# EXHIBIT P
# FISH AND WILDLIFE HABITATS AND SPECIES

OAR 345-021-0010(1)(p); OAR 345-022-0060

## TABLE OF CONTENTS

## ATTACHMENTS



## TABLES



## FIGURE

# P.1 INTRODUCTION

**OAR 345-021-0010(1)(p)** *requires the following:*

> *Information about the fish and wildlife habitat and the fish and wildlife species, other than the species addressed in subsection (q) that could be affected by the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0060.*

**OAR 345-022-0060** *requires the following:*

> *"[T]he Council must find that the design, construction and operation of the facility, taking into account mitigation, are consistent with the general fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025 (1) through (6) in effect as of February 24, 2017."*

## P.1.1 Analysis Area

The Madras Solar Energy Facility (Facility) analysis area, for purposes of Exhibit P, includes the area within the approximately 284-acre Facility site boundary and the area within 0.5 mile of the site boundary, in accordance with OAR 345-001-0010(2) and (59).

## P.1.2 Agency Consultation

Madras PV1, LLC (Applicant) has consulted with Oregon Department of Fish and Wildlife (ODFW) and U.S. Fish and Wildlife Service (USFWS) personnel regarding fish and wildlife habitat and species that could be affected by the Facility. Consultations began in November 2018 and are ongoing. The following meetings and correspondence are described in additional detail in Section P.3.2.2 and Attachment P-1:

- Preliminary discussion introducing the Facility and a summary of wildlife and habitat within the site boundary with ODFW biologist, Greg Jackle, and USFWS staff, Matt Stuber—November 13, 2018
- Comments related to the Notice of Intent from the ODFW biologist, Greg Jackle (attachment map redacted)
- Site visit with ODFW biologist, Greg Jackle, and Oregon Department of Energy (ODOE) staff, Chase McVeigh-Walker—July 23, 2019
- Site visit with Matt Stuber and Emily Weidner of USFWS—July 23, 2019

# P.2 FISH AND WILDLIFE HABITAT CATEGORIES, MITIGATION GOALS, AND IMPLEMENTATION STANDARDS

**OAR 635-415-0025** defines six habitat categories and establishes mitigation goals and implementation standards for each category. For reference, the six habitat categories and corresponding mitigation goals and implementation standards are described in Sections P.2.1 through P.2.6.

## P.2.1 Habitat Category 1

**OAR 635-415-0025(1)** *Habitat Category 1 is irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population, or unique assemblage.*

*(a) The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality.*

*(b) The Department shall act to protect Category 1 habitats by recommending or requiring:*

*(A) Avoidance of impacts through alternatives to the proposed development action; or*

*(B) No authorization of the proposed development action if impacts cannot be avoided.*

### P.2.2 Habitat Category 2

**OAR 635-415-0025(2)** *Habitat Category 2 is essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population or unique assemblage.*

*(a) The mitigation goal if impacts are unavoidable, is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality.*

*(b) The Department shall act to achieve the mitigation goal for Category 2 habitat by recommending or requiring:*

*(A) Avoidance of impacts through alternatives to the proposed development action; or*

*(B) Mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss of either pre-development habitat quantity or quality. In addition, a net benefit of habitat quantity or quality must be provided. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action.*

*(c) If neither 635-415-0025(2)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action. I*

### P.2.3 Habitat Category 3

**OAR 635-415-0025(3)** *Habitat Category 3 is essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.*

*(a) The mitigation goal is no net loss of either habitat quantity or quality.*

*(b) The Department shall act to achieve the mitigation goal for Category 3 habitat by recommending or requiring:*

*(A) Avoidance of impacts through alternatives to the proposed development action; or*

*(B) Mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed prior to or concurrent with the development action.*

*(c) If neither 635-415-0025(3)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.*

### P.2.4 Habitat Category 4

**OAR 635-415-0025(4)** *Habitat Category 4 is important habitat for fish and wildlife species.*

*(a) The mitigation goal is no net loss in either existing habitat quantity or quality.*

*(b) The Department shall act to achieve the mitigation goal for Category 4 habitat by recommending or requiring:*

*(A) Avoidance of impacts through alternatives to the proposed development action; or*

*(B) Mitigation of impacts, if unavoidable, through reliable in-kind or out-of-kind, in-proximity or off-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures*

*shall be implemented and completed prior to or concurrent with the development action.*

*(c) If neither 635-415-0025(4)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.*

### P.2.5 Habitat Category 5

**OAR 635-415-0025(5)** *Habitat Category 5 is habitat for fish and wildlife having high potential to become either essential or important habitat.*

*(a) The mitigation goal, if impacts are unavoidable, is to provide a net benefit in habitat quantity or quality.*

*(b) The Department shall act to achieve the mitigation goal for Category 5 habitat by recommending or requiring:*

*(A) Avoidance of impacts through alternatives to the proposed development action; or*

*(B) Mitigation of impacts, if unavoidable, through actions that contribute to essential or important habitat.*

*(c) If neither 635-415-0025(5)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.*

### P.2.6 Habitat Category 6

**OAR 635-415-0025(6)** *Habitat Category 6 is habitat that has low potential to become essential or important habitat for fish and wildlife.*

*(a) The mitigation goal is to minimize impacts.*

*(b) The Department shall act to achieve the mitigation goal for Category 6 habitat by recommending or requiring actions that minimize direct habitat loss and avoid impacts to offsite habitat.*

## P.3 BIOLOGICAL AND BOTANICAL SURVEYS

**OAR 345-021-0010(1)(p)(A)** *A description of biological and botanical surveys performed that support the information in this exhibit, including a discussion of the timing and scope of each survey.*

**Response**: Sections P.3.1 and P.3.2 summarize the information review and the biological and botanical (habitat, wildlife, rare plants) investigations completed for the Facility. Further details are provided in the *Critical Issues Analysis* found in Attachment P-2 (*submitted separately under confidential cover*).

