

Klondike III Wind Project: Wildlife Monitoring and Mitigation Plan **[JUNE 30, 2006]**

1 This plan describes wildlife monitoring that the certificate holder shall conduct during
2 operation of the Klondike III Wind Project (KWP).¹ The monitoring objectives are to determine
3 whether the facility causes significant fatalities of birds and bats and to determine whether the
4 facility results in a loss of habitat quality. The KWP facility consists of 165 wind turbines, three
5 non-guyed meteorological towers and other related or supporting facilities as described in the
6 site certificate.

7 The certificate holder shall use experienced personnel to manage the monitoring required
8 under this plan and properly trained personnel to conduct the monitoring, subject to approval by
9 the Oregon Department of Energy (Department) as to professional qualifications. For all
10 components of this plan except PPM Energy's Klondike III Wind Project Wildlife Reporting and
11 Handling System, the certificate holder shall hire an independent third party (not employees of
12 the certificate holder) to perform monitoring tasks.

13 The Wildlife Monitoring and Mitigation Plan for the Klondike III Wind Project has the
14 following components:

- 15 1) Fatality monitoring program including:
 - 16 a) Removal trials
 - 17 b) Searcher efficiency trials
 - 18 c) Fatality search protocol
 - 19 d) Statistical analysis
- 20 2) Raptor nesting surveys
- 21 3) Avian use surveys
- 22 4) PPM Energy's Klondike III Wind Project Wildlife Reporting and Handling
23 System

24 Following is a discussion of the components of the monitoring plan, statistical analysis
25 methods for fatality data, data reporting and potential mitigation.

26 The selection of the mitigation actions that the certificate holder may be required to
27 implement under this plan should allow for flexibility in creating appropriate responses to
28 monitoring results that cannot be known in advance. If the Department determines that
29 mitigation is needed, the certificate holder shall propose appropriate mitigation actions to the
30 Department and shall carry out mitigation actions approved by the Department, subject to review
31 by the Oregon Energy Facility Council (Council).

¹ This plan is incorporated by reference in the site certificate for the KWP and must be understood in that context. It is not a "stand-alone" document. This plan does not contain all mitigation required of the certificate holder.

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1. Fatality Monitoring

(a) Definitions and Methods

Seasons

This plan uses the following dates for defining seasons:

Season	Dates
Spring Migration	March 16 to May 15
Summer/Breeding	May 16 to August 15
Fall Migration	August 16 to October 31
Winter	November 1 to March 15

Search Plots

The certificate holder shall conduct fatality monitoring within search plots. The certificate holder, in consultation with the Oregon Department of Fish and Wildlife (ODFW), shall select search plots based on a systematic sampling design that ensures that the selected search plots are representative of the habitat conditions in different parts of the site. Each search plot will contain one turbine. Search plots will be square or circular. Circular search plots will have a radius of 242 meters centered on the turbine location. Square search plots will be of sufficient size to contain a circle with a radius of 242 meters centered on the turbine location. The certificate holder shall provide maps of the search plots to the Department before beginning fatality monitoring at the facility. The certificate holder shall use the same search plots for each search conducted during a monitoring year.

Scheduling

In each monitoring year, the certificate holder shall conduct fatality monitoring searches at the rates of frequency shown below. Over the course of one monitoring year, the certificate holder would conduct 16 searches, as follows:

Season	Frequency
Spring Migration	2 searches per month (4 searches)
Summer/Breeding	1 search per month (3 searches)
Fall Migration	2 searches per month (5 searches)
Winter	1 search per month (4 searches)

Sample Size

The sample size for fatality monitoring is the number of turbines searched per monitoring year. The certificate holder shall search a minimum of 55 turbines during the first monitoring year. The certificate holder shall search a minimum of 55 different turbines during the second monitoring year. Over two monitoring years, 110 of the 165 turbines will be searched.

(b) Removal Trials

The objective of the removal trials is to estimate the length of time avian and bat carcasses remain in the search area. Carcass removal studies will be conducted during each season in the vicinity of the search plots. Estimates of carcass removal rates will be used to adjust carcass counts for removal bias. "Carcass removal" is the disappearance of a carcass from

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1 the search area due to predation, scavenging or other means such as farming activity. Removal
2 rates will be estimated by habitat and season.

