. 2008	Klondike II, OR (05-06)	NWC and WEST 2007
Biglow Canyon, OR (Phase I; 08)	Jeffrey et al. 2009a	Klondike III (Phase I), OR (07-09)	Gritski et al. 2010
Biglow Canyon, OR (Phase I; 09)	Enk et al. 2010	Klondike IIIa (Phase II), OR (08-10)	Gritski et al. 2011
Biglow Canyon, OR (Phase II; 09-10)	Enk et al. 2011b	Leaning Juniper, OR (06-08)	Gritski et al. 2008
Biglow Canyon, OR (Phase II; 10-11)	Enk et al. 2012b	Linden Ranch, WA (10-11)	Enz and Bay 2011
Biglow Canyon, OR (Phase III; 10-11)	Enk et al. 2012a	Marengo I, WA (09-10)	URS Corporation 2010b
Combine Hills, OR (Phase I; 04-05)	Young et al. 2006	Marengo II, WA (09-10)	URS Corporation 2010d
Combine Hills, OR (11)	Enz et al. 2012	Nine Canyon, WA (02-03)	Erickson et al. 2003
Condon, OR	Fishman Ecological Services 2003	Pebble Springs, OR (09-10)	Gritski and Kronner 2010b
Elm Creek, MN (09-10)	Derby et al. 2010	Stateline, OR/WA (01-02)	Erickson et al. 2004
Elm Creek II, MN (11-12)	Derby et al. 2012	Stateline, OR/WA (03)	Erickson et al. 2004
Goodnoe, WA (09-10)	URS Corporation 2010a	Stateline, OR/WA (06)	Erickson et al. 2007
Harvest Wind, WA (10-12)	Downes and Gritski 2012a	Tuolumne (Windy Point I), WA (09-10)	Enz and Bay 2010
Hay Canyon, OR (09-10)	Gritski and Kronner 2010a	Vansycle, OR (99)	Erickson et al. 2000a
Hopkins Ridge, WA (06)	Young et al. 2007	Vantage, WA (10-11)	Ventus Environmental Solutions 2012
Hopkins Ridge, WA (08)	Young et al. 2009	White Creek, WA (07-11)	Downes and Gritski 2012b
Kittitas Valley, WA (11-12)	Stantec Consulting 2012	Wild Horse, WA (07)	Erickson et al. 2008
Klondike, OR (02-03)	Johnson et al. 2003a	Windy Flats, WA (10-11)	Enz et al. 2011

ENVIRONMENTAL & STATISTICAL CONSULTANTS

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March 12, 2015

Kate Valentine
BayWa r.e. Wind, LLC
4365 Executive Drive, Suite 1470
San Diego, CA 92121

RE: Chopin Wind Energy Facility

Dear Ms. Valentine,

In 2010 and 2011, Western EcoSystems Technology, Inc. (WEST) was contracted by WKN Chopin LLC to complete Baseline Wildlife Surveys, consistent with the current USFWS Land-Based Wind Energy Guidelines Tier III surveys, for the proposed Chopin Wind Energy Facility (Facility) in Umatilla County, Oregon. The survey efforts included avian use, raptor nest, bat acoustic, sensitive species, and rare plant surveys. Furthermore, wetlands and streams were delineated, and general habitat availability was mapped. These studies were based on the original boundary for the Facility, which was based on a 33 turbine, 99 MW project (Figure 1). However, Chopin Wind, LLC (a subsidiary of BayWa r.e. Wind, LLC) now proposes a 5 turbine, 10 MW project in order to reach compliance with Umatilla County permitting requirements. The revised Facility would occur on agricultural lands and falls entirely within the former survey areas (Figure 2). This letter offers our recommendations for the applications and shortcomings of existing Tier 3 data to the current Chopin Wind, LLC Facility plans.

Generally, 2010-2011 survey results indicate that the originally proposed 99 MW project would not have significant direct or indirect impacts on plants or wildlife. Avian use data was consistent with data from other wind energy studies conducted within Umatilla County. Raptor use was relatively high, but was focused within the Pine Creek and Dry Creek riparian corridors. Swainson's hawk (*Buteo swainsoni*) and grasshopper sparrow (*Ammodramus savannarum*) were the only sensitive species (both State Vulnerable) observed with frequency, but few of these observations were associated with agricultural fields. Bat use was generally low throughout the 2010-2011 study area, and very low (<1 pass/night) at survey points nearest the current turbine layout. No rare plants were found in 2011, and wetlands were not documented within the current anticipated development corridors. Based on these results, as well as the current size, land cover (agricultural), and location of the currently proposed turbines, repeating the Tier III surveys is likely not warranted.