The information review encompassed the site boundary and a 5-mile buffer for state and federal special-status species within Jefferson County, Oregon. Habitat mapping was done within the site boundary.

### P.3.1 Information Review

A USFWS Information for Planning and Conservation (IPaC) Trust Resources Report was generated for federal special-status species within the site boundary and 5 miles of the Facility (USFWS, 2019). In addition, the Oregon Biodiversity Information Center (ORBIC) database was queried for records of state and federal special-status species within the site boundary and within 5 miles of the Facility (ORBIC, 2019). The USFWS report is found in Attachment P-3A and the ORBIC database query results (*submitted separately under confidential cover*) are found in Attachment P-3B.

Based on results of the USFWS report and the ORBIC database query, two federal threatened fish and one federal proposed threatened mammal species were identified as occurring or potentially occurring within the site boundary or a 5-mile buffer area. These species are listed in Table Q-1 and described further in Exhibit Q. Exhibit P focuses on the state sensitive and other

non-listed special-status species in Oregon, and Table P-1 lists these species. Table P-1 and Table Q-1 (Exhibit Q) were used to design the field surveys described in Sections P.3.2 and Q.2.2. If there is no impact potential for the species, the species is not addressed further in this Exhibit P.

Based on the Oregon Department of Agriculture (ODA) *Oregon Listed Plants by County* (ODA, 2019) and the USFWS IPaC report (USFWS, 2019), no federally or state-listed plants are documented to occur in Jefferson County, Oregon.

To help make a determination as to whether there is suitable habitat within the site boundary and potential for impacts within the analysis area for species identified in Table P-1, additional sources were consulted to supplement the USFWS report and ORBIC database query. ORBIC does not represent a comprehensive survey effort and relies on voluntary reporting. The following sources provided additional information on species that potentially occur in the analysis area and includes critical information such as habitat preferences, morphological characteristics, phonologic development timelines, and species ranges:

- 2011 National Land Cover Database (Homer et al., 2015)
- The National Map (USGS, 2019)
- Recent high-quality aerial imagery (ESRI, 2019)
- Oregon Department of Agriculture Plant Conservation Program (ODA, 2019)
- *Jefferson County Comprehensive Plan* (Jefferson County, 2018)
- Deer and Elk Winter Range Maps (ODFW, 2019)
- eBird, an online database of bird distribution and abundance (eBird, 2019)
- The National Audubon Society Important Bird Areas (Audubon, 2019)
- U.S. Geological Survey (USGS) Breeding Bird Survey (BBS) (USGS, 2001)
- *Golden Eagles (Aquila chrysaetos) Nesting in Oregon, 2011-2014: Final Annual Report* (Isaacs, 2015)

The following two USGS BBS routes within 20 miles of the site boundary were reviewed for species occurrence:

- Madras, approximately 10 miles southeast in Jefferson, Deschutes, and Crook counties, Oregon
- Sisters, approximately 20 miles southwest in Jefferson and Deschutes counties, Oregon

There are no ODA plant protection and conservation programs that apply to the Facility or within the site boundary, nor are wildlife conservation programs in place.

**Table P-1. State Sensitive and Other Nonlisted Special-status Species with Potential to Occur within 0.5 Mile of the Facility Site Boundary – State of Oregon**

| Species | Scientific Name | State Status[a,b] | Federal Status[a,b] | Potential Habitat within the Facility Site Boundary | Potential Impact within the 0.5-mile Analysis Area (Yes/No) |
|---|---|---|---|---|---|
| **Mammals** | | | | | |
| California bat | *Myotis californicus* | SV | -- | No; no foraging or roosting habitat | Yes |
| Pallid bat | *Antrozous pallidus* | SV | SOC | Yes; foraging habitat in grassland and shrub-steppe, no roosting habitat | Yes |
| Spotted bat | *Euderma maculatum* | SV | SOC | Yes; foraging habitat in shrub-steppe, no roosting habitat | Yes |