3 The certificate holder shall conduct carcass removal trials within each of the seasons
4 defined above during the years in which fatality monitoring occurs. During the first year in
5 which fatality monitoring occurs, trials will occur in at least eight different calendar weeks in a
6 year, with at least one calendar week between starting dates. Trials will be spread throughout the
7 year to incorporate the effects of varying weather, farming practices and scavenger densities. At
8 least two trials will be started in each season. Each trial will use at least 20 carcasses. For each
9 trial, at least 5 small bird carcasses and at least 5 large bird carcasses will be distributed in
10 cultivated agriculture habitat and at least 3 small bird carcasses and at least 3 large bird carcasses
11 will be distributed in non-cultivated habitat (grassland/shrub steppe and CRP). In a year,
12 approximately 100 carcasses will be placed in cultivated agriculture and approximately 60 in
13 non-cultivated grassland/shrub steppe or CRP for a total of approximately 160 trial carcasses.
14 The number of removal trials may be reduced to one per season (80 trial carcasses) during the
15 second year of fatality monitoring, subject to approval by the Department, if the certificate
16 holder can demonstrate that the calculation of fatality rates will continue to have statistical
17 validity with the reduced sample size.

18 The “small bird” size class will use carcasses of house sparrows, starlings, commercially
19 available game bird chicks or legally obtained native birds to simulate passerines. The “large
20 bird” size class will use carcasses of raptors provided by agencies, commercially available adult
21 game birds or cryptically colored chickens to simulate raptors, game birds and waterfowl. If
22 fresh bat carcasses are available, they may also be used.

23 To avoid confusion with turbine-related fatalities, planted carcasses will not be placed in
24 fatality monitoring search plots. Planted carcasses will be placed in the vicinity of search plots
25 but not so near as to attract scavengers to the search plots. The planted carcasses will be located
26 randomly within the carcass removal trial plots.

27 Carcasses will be placed in a variety of postures to simulate a range of conditions. For
28 example, birds will be: 1) placed in an exposed posture (e.g., thrown over the shoulder), 2)
29 hidden to simulate a crippled bird (e.g., placed beneath a shrub or tuft of grass) and, 3) partially
30 hidden. Trial carcasses will be marked discreetly for recognition by searchers and other
31 personnel. Trial carcasses will be left at the location until the end of the carcass removal trial.

32 It is expected that carcasses will be checked as follows, although actual intervals may
33 vary. Carcasses will be checked for a period of 40 days to determine removal rates. They will be
34 checked approximately every day for the first 4 days, and then on day 7, day 10, day 14, day 20,
35 day 30 and day 40. This schedule may vary depending on weather and coordination with the
36 other survey work. At the end of the 40-day period, the trial carcasses and scattered feathers will
37 be removed.

38 (c) Searcher Efficiency Trials

39 The objective of searcher efficiency trials is to estimate the percentage of bird and bat
40 fatalities that searchers are able to find. The certificate holder shall conduct searcher efficiency
41 trials on the fatality monitoring search plots in both grassland/shrub-steppe and cultivated
42 agriculture habitat types. Searcher efficiency will be estimated by habitat type and season.
43 Estimates of searcher efficiency will be used to adjust carcass counts for detection bias.

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1 Searcher efficiency trials will be conducted in each season as defined above, during the
2 years in which the fatality monitoring occurs. Trials will be spread throughout the year to
3 incorporate the effects of varying weather, farming practices and scavenger densities. At least
4 two trials will be conducted in each season. Each trial will use approximately 20 carcasses,
5 although the number will be variable so that the searcher will not know the total number of trial
6 carcasses being used in any trial. For each trial, both small bird and large bird carcasses will be
7 used in approximately equal numbers. “Small bird” and “large bird” size classes and carcass
8 selection are as described above for the removal trials. A greater proportion of the trial carcasses
9 will be distributed in cultivated agriculture habitat than in non-cultivated habitat (grassland/shrub
10 steppe and CRP). In a year, approximately 100 carcasses will be placed in cultivated agriculture
11 and approximately 60 in non-cultivated grassland/shrub steppe or CRP for a total of
12 approximately 160 trial carcasses. The number of searcher efficiency trials may be reduced to
13 one per season (80 trial carcasses) during the second year of fatality monitoring, subject to
14 approval by the Department, if the certificate holder can demonstrate that the calculation of
15 fatality rates will continue to have statistical validity with the reduced sample size.