Raptor nest data documented extensive use of the drainages within the old boundary, including several red-tailed hawk (*Buteo jamaicensis*) nests in close proximity to the current turbine layout (Figure 2). Direct and indirect impacts to raptor species nesting near turbines remain a concern for the Facility. WEST recommends that Chopin Wind, LLC completes another raptor nest study close to the proposed construction period in order to minimize and avoid impacts to locally nesting raptors (e.g., through seasonal construction restrictions). In following the Wind Energy Guidelines, Chopin Wind, LLC should plan to complete a Tier IV avian and bat post-construction

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monitoring study once the Facility is built in order to document the anticipated low impacts from Facility operations.

In summary, WEST feels that existing Tier III data adequately supports the conclusion that overall Facility impacts will be low and consistent with other wind energy facilities within Umatilla County. However, WEST recommends the completion of another raptor nest survey shortly before construction begins, as well as post-construction monitoring of impacts, in order to minimize, avoid, and mitigate potential development impacts.

Sincerely,

Eric Hallingstad
Project Manager

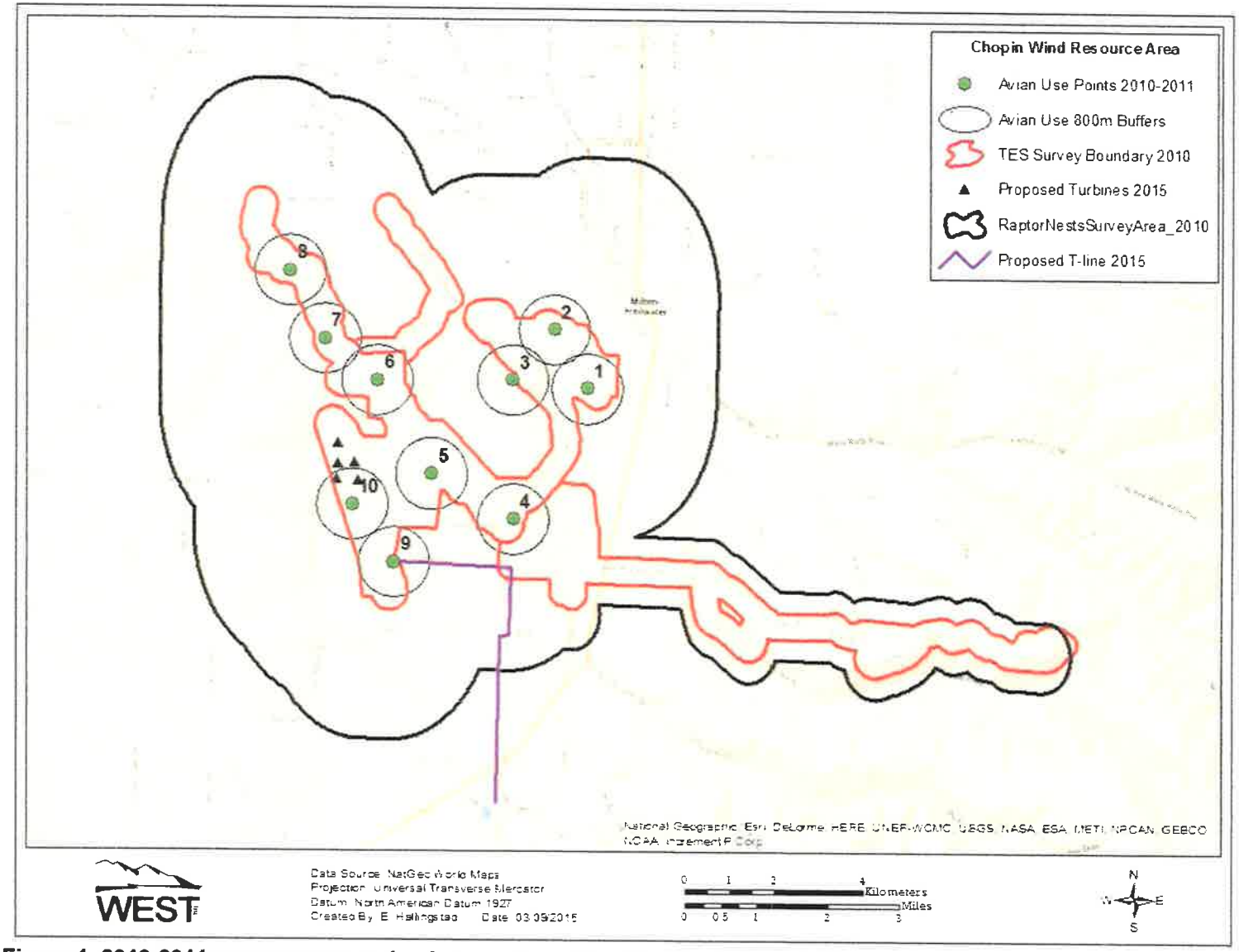

Figure 1. 2010-2011 survey areas and point count locations for the proposed Chopin Wind Energy Facility. The current turbine and transmission line plans are also shown.