**Table P-1. State Sensitive and Other Nonlisted Special-status Species with Potential to Occur within 0.5 Mile of the Facility Site Boundary – State of Oregon**

| Species | Scientific Name | State Status[a,b] | Federal Status[a,b] | Potential Habitat within the Facility Site Boundary | Potential Impact within the 0.5-mile Analysis Area (Yes/No) |
|---|---|---|---|---|---|
| Townsend's big-eared bat | *Corynorhinus townsendii* | SC | SOC | No; no foraging or roosting habitat | Yes |
| **Birds** | | | | | |
| Bald eagle | *Haliaeetus leucocephalus* | -- | BGEPA | No suitable foraging or nesting habitat | Yes |
| Ferruginous hawk | *Buteo regalis* | SC | BCC, SOC | Yes; foraging habitat in grassland and shrub-steppe, no nesting habitat | Yes |
| Golden eagle | *Aquila chrysaetos* | -- | BGEPA | Yes; foraging habitat in grassland and shrub-steppe, no nesting habitat | Yes |
| Peregrine falcon | *Falco peregrinus anatum* | SV | BCC | No suitable foraging or nesting habitat | Yes |
| Swainson's hawk | *Buteo swainsoni* | SV | -- | Yes; foraging habitat in grassland, no nesting habitat | Yes |
| **Fish** | | | | | |
| Bull Trout (Coastal Recovery Unit) | *Salvelinus confluentus* | SC | T, CH | No suitable habitat; nearest habitat is Lake Simtustus located 900 feet from the site boundary | Yes |
| Chinook Salmon (Deschutes River ESU) | *Oncorhynchus tshawytscha* | SV | -- | No suitable habitat; nearest habitat is Lake Simtustus located 900 feet from the site boundary | Yes |
| Steelhead (Middle Columbia River ESU) | *Oncorhynchus mykiss* | SC | T, CH | No suitable habitat; nearest habitat is Lake Simtustus located 900 feet from the site boundary | Yes |

[a] ORBIC, 2019; ODFW, 2019; USFWS, 2019; USFWS, 2008; BGEPA, 1940; ODA, 2019.

[b] Status Definitions

-- = No status.

**Oregon**

SV = Sensitive-vulnerable; listing as threatened or endangered is not believed to be imminent and can be avoided through continued or expanded use of adequate protective measures and monitoring.

SC = Sensitive-critical; listing as threatened or endangered is pending or may be appropriate if immediate conservation actions are not taken.

**Federal**

SOC = Species of Concern; being reviewed by USFWS for consideration as candidates for listing.
BCC = USFWS Birds of Conservation Concern.
BGEPA = Protected under the Bald and Golden Eagle Protection Act.
CH = Critical Habitat.
T = Threatened.

Note: All nongame migratory birds are protected by the Migratory Bird Treaty Act.

## P.3.2 Field Survey Methods

### P.3.2.1 Summary of Field Survey Methods

Table P-2 summarizes field surveys that have been conducted. Further details of the completed biological investigations are provided in Section P.3.2.2 and in the Attachment P-4 baseline field survey protocol.

**Table P-2. Summary of Field Surveys for Madras Solar Energy Facility**

| Date | Description |
|---|---|
| October 9, 2018 | Habitat Categorization and Wildlife Survey |
| October 30, 2018 | Wetland Delineation |
| March 8, 2019 | Raptor and Eagle Nest Survey |
| May 15, 2019 | Raptor and Eagle Nest Survey |
| June 13, 2019 | Raptor and Eagle Nest Survey |
| July 1, 2019 | Raptor and Eagle Nest Survey |
| July 23, 2019 | Agency Site Visit |

### P.3.2.2 Field Surveys

A field survey was conducted on October 9, 2018, by a Jacobs biologist. The survey focused on identifying the potential presence of special-status species and potentially suitable habitats for fish, wildlife, and plants. The Madras site was viewed from vehicle and on foot, with special targeting of wildlife and habitats (e.g., aquatic resources and vegetation communities with potential to provide suitable habitat for special-status species) that had been identified during the initial desktop mapping conducted before the site visit. Meandering transects were walked by the Jacobs biologist at a minimum spacing of 660 feet. Observations of wildlife and wildlife signs (e.g., prints, scat, burrows, nests, hair, and feathers) were recorded. No special-status species were identified during the site visit.

A wetland delineation was conducted on October 30, 2018. The wetland delineation is described in Exhibit J and the Oregon Department of State Lands concurrence with the delineation is attached to Exhibit J.

Ground and helicopter field surveys were conducted on March 8, May 15, June 13, and July 1, 2019, by Western Ecosystem Technologies, Inc. (WEST) biologists to identify nesting raptors within 2 miles of the site boundary. Further details are provided in WEST's technical memorandum titled *Madras Solar 2019 Eagle Nest Surveys* found in Attachment P-5 (*submitted separately under confidential cover*).

A site visit was conducted on July 23, 2019, by Jacobs and WEST biologists, USFWS and ODFW biologists, and ODOE staff. The visit focused on the potential presence of special-status species and potentially suitable habitats for fish, wildlife, and plants. The site boundary and vicinity was viewed from vehicle and on foot in areas with the highest potential to support special-status species. No federally or state-listed threatened or endangered species or their sign (e.g., prints, scat, burrows, nests, hair, and feathers) were identified during the site visit. No special-status species were identified during the site visit.

### P.3.2.3 Habitat Categorization

Biologists familiar with Blue Mountains ecoregion habitat types and wildlife used a combination of historical land cover data (Homer et al., 2015), color aerial image interpretation (ESRI, 2019), topographic information (USGS, 2019), and onsite verification to characterize habitat types present within the site boundary from the perspective of wildlife use, both general assemblages (for example, shrub-steppe obligates) and specific species (for individual taxa [e.g., special-status species]).