16 Personnel conducting searches will not know in advance when trials are conducted; nor
17 will they know the location of the trial carcasses. If suitable trial carcasses are available, trials
18 during the fall season will include several small brown birds to simulate bat carcasses. Legally
19 obtained bat carcasses will be used if available.

20 On the day of a standardized fatality monitoring search (described below) but before the
21 beginning of the search, efficiency trial carcasses will be placed at random locations within areas
22 to be searched. If scavengers appear attracted by placement of carcasses, the carcasses will be
23 distributed before dawn.

24 Efficiency trials will be spread over the entire season to incorporate effects of varying
25 weather and vegetation growth. Carcasses will be placed in a variety of postures to simulate a
26 range of conditions. For example, birds will be: 1) placed in an exposed posture (thrown over the
27 shoulder), 2) hidden to simulate a crippled bird and 3) partially hidden.

28 Each non-domestic carcass will be discreetly marked so that it can be identified as an
29 efficiency trial carcass after it is found. The number and location of the efficiency trial carcasses
30 found during the carcass search will be recorded. The number of efficiency trial carcasses
31 available for detection during each trial will be determined immediately after the trial by the
32 person responsible for distributing the carcasses.

33 If new searchers are brought into the search team, additional detection trials will be
34 conducted to ensure that detection rates incorporate searcher differences.

35 (d) Coordination with the Biglow Canyon Wind Farm

36 The proposed Biglow Canyon Wind Farm lies to the north of the Klondike III Wind
37 Power Project on similar terrain and habitat. If the Council approves site certificates for both
38 facilities and requires similar wildlife monitoring, coordination of removal trials and searcher
39 efficiency trials would be possible. Subject to the approval of both certificate holders and the
40 Department, the number of trials at each site and the number of trial carcasses used at each site
41 can be reduced by combining the removal data and efficiency data from both projects, if the
42 certificate holder can demonstrate that the calculation of fatality rates would continue to have

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1 statistical validity for both facilities and that combining the data would not affect any other
2 requirements of the monitoring plans for either facility.

3 (e) Fatality Monitoring Search Protocol

4 The objective fatality monitoring is to estimate the number of bird and bat fatalities that
5 are attributable to facility operation. The goal of bird and bat fatality monitoring is to obtain a
6 precise estimate of the fatality rate and associated variances. The certificate holder shall conduct
7 fatality monitoring using standardized carcass searches. The certificate holder shall conduct
8 fatality monitoring for two years (32 searches), beginning one month after the start of
9 commercial operation of the KWP.

10 The certificate holder shall use a worst-case analysis to resolve any uncertainty in the
11 results and to determine whether the data indicate that additional mitigation should be
12 considered. The Department may require additional, targeted monitoring if the data indicate the
13 potential for significant impacts that cannot be addressed by worst-case analysis and appropriate
14 mitigation. On an annual basis, the certificate holder shall report an estimate of fatalities in seven
15 categories: 1) all birds, 2) small birds, 3) large birds, 4) raptors, 5) grassland birds, 6) nocturnal
16 migrants, 7) State Sensitive Species listed under OAR 635-100-0040 and 8) bats. The certificate
17 holder shall calculate fatality rates using the statistical methods described in Section (f).

18 The certificate holder shall estimate the number of avian and bat fatalities attributable to
19 operation of the facility based on the number of avian and bat fatalities found at the facility site.
20 All carcasses located within areas surveyed, regardless of species, will be recorded and, if
21 possible, a cause of death determined based on blind necropsy results. If a different cause of
22 death is not apparent, the fatality will be attributed to facility operation. The total number of
23 avian and bat carcasses will be estimated by adjusting for removal and searcher efficiency bias.