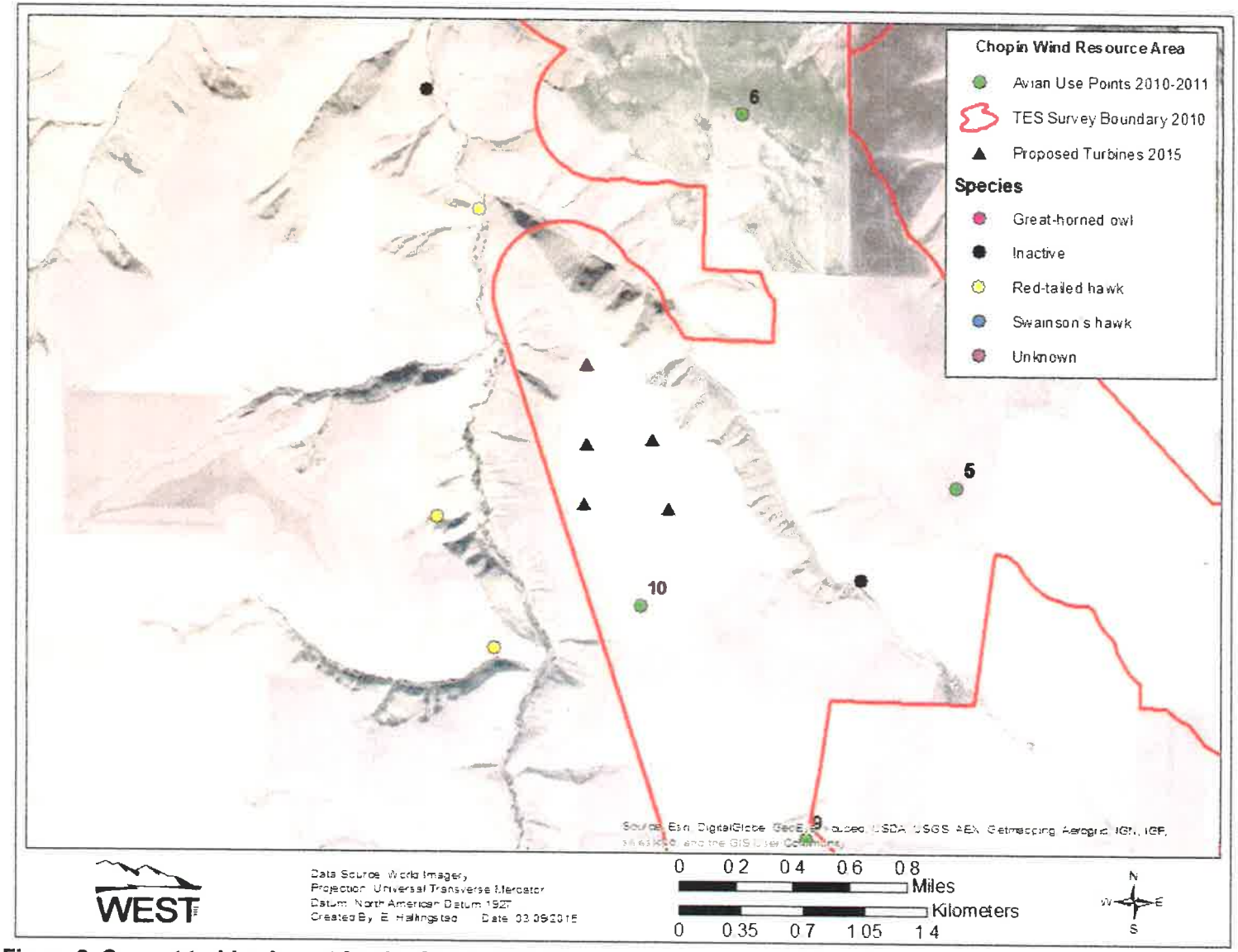

Figure 2. Current turbine layout for the Chopin Wind Energy Facility with 2010 raptor nest locations and sensitive species survey area.