During the October 9, 2018, field survey, a Jacobs biologist familiar with regional flora and fauna ground-truthed habitat occurrence and quality. Habitat boundaries were delineated and distinct habitats were categorized according to the habitat definitions in ODFW's Fish and Habitat Mitigation Policy (see Table P-3), based on a combination of vegetative structure, habitat functionality, and overall ecological condition for wildlife, in particular for special-status species.

**Table P-3. Oregon Department of Fish and Wildlife Habitat Categories, Characteristics, and Goals for Mitigation**

| Category | Habitat Characteristics | Goal for Mitigation |
|---|---|---|
| 1 | Irreplaceable, essential, and limited | No loss of habitat quantity or quality |
| 2 | Essential and limited | No net loss of habitat quantity or quality and to provide a net benefit of habitat quantity or quality |
| 3 | Essential, or important and limited | No net loss of habitat quantity or quality |
| 4 | Important | No net loss of habitat quantity or quality |
| 5 | Having high potential to become either essential or important | Net benefit in habitat quantity or quality |
| 6 | Low potential to become essential or important | Minimize impacts |

### P.3.2.4 Wetland Delineation

The wetland delineation is described in Exhibit J.

## P.4 FISH AND WILDLIFE HABITAT

**OAR 345-021-0010(1)(p)(B**) *Identification of all fish and wildlife habitat in the analysis area, classified by the habitat categories as set forth in OAR 635-415-0025 and the sage-grouse specific habitats described in the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-140-0000 through -0025 (core, low density, and general habitats), and a description of the characteristics and condition of that habitat in the analysis area, including a table of the areas of permanent disturbance and temporary disturbance (in acres) in each habitat category and subtype.*

**Response**: Below are the habitat types and categories that were mapped during the October 9, 2018, field surveys. Habitat types and categories were refined during the July 23, 2019, site visit, based on observed vegetation in burned areas. No sage-grouse specific habitats as described in the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-140-0000 through -0025 (core, low-density, and general habitats) occur within 40 miles of the Facility site boundary.

### P.4.1 Habitat Types

Habitat types within the site boundary include developed, non-native grassland, and shrub-steppe, as shown in Table P-4 and on Figure P-1.

**Table P-4. Habitat Types within the Facility Site Boundary**

| General Land Cover Type and Codes | Specific Habitat Type ("Subtype") and Mapping Codes | Description | Acres within Site Boundary |
|---|---|---|---|
| Developed (D) | Paved Roads (DX) | Includes NW Pelton Dam Road and NW Elk Drive. | 0.36 |
| Grassland (G) Steppe dominated by non-native grasses | Exotic Annual Grassland (GA) | Includes areas that burned in August 2018 and are dominated by non-native crested wheatgrass (*Agropyron cristatum*) in spring of 2019. Other dominant grass species include cheatgrass (*Bromus tectorum*) and medusahead rye (*Taeniatherum canput-medusae*). | 150.03 |

| | | | |
|---|---|---|---|
| Shrub-steppe (SS) dominated by native and/or non-native grasses and forbs (<20% shrub cover) | Rabbitbrush Shrub-steppe (SSR) | Dominated by early successional gray rabbitbrush (*Ericameria nauseosa*). Understory was dominated by cheatgrass, crested wheatgrass, and some native forbs. Habitat is historically grazed. | 133.74 |
| **Total** | | | **284.13** |

## P.4.2 Habitat Categorization

### P.4.2.1 Habitats and Disturbance with Site Boundary

The habitats within the Facility site boundary are categorized as 4 or 6. Habitat categories 1, 2, 3, and 5 do not occur within the site boundary. Table P-5 shows the areas of disturbance in each habitat category and subtype. The permanently disturbed acres represent maximum impacts that could occur during operations and the temporarily disturbed acres represent additional maximum impacts during construction, which will be restored following construction.

**Table P-5. Temporary and Permanent Disturbance by Habitat Category and Subtype**

| Habitat Category | Habitat Subtype | Permanently Disturbed (acres) | Temporarily Disturbed (acres) | Total Disturbed (acres) |
|---|---|---|---|---|
| 4 | Grassland | 142.19 | 5.56 | 147.84 |
| | Shrub-steppe | 127.99 | 1.10 | 129.09 |
| | **Subtotal** | 270.18 | 6.66 | 276.93 |
| 6 | Paved roads | 0 | 0.02 | 0.02 |
| | **Subtotal** | 0 | 0.02 | 0.02 |
| **Total** | | **270.18** | **6.68** | **276.95** |

### P.4.2.2 Category 4 Habitat

Category 4 habitat is important wildlife habitat that is not limited and includes areas that have been historically grazed or show signs of other disturbance and have moderate structure and forage for wildlife. These areas are usually weedy and contain a high percentage of non-native grasses. Two types of Category 4 habitat occur within the site boundary: grassland and shrub-steppe. While sagebrush-steppe and grasslands would typically be considered important and limited (i.e., Category 3) in the analysis area, the areas described below are dominated by non-native plant species and have been impacted by historical grazing and fire. These areas may still provide important habitat for some wildlife, but their relatively poor quality precludes them from being considered limited. Important, but not limited, habitats are, by definition, considered Habitat Category 4.