24 Personnel trained in proper search techniques (“the searchers”) will conduct the carcass
25 searches by walking parallel transects within the search plots.² Transects will be initially set at 6
26 meters apart in the area to be searched. A searcher will walk at a rate of approximately 45 to 60
27 meters per minute along each transect searching both sides out to three meters for casualties.
28 Search area and speed may be adjusted by habitat type after evaluation of the first searcher
29 efficiency trial. The searchers will record the condition of each carcass found, using the
30 following condition categories:

- 31 ▪ Intact – a carcass that is completely intact, is not badly decomposed and shows no
32 sign of being fed upon by a predator or scavenger
- 33 ▪ Scavenged – an entire carcass that shows signs of being fed upon by a predator or
34 scavenger, or portions of a carcass in one location (e.g., wings, skeletal remains,
35 legs, pieces of skin, etc.)
- 36 ▪ Feather Spot – 10 or more feathers at one location indicating predation or
37 scavenging or 2 or more primary feathers

38 All carcasses (avian and bat) found during the standardized carcass searches will be
39 photographed, recorded and labeled with a unique number. Each carcass will be bagged and
40 frozen for future reference and possible necropsy. A copy of the data sheet for each carcass will

² Where search plots are adjacent, the search area may be rectangular.

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1 be kept with the carcass at all times. For each carcass found, searchers will record species, sex
2 and age when possible, date and time collected, location, condition (e.g., intact, scavenged,
3 feather spot) and any comments that may indicate cause of death. Searchers will photograph each
4 carcass as found and will map the find on a detailed map of the search area showing the location
5 of the wind turbines and associated facilities. The certificate holder shall coordinate collection of
6 state endangered, threatened or protected species with ODFW. The certificate holder shall
7 coordinate collection of federal endangered, threatened or protected species with the U.S. Fish
8 and Wildlife Service (USFWS). The certificate holder shall obtain appropriate collection permits
9 from ODFW and USFWS.

10 The searchers might discover carcasses incidental to formal carcass searches (e.g., while
11 driving within the project area). For each incidentally discovered carcass, the searcher shall
12 identify, photograph, record data and collect the carcass as would be done for carcasses within
13 the formal search sample during scheduled searches. If the incidentally discovered carcass is
14 found within a formal search plot, the fatality data will be included in the calculation of fatality
15 rates. If the incidentally discovered carcass is found outside a formal search plot, the data will be
16 reported separately. The certificate holder shall coordinate collection of incidentally discovered
17 state endangered, threatened or protected species with ODFW. The certificate holder shall
18 coordinate collection of incidentally discovered federal endangered, threatened or protected
19 species with the USFWS.

20 Any injured native birds found on the facility site will be carefully captured by a trained
21 project biologist or technician and transported to Jean Cypher (wildlife rehabilitator) in The
22 Dalles, the Blue Mountain Wildlife Rehabilitation Center in Pendleton or the Audubon Bird Care
23 Center in Portland in a timely fashion. The certificate holder shall pay costs, if any, charged for
24 time and expenses related to care and rehabilitation of injured native birds found on the site,
25 unless the cause of injury is clearly demonstrated to be unrelated to the facility operations.

26 (f) Statistical Methods for Fatality Estimates

27 The estimate of the total number of wind facility-related fatalities is based on:

- 28 (1) The observed number of carcasses found during standardized searches during the
29 two monitoring years for which the cause of death is attributed to the facility.³
- 30 (2) Searcher efficiency expressed as the proportion of planted carcasses found by
31 searchers.
- 32 (3) Removal rates expressed as the estimated average probability a carcass is expected
33 to remain in the study area and be available for detection by the searchers during
34 the entire survey period.

35 Definition of Variables

36 The following variables are used in the equations below:

- | | | |
|----|-------|--|
| 37 | c_i | the number of carcasses detected at plot i for the study period of interest (e.g., one |
| 38 | | year) for which the cause of death is either unknown or is attributed to the facility |
| 39 | n | the number of search plots |

³ If a different cause of death is not apparent, the fatality will be attributed to facility operation.

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1	k	the number of turbines searched (includes the turbines centered within each
2		search plot and a proportion of the number of turbines adjacent to search plots to
3		account for the effect of adjacent turbines on the 90-meter search plot buffer area)
4	\bar{c}	the average number of carcasses observed per turbine per year
5	s	the number of carcasses used in removal trials
6	s_c	the number of carcasses in removal trials that remain in the study area after 40
7		days
8	se	standard error (square of the sample variance of the mean)
9	t_i	the time (days) a carcass remains in the study area before it is removed
10	\bar{t}	the average time (days) a carcass remains in the study area before it is removed
11	d	the total number of carcasses placed in searcher efficiency trials
12	p	the estimated proportion of detectable carcasses found by searchers
13	I	the average interval between searches in days
14	$\hat{\pi}$	the estimated probability that a carcass is both available to be found during a
15		search and is found
16	m_t	the estimated annual average number of fatalities per turbine per year, adjusted
17		for removal and observer detection bias
18	C	nameplate energy output of turbine in megawatts (MW)

19 Observed Number of Carcasses

20 The estimated average number of carcasses (\bar{c}) observed per turbine per year is:

$$21 \quad \bar{c} = \frac{\sum_{i=1}^n c_i}{k}. \quad (1)$$

22

23 Estimation of Carcass Removal

24 Estimates of carcass removal are used to adjust carcass counts for removal bias. Mean carcass
25 removal time (\bar{t}) is the average length of time a carcass remains at the site before it is removed:

$$26 \quad \bar{t} = \frac{\sum_{i=1}^s t_i}{s - s_c}. \quad (2)$$

27 This estimator is the maximum likelihood estimator assuming the removal times follow an
28 exponential distribution and there is right-censoring of data. Any trial carcasses still remaining at
29 40 days are collected, yielding censored observations at 40 days. If all trial carcasses are

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1 removed before the end of the trial, then s_c is 0, and \bar{t} is just the arithmetic average of the
2 removal times. Removal rates will be estimated by carcass size (small and large) and season.

3 Estimation of Observer Detection Rates

4 Observer detection rates (i.e., searcher efficiency rates) are expressed as p , the proportion
5 of trial carcasses that are detected by searchers. Observer detection rates will be estimated by
6 carcass size and season.

7 Estimation of Facility-Related Fatality Rates

8 The estimated per turbine annual fatality rate (m_t) is calculated by:

$$9 \quad m_t = \frac{\bar{c}}{\hat{\pi}}, \quad (3)$$

10 where $\hat{\pi}$ includes adjustments for both carcass removal (from scavenging and other means) and
11 observer detection bias assuming that the carcass removal times t_i follow an exponential
12 distribution. Under these assumptions, this detection probability is estimated by:

$$13 \quad \hat{\pi} = \frac{\bar{t} \cdot p}{I} \cdot \left[\frac{\exp\left(\frac{I}{\bar{t}}\right) - 1}{\exp\left(\frac{I}{\bar{t}}\right) - 1 + p} \right]. \quad (4)$$

14

15 The estimated per MW annual fatality rate (m) is calculated by:

$$16 \quad m = \frac{m_t}{C}. \quad (5)$$

17 The certificate holder shall calculate fatality estimates for: (1) all birds, (2) small birds,
18 (3) large birds, (4) raptors, (5) grassland birds, (6) nocturnal migrants 7) State Sensitive Species
19 listed under OAR 635-100-0040 and 8) bats. The final reported estimates of m , associated
20 standard errors and 90% confidence intervals will be calculated using bootstrapping (Manly
21 1997). Bootstrapping is a computer simulation technique that is useful for calculating point
22 estimates, variances and confidence intervals for complicated test statistics. For each iteration of
23 the bootstrap, the plots will be sampled with replacement, trial carcasses will be sampled with
24 replacement and \bar{c} , \bar{t} , p , $\hat{\pi}$ and m will be calculated. A total of 5,000 bootstrap iterations will
25 be used. The reported estimates will be the means of the 5,000 bootstrap estimates. The standard
26 deviation of the bootstrap estimates is the estimated standard error. The lower 5th and upper 95th
27 percentiles of the 5000 bootstrap estimates are estimates of the lower limit and upper limit of
28 90% confidence intervals.