#### 1.1.1.1 Category 4 Grassland

Category 4 exotic annual grassland habitat includes non-native grasslands (e.g., crested wheatgrass and cheatgrass) and has disturbance associated with recent fire-fighting activities and historical grazing. The forb component is composed primarily of non-native weeds, with occasional patches of native forb species (e.g., Lupine [*Lupinus* spp.] and tall tumblemustard [*Sisymbrium altissima*]). The high non-native content is primarily the result of past fires, which burned native shrubs and bunchgrasses and were followed by historical grazing and the planting of crested wheatgrass.

Category 4 exotic annual grassland habitat is “important,” according to the definition set forth in OAR 635-415-0005 because it sustains wildlife populations over time. Common wildlife species

observed in this habitat during field surveys included a variety of birds such as western kingbird (*Tyrannus verticalis)* and white-crowned sparrow (*Zonotrichia leucophrys*). A few rodent burrows were observed, but they were widely distributed, especially in the recently burned areas. The recent fire, dense non-native herbaceous cover, and lack of native grasses limit the ability of most wildlife species to use this area for forage or cover.

#### 1.1.1.2 Category 4 Shrub-steppe

There is one subtype of Category 4 shrub-steppe within the site boundary: rabbitbrush shrub-steppe. This habitat subtype is dominated by early successional gray rabbitbrush with an understory dominated by cheatgrass, crested wheatgrass, and some native forbs, and has been historically grazed. Rabbitbrush cover is less than 20 percent of this area. The dominance of non-native vegetation and disturbance associated with previous agricultural practices resulted in the shrub-steppe habitat being classified as Category 4 rather than Category 3. Category 4 rabbitbrush shrub-steppe habitat is “important,” according to the definition set forth in OAR 635-415-0005 because it sustains wildlife populations over time. Category 4 shrub-steppe provides foraging and nesting habitat for common bird and small mammal species.

## P.5 HABITAT LOCATIONS

**OAR 345-021-0010(1)(p)(C)** *A map showing the locations of the habitat identified in (B).*

**Response**: Figure P-1 is a map showing the habitat locations within the site boundary.

## P.6 IDENTIFICATION OF SENSITIVE SPECIES AND SITE-SPECIFIC ODFW ISSUES

**OAR 345-021-0010(1)(p)(D)** *Based on consultation with the Oregon Department of Fish and Wildlife and appropriate field study and literature review, identification of all State Sensitive Species that might be present in the analysis area and a discussion of any site-specific issues of concern to ODFW.*

**OAR 345-021-0010(1)(p)(E)** *A baseline survey of the use of the habitat in the analysis area by species identified in (D) performed according to a protocol approved by the Department and ODFW.*

### P.6.1 Identification of State Sensitive and Other Nonlisted Special-status Species

Based on current literature review, the July 2019 field visit, the October 2018 and spring 2019 field surveys and habitat categorization effort, and consultation with ODFW, it appears that there is suitable habitat in the analysis area for ten state-sensitive species and two other non-listed special-status species (see Table P-1).

### P.6.2 Baseline Survey

A baseline survey of the use of habitat in the analysis area by sensitive and other special-status species was conducted according to a protocol approved by ODFW on other PV solar projects and included here as Attachment P-4. This survey includes the information review described in Section P.3.1 and field surveys described in Section P.3.2.

## P.7 DESCRIPTION OF SIGNIFICANT POTENTIAL DISTURBANCES

**OAR 345-021-0010(1)(p)(F)** *A description of the nature, extent and duration of potential adverse impacts on the habitat identified in (B) and species identified in (D) that could result from construction, operation and retirement of the proposed facility.*

**Response**: Potential impacts on habitat and sensitive species are described below.

### P.7.1 Potential Habitat Impacts

Potential impacts on Habitat Category 4 wildlife habitat from construction and operation of the Facility include temporary and permanent habitat loss and disturbance. This section focuses on habitat loss and Section P.7.2 discusses potential habitat loss/alteration and disturbance.

Approximately 270.18 acres of Habitat Category 4 will be permanently removed to make way for permanent Facility major components (i.e., solar modules, tables and trackers, posts, cabling, inverters, transformer, and switchgear) and related facilities (i.e., collection system, energy storage system, substation, switching station, operations enclosure, service roads, security station, and gates). This will result in a loss of habitat until retirement and reclamation of the Facility, when these acres will be restored.

Approximately 6.66 additional acres of Habitat Category 4 will be cleared for temporary construction laydown, grading, and potential concrete batch plant areas. This impact will result in a temporary loss of habitat during construction that will be restored following construction as part of the *Revegetation Plan* and the *Noxious Weed Control Plan* (Attachments P-6 and P-7, respectively).

## P.7.2 Potential Wildlife Impacts

Potential impacts are discussed below for the ten state sensitive species and two other non-listed special-status species. In summary, existing science regarding wildlife impacts from solar energy facilities is fairly limited but suggests that impacts are primarily indirect and are from disturbance during construction and habitat loss/alteration during construction and operations.

### P.7.2.1 Potential Impacts on Mammals

Four special-status bat species have the potential to use the analysis area (see Table P-1), particularly for foraging habitat in and around grasslands. However, there is no suitable roosting habitat (e.g., large trees, large cliffs, caves, buildings) or water sources within the site boundary. Construction and operation activities generally occur during daylight hours when bats are generally absent. Therefore, construction and operation of the Facility are not anticipated to disturb bat-foraging activity within the Facility site boundary.