29 Nocturnal Migrant and Bat Fatalities

30 Differences in observed nocturnal migrant and bat fatality rates for lit turbines, unlit
31 turbines that are adjacent to lit turbines and unlit turbines that are not adjacent to lit turbines will
32 be compared graphically and statistically.

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1 (g) Mitigation

2 Mitigation may be appropriate if fatality rates exceed a “threshold of concern.” For the
3 purpose of determining whether a threshold has been exceeded, the certificate holder shall
4 calculate the average annual fatality rates for species groups after two years of monitoring. Based
5 on current knowledge of the species that are likely to use the habitat in the area of the facility, the
6 following thresholds apply to the Klondike III facility:

Species Group	Threshold of Concern (fatalities per MW)
Raptors (All eagles, hawks, falcons and owls, including burrowing owls.)	0.09
Raptor species of special concern (Swainson’s hawk, ferruginous hawk, peregrine falcon, golden eagle, bald eagle, burrowing owl and any federal threatened or endangered raptor species.)	0.06
Grassland species (All native bird species that rely on grassland habitat and are either resident species, occurring year round, or species that nest in the area, excluding horned lark, burrowing owl and northern harrier.)	0.59
State sensitive avian species listed under OAR 635-100-0040 (Excluding raptors listed above.)	0.2

7 If the data show that a threshold of concern for a species group has been exceeded, the
8 certificate holder shall implement additional mitigation if the Department determines that
9 mitigation is appropriate based on analysis of the data, consultation with ODFW and
10 consideration of any other significant information available at the time. In addition, mitigation
11 may be appropriate if the Department determines that fatality rates for individual avian or bat
12 species (especially State Sensitive Species) are higher than expected and at a level of biological
13 concern. If mitigation is appropriate, the certificate holder, in consultation with the Department
14 and ODFW, shall propose mitigation measures designed to benefit the affected species. The
15 certificate holder shall implement mitigation as approved by the Council. The Department may
16 recommend additional, targeted data collection if the need for mitigation is unclear based on the
17 information available at the time. The certificate holder shall implement such data collection as
18 approved by the Council.

19 Mitigation should be designed to benefit the affected species group. Mitigation may
20 include, but is not limited to, protection of nesting habitat for the affected group of native species
21 through a conservation easement or similar agreement. Tracts of land that are intact and
22 functional for wildlife are preferable to degraded habitat areas. Preference should be given to
23 protection of land that would otherwise be subject to development or use that would diminish the
24 wildlife value of the land. In addition, mitigation measures might include: enhancement of the
25 protected tract by weed removal and control; increasing the diversity of native grasses and forbs;
26 planting sagebrush or other shrubs; constructing and maintaining artificial nest structures for
27 raptors; improving wildfire response; and local research that will aid in understanding more
28 about the species and conservation needs. In considering whether additional mitigation is
29 appropriate for bat fatalities, the Department will take into account the mitigation that the
30 certificate holder has already implemented under Condition 96 of the site certificate (a
31 contribution of \$10,000 per year for three years, beginning in the first year of operation, to fund

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1 research toward better understanding wind facility impacts to bats and to develop mitigation
2 solutions).

3 2. Raptor Nest Surveys

4 The objectives of raptor nest surveys are to estimate the size of the local breeding
5 populations of tree or other above-ground-nesting raptor species in the vicinity of the facility and
6 to determine whether operation of the facility results in a reduction of nesting activity or nesting
7 success in the local populations of the following raptor species: Swainson's hawk, golden eagle
8 and ferruginous hawk.

9 (a) Survey Protocol

10 For the species listed above, aerial and ground surveys will be used to gather nest success
11 statistics on active nests, nests with young and young fledged. The certificate holder will share
12 the data with state and federal biologists. The certificate holder will conduct two years of post-
13 construction raptor nest surveys. One year of surveys will be done in the first nesting season after
14 construction is completed. The second year of surveys will be done in the fourth year after
15 construction is completed.

16 During each monitoring year, the certificate holder will conduct a minimum of one
17 helicopter survey in late May or early June and additional surveys as described in this section.
18 All nests discovered during pre-construction surveys and any nests discovered during post-
19 construction surveys, whether active or inactive, will be given identification numbers. Nest
20 locations will be recorded on U.S. Geological Survey 7.5-minute quadrangle maps. Global
21 positioning system coordinates will be recorded for each nest. Locations of inactive nests will be
22 recorded as they may become occupied during future years.

23 The certificate holder shall conduct the aerial surveys within the Klondike III site and a
24 2-mile buffer around the turbines to determine nest occupancy. Determining nest *occupancy* will
25 likely require two helicopter visits to each nest. For occupied nests, the certificate holder shall
26 determine nesting *success* by a minimum of one ground visit to determine species, number of
27 young and nesting success. "Nesting success" means that the young have successfully fledged
28 (the young are independent of the core nest site). Nests that cannot be monitored due to the
29 landowner denying access will be checked from a distance where feasible.

30 (b) Mitigation

31 The certificate holder shall analyze the raptor nesting data collected after two monitoring
32 years to determine whether a reduction in either nesting success or nest use has occurred in the
33 vicinity of the Klondike III facility. If the analysis indicates a reduction in nesting success by
34 Swainson's hawk, golden eagle or ferruginous hawk within 2 miles of the facility, then the
35 certificate holder shall propose appropriate mitigation and shall implement mitigation as
36 approved by the Council. At a minimum, if the analysis shows that any of these species has
37 abandoned a nest territory within ½ mile of the facility or has not fledged any young over the
38 two-year period within a ½ mile of the facility, the certificate holder shall assume the
39 abandonment or unsuccessful fledging is the result of the facility unless another cause can be
40 demonstrated convincingly.

1 Given the very low buteo nesting densities in the area, statistical power to detect a
2 relationship between distance from a wind turbine and nesting parameters (e.g., number of
3 fledglings per reproductive pair) will be very low. Therefore, impacts may have to be judged
4 based on trends in the data, results from other wind energy facility monitoring studies and
5 literature on what is known regarding the populations in the region.

6 If the analysis shows that mitigation is appropriate, the certificate holder shall propose
7 mitigation for the affected species in consultation with the Department and ODFW. Mitigation
8 should be designed to benefit the affected species or contribute to overall scientific knowledge
9 and understanding what stimulates nest abandonment. Mitigation may be designed to proceed in
10 phases over several years. It may include, but is not limited to, additional raptor nest monitoring,
11 protection of natural nest sites from human disturbance or cattle activity (preferably within two
12 miles of the facility) or participation in research projects designed to improve scientific
13 understanding of the needs of the affected species.

14 **(c) Long-term Raptor Nest Monitoring and Mitigation Plan**

15 In addition to the two years of post-construction raptor nest surveys described in
16 paragraph (a), the certificate holder shall conduct long-term raptor nest surveys at five-year
17 intervals for the life of the facility. The certificate holder shall conduct the first long-term raptor
18 nest survey in the ninth year after construction is completed. In conducting long-term surveys,
19 the certificate holder shall follow the same survey protocol that is described above in paragraph
20 (a) unless the certificate holder proposes an alternative protocol that is approved by the
21 Department. In developing an alternative protocol, the certificate holder shall consult with
22 ODFW and may collaborate with the certificate holder for any other wind energy facility.

23 The certificate holder shall analyze the long-term survey data as described above in
24 paragraph (b). If the analysis shows that mitigation is appropriate, the certificate holder shall
25 propose mitigation for the affected species in consultation with the Department and ODFW as
26 described in paragraph (b) and shall implement mitigation as approved by the Council. Any
27 reduction in nesting success could be due to operation of the KWP, operation of another wind
28 facility in the vicinity or some other cause. The reduction shall be attributed to the KWP if the
29 wind turbine closest to the affected nest site is a KWP turbine unless the certificate holder
30 demonstrates, and the Department agrees, that the reduction was due to a different cause.