Because the Facility will be built in marginal foraging habitat and more suitable foraging and roosting habitat is abundant surrounding the Facility, the operation of the Facility is not anticipated to result in significant loss or degradation of bat-foraging habitat. In addition, no direct impacts are anticipated since most construction will occur during daylight hours when bats are generally absent.

### P.7.2.2 Potential Impacts on Birds

Five special-status raptor species have the potential to use the analysis area (see Table P-1), particularly for foraging habitat in and around grassland and shrub-steppe habitats. However, there is no suitable nesting habitat (e.g., large trees and cliffs) within the Facility site boundary with the possible exception of existing Portland General Electric (PGE) transmission line power poles. Although existing transmission line power poles can be seen as potential eagle nesting habitat, eagles are unlikely to nest on these poles because there is much preferred nesting habitat (e.g., large trees and cliffs) located in the immediate vicinity of the site boundary.

Because the Facility will be built in marginal foraging habitat and more suitable foraging habitat is abundant surrounding the Facility, the operation of the Facility is not anticipated to result in significant loss or degradation of bird foraging habitat. In addition, no direct impacts are anticipated since construction will occur at ground level.

Construction of the Facility will result in temporary and permanent habitat loss and alteration. Temporary disturbance to foraging birds could occur during construction, especially during the sensitive breeding season. Permanent habitat loss may prevent species from foraging in impacted areas. However, based on habitat degradation within the site boundary from fire and historical agricultural practices, and the abundance of higher-quality nesting and foraging habitats surrounding the Facility, birds using the site would be expected to relocate to other comparable habitats surrounding the Facility.

Raptor nesting could occur on humanmade structures, such as the existing PGE transmission line power poles. If present, nesting raptor species may be temporarily impacted by construction activities during the breeding season, and permanently impacted by the loss of foraging habitat near nest locations. However, based on field surveys and the limited suitable nesting habitat, no raptors are expected to nest within the Facility site boundary.

Raptor foraging is influenced by prey availability. Small- and medium-sized mammals comprise the primary prey base for many raptor species, although small- and medium-sized birds, reptiles, and insects also make up the diet for several raptor species (Preston, 1990; Rosenzweig, 1989). Passerines, insects, and a few rodents likely occur in most of the analysis area. Waterfowl and fish, also potential prey for large raptors, occur in Lake Simtustus located near the Facility site boundary. Although raptors that have nests in the vicinity of the Facility may be permanently displaced from any potential foraging habitat within the Facility site boundary, similar and higher-quality foraging habitats are abundant throughout the immediate vicinity and the loss of small areas of degraded habitat is not anticipated to result in significant adverse impacts.

Additional details regarding the three state sensitive raptor species and two other nonlisted special-status species with potential to be impacted within the 0.5-mile analysis area are provided below.

***Ferruginous Hawk.*** Ferruginous hawk, an Oregon sensitive-critical species, is a summer resident in the lowland desert terrain of Oregon that typically nests at the edge of pinyon-juniper (*Pinus* spp.-*Juniperus* spp.) and shrub-steppe habitats. However, they can be found in any arid and semi-arid grassland region (Bechard and Schmutz, 1995). The diet of the ferruginous hawk varies geographically, but mammals generally compose the vast majority of their prey (Cornell Lab of Ornithology, 2019a). This species has been documented along the Audubon BBS Madras route approximately 5 miles southeast of the analysis area. No ferruginous hawks were identified during field surveys. If small mammals are present, particularly jackrabbits, there is potential for ferruginous hawks to forage within the analysis area from late spring through early fall. Permanent loss or degradation of foraging habitat resulting from Facility construction may negatively influence prey availability within the site boundary, potentially causing the permanent displacement of this species from the impacted habitat. However, based on recent fires and limited observations of preferred prey and their sign (e.g., burrows, pellets), along with the abundance of foraging habitats surrounding the site, any ferruginous hawks using the site could be expected to relocate to other comparable habitats closer to their nest sites. No direct or indirect impacts are anticipated for this species because they are not expected to occur in the analysis area.

***Peregrine Falcon.*** Peregrine falcon, an Oregon sensitive-vulnerable species, are aerial hunters that breed in a variety of habitats. Nests are normally built on cliff edges or on tall humanmade structures (White et al., 2002). No suitable nest substrate is present within the Facility site boundary, but suitable nesting habitat occurs within the analysis area approximately 0.2 miles to the north. This species also has the potential to occur as a transient during migratory and wintering periods. No observations of peregrine falcons have been documented along the two BBS routes closest to the Facility area (i.e., Madras and Sisters) or during field surveys. If present, peregrine falcons will likely be located on cliff edges north of the Facility site boundary. No direct or indirect impacts are anticipated for this species because they are not expected to occur in the analysis area.