31 **3. Avian Use Surveys**

32 During each fatality monitoring search, observers will record birds detected in a ten-
33 minute period at approximately one-third of the turbines within the fatality monitoring sample
34 using standard variable circular plot point count survey methods. The purpose of observing and
35 recording avian use while conducting the fatality monitoring is to identify additional species that
36 may not have been listed in the original baseline survey report. In addition, avian use surveys
37 provide a basis to evaluate, in general terms, whether the species with the highest fatality
38 numbers are also the most common species at the site.

39 **4. PPM Energy’s Klondike III Wind Project Wildlife Reporting and Handling System**

40 PPM Energy’s Klondike III Wind Project Wildlife Reporting and Handling System
41 (WRHS) is a monitoring program to search for and handle avian and bat casualties found by
42 maintenance personnel during construction and operation of the facility. A similar system is in

1 place for Klondike I and II. Construction and maintenance personnel will be trained in the
2 methods. This monitoring program includes the initial response, the handling and the reporting
3 of bird and bat carcasses discovered incidental to construction and maintenance operations
4 (“incidental finds”).

5 All carcasses discovered by maintenance personnel will be photographed and recorded. If
6 maintenance personnel discover incidental finds at turbines that are not within search plots for
7 the fatality monitoring searches, the data will be reported separately from fatality monitoring
8 data. For such incidental finds, the maintenance personnel will notify a project biologist. The
9 project biologist must be a qualified independent professional biologist who is not an employee
10 of the certificate holder. The project biologist (or the project biologist’s experienced wildlife
11 technician) will collect the carcass or will instruct maintenance personnel to have an on-site
12 carcass handling permittee collect the carcass. The certificate holder’s on-site carcass handling
13 permittee must be a person who is listed on state and federal scientific or salvage collection
14 permits and who is available to process (collect) the find on the day it is discovered. The find
15 must be processed on the same day as it is discovered.

16 If maintenance personnel discover carcasses within search plots, the data will be included
17 in the calculation of fatality rates. The maintenance personnel will notify a project biologist. The
18 project biologist will collect the carcass or will instruct maintenance personnel to have an on-site
19 carcass handling permittee collect the carcass. As stated above, the on-site permittee must be
20 available to process the find on the day it is discovered. The certificate holder shall coordinate
21 collection of state endangered, threatened or protected species with ODFW. The certificate
22 holder shall coordinate collection of federal endangered, threatened or protected species with the
23 USFWS.

24 **5. Data Reporting**

25 The certificate holder will report the monitoring data and analysis to the Department.
26 Monitoring data include fatality data, raptor nest survey data, avian use point counts and data on
27 incidental finds by fatality searchers and KWP personnel. The report may be included in the
28 annual report required under OAR 345-026-0080 or may be submitted as a separate document at
29 the same time the annual report is submitted. In addition, the certificate holder shall provide to
30 the Department any data or record generated in carrying out this monitoring plan upon request by
31 the Department.

32 The certificate holder shall notify USFWS and ODFW immediately in the event that any
33 federal or state endangered or threatened species are killed or injured on the facility site.

34 The public will have an opportunity to receive information about monitoring results and
35 to offer comment. Within 30 days after receiving the annual report of monitoring results, the
36 Department will make the report available to the public on its website and will specify a time in
37 which the public may submit comments to the Department.⁴

⁴ The certificate holder may establish a Technical Advisor Committee (TAC) but is not required to do so. If the certificate holder establishes a TAC, the TAC may offer comments to the Council about the results of the monitoring required under this plan.

1 **6. Amendment of the Plan**

2 This Wildlife Monitoring and Mitigation Plan may be amended from time to time by
3 agreement of the certificate holder and the Council. Such amendments may be made without
4 amendment of the site certificate. The Council authorizes the Department to agree to
5 amendments to this plan and to mitigation actions that may be required under this plan. The
6 Department shall notify the Council of all amendments and mitigation actions, and the Council
7 retains the authority to approve, reject or modify any amendment of this plan or mitigation action
8 agreed to by the Department.