***Swainson's Hawk.*** Swainson's hawk, an Oregon sensitive-vulnerable species, spends the breeding season in grassland, shrub, and agricultural areas where scattered trees offer nesting opportunities (Cornell Lab of Ornithology, 2019b). Small mammals (e.g., mice, voles) make up the bulk of their diet during the breeding season. This species was been identified during field surveys approximately 1.5 mile north of the analysis area and along the BBS Madras route approximately 5 miles southeast of the analysis area. If Swainson's hawks are present within the analysis area, they may be temporarily impacted by construction activities during the breeding season. Permanent loss or degradation of foraging habitat resulting from Facility construction may negatively influence prey availability within the site boundary, potentially causing the permanent displacement of Swainson's hawks from the impacted habitat. However, based on recent fires and limited observations of preferred prey and their sign (e.g., rodent burrows, scat), and the abundance of foraging habitats surrounding the site, any Swainson's hawks using the site could be expected to relocate to other comparable habitats closer to their nest sites. No direct or indirect impacts are anticipated for this species because they are not expected to occur in the analysis area.

***Bald Eagle.*** Bald eagles are protected by the BGEPA. One bald eagle nest was identified during field surveys approximately 1.5 mile west of the analysis area and along the BBS Sisters route

approximately 10 miles southwest analysis area. The Facility site boundary is also located near Lake Simtustus, which may attract bald eagles.

Bald eagles typically nest in forested areas or mature trees adjacent (within 1.2 miles) to waterbodies large enough to provide foraging opportunities (Buehler, 2000). No suitable nesting habitat for bald eagles is located within the Facility site boundary. However, bald eagle nests are documented within 5 miles of the site boundary and forage in and around Lake Simtustus and the Deschutes River. Therefore, the species could potentially fly over the Facility, but is not expected to occur within the Facility site boundary based on the absence of suitable nesting or foraging habitat. No direct or indirect impacts are anticipated for this species because they are not expected to occur in the analysis area.

***Golden Eagle***. Golden eagles are protected by the BGEPA. The nearest known golden eagle nest is 0.2 mile to the north of the Facility site boundary (Attachment P-5). This nest was occupied in 2019 and successfully fledged one young. Six additional golden eagle nests associated with the Willow Creek Territory were unoccupied in 2019. At least one of the seven nests associated with the Willow Creek Territory was occupied between 2011-2019.

Golden eagle prey species include rabbits, ground squirrels, and other small and medium-sized prey (Kochert et al., 2002). Rabbit pellets more than a year old and minimal, widely distributed rodent sign (e.g., burrows and scat) were observed within the Facility site boundary, so it is possible that golden eagles may use shrub-steppe and grasslands within the site boundary for foraging. However, the proposed infrastructure footprint of the Project area does not contain nesting or preferred foraging habitat for golden eagles; therefore, golden eagles are expected to nest and forage infrequently, at best, within the Facility site boundary.

The project does not include any new transmission lines, and thus no direct impacts are anticipated from the Project. Increased noise and human presence could temporarily deter foraging eagles from using habitat adjacent to the Project during construction. Although foraging golden eagles could be permanently displaced from foraging within the Facility site, more preferred foraging habitat are abundant throughout the immediate vicinity. Therefore, the loss of this foraging habitat is not considered significant. Discussions about potential adverse impacts to golden eagles are ongoing with ODFW and USFWS. See Attachment P-5 for more information about golden eagles near the Facility. The Applicant has submitted an application to the USFWS for an Incidental Eagle Take Permit to address potential disturbance take of golden eagles during construction. Attachment P-8 (*submitted separately under confidential cover*) contains the Applicant's application. In coordination with the USFWS, the Applicant has applied for this voluntary permit to document and formalize avoidance, minimization, mitigation, and monitoring measures to be implemented for potential construction disturbance.

### P.7.2.3 Potential Impacts on Fish

Three special-status fish species have the potential are documented to occur in aquatic habitat located within the analysis area (see Table P-1). However, no aquatic habitats occur within the Facility site boundary. The nearest fish habitat is Lake Simtustus located approximately 900 feet north of the site boundary and down approximately 600 feet in elevation from the lowest point within the site boundary. Therefore, no direct or indirect impacts are anticipated for this species or their habitat, because they do not occur within the site boundary.

### P.7.2.4 Climate Change

Wildlife can be adversely impacted by climate change. Renewable energy developments, such as utility-scale solar facilities, help reduce carbon emissions that accelerate climate change. Most mammals (including bats) have specific adaptations and distributions that depend on climate and preclude the avoidance of adverse effects from climate change (McKelvey et al., 2013). Mammals are a key prey base for eagle and raptor species found in the Blue Mountains ecoregion. The National Audubon Society predicted 314 of 588 species of North American birds will lose more than half of their current geographic range by 2080 as a result of climate change. Sensitive species ferruginous hawk, Swainson's hawk, and bald and golden eagles are included in this study as species that will be affected by a reduced geographic range (Audubon, 2015). The proposed Facility will help reduce carbon emissions that accelerate climate change and will thereby alleviate adverse impacts on wildlife, including state-listed sensitive species.

## P.8 MEASURES TO AVOID, MINIMIZE, OR MITIGATE DISTURBANCES

**OAR 345-021-0010(1)(p)(G)** *A description of any measures proposed by the applicant to avoid, reduce, or mitigate the potential adverse impacts described in (F) in accordance with general fish and wildlife habitat mitigation goals and standards described in OAR635-415-0025 and a description of any measures proposed by the applicant to avoid, minimize, and provide compensatory mitigation for the potential adverse impacts described in (F) in accordance with the sage-grouse specific habitat mitigation requirements described in the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-140-0000 through -0025, and a discussion of how the proposed measures would achieve those goals and requirements.*

**Response**: In coordination with ODFW and the landowner, the Applicant has implemented or will implement measures to avoid or reduce adverse impacts for non-listed special-status wildlife and habitat. These are in addition to the measures for threatened and endangered species described in Exhibit Q, Section Q.4. The Applicant does not propose measures or mitigation specific to greater sage-grouse, because no sage-grouse specific habitats as described in the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-140-0000 through -0025 (core, low-density, and general habitats) occur within 40 miles of the Facility site boundary.

### P.8.1 Avoidance Measure

As the Applicant has gathered additional information about the analysis area and its habitat and environmental attributes, the following adjustments to the Facility layout have been made:

- Wetlands—Major components and related facilities have been specifically aligned to avoid (Category 2) wetlands and waterbodies, as described in Exhibit J.
- Habitat—The Facility was intentionally sited on Category 4 disturbed grassland and shrub-steppe habitat to avoid higher-quality Category 1, Category 2, and Category 3 habitats.
- Roads—During construction and operation, vehicles and construction equipment will use existing roads to the maximum extent possible.
- Transmission line—The Facility was intentionally sited along an existing transmission line to avoid wildlife and habitat impacts associated with construction and operation of a new transmission line.

### P.8.2 Minimization Measures

The Applicant will work to minimize (reduce) the impact of construction on the environment by employing the following methods to ensure compliance with federal, state, and local regulations and industry best practices:

- Construction Monitoring—A qualified biologist will identify and monitor any active raptor nests (e.g., ferruginous hawk, Swainson's hawk, bald and golden eagle) within 0.25 mile of construction activities to document possible disturbance during the following ODFW recommended time periods:
  - Ferruginous hawk: March 15–August 15
  - Swainson's hawk: April 1–August 15
  - Bald and golden eagle: February 1–August 15
- Environmental Training—A qualified biologist will develop and implement an environmental training course for site workers, which will require reporting any injured or dead wildlife on the site, adherence to site speed limits, trash control, and other subjects.
- Exclusion Flagging—A qualified biologist will mark approved buffers around any active raptor nests.
- Clearing Limits—Construction boundaries will be identified and visibly marked before construction activities take place. These boundaries are deliberately constrained as much as reasonably possible, and any activity or traffic outside these limits must be deemed necessary and approved by the Applicant or its construction contractor. During design and

construction, the contractor will not remove existing vegetation beyond approved construction corridors.

- Vegetation Clearing—Vegetation clearing will occur between September 1 and March 1 to the greatest extent feasible to avoid impacts on wildlife. Any vegetation clearing outside of this period will be conducted only following a nest clearance survey and will be performed no more than 7 days prior to the clearing of the area in order to ensure that no birds are nesting in the area in question. If birds are discovered, no clearing will occur until the birds have left the nest for the season.
- Construction Noise—Any blasting and pile-driving noise will be avoided to the extent feasible during the nesting season for golden eagles (January 1 to August 1) within 0.25 mile of any occupied nest.
- Best Management Practices (BMPs)—The Applicant will develop an erosion and sediment control plan in accordance with the Facility's 1200-C Construction Stormwater National Pollutant Discharge Elimination System (NPDES) Permit. The Applicant and its construction contractors will use BMPs to reduce potential impacts on areas immediately surrounding the construction site. Straw wattles, silt fence, rock check dams, or ditching will be installed to control erosion and avoid contamination of discharged stormwater. The Applicant will conduct periodic inspections of BMPs to ensure measures are maintained and in compliance with the NPDES permit. Dust control measures will be deployed throughout the Facility where construction is active.
- Hazardous Material Containment—Any hazardous materials generated by construction will be collected and disposed of properly. Equipment maintenance and fueling will be performed over drip pans and equipment will be inspected for leaks regularly. Waste oil and contaminated earth from minor spills or drips will be collected for disposal. Spills will be reported in accordance with the NPDES permit requirements.
- Restoration—Any remaining disturbed ground will be prepared and sown with an appropriate seed mix in accordance with the *Revegetation Plan* and the *Noxious Weed Control Plan* (Attachments P-6 and P-7, respectively) to ensure rapid growth and erosion prevention.
- Noxious Weeds – Weeds will be controlled using both mechanical and chemical methods in surface-disturbed areas in accordance with the *Revegetation Plan* and the *Noxious Weed Control Plan* (Attachments P-6 and P-7, respectively). Herbicide and pesticide mixing and applications will be conducted in accordance with federal, state, and local laws and regulations and the specific product's label.
- Traffic—Personnel will be required to adhere to a reduced speed limit of 20 miles per hour while driving in the Facility area and will be required to adhere to posted speed limits on public roads. If there are no posted speed limits, the contractor will operate vehicles in a manner consistent with typical public traffic on public roads. Travel will be restricted to designated roads where possible; no off-road travel will be allowed except in case of emergencies. In addition, construction personnel will be instructed to observe caution when driving through the Facility area and to maintain reasonable driving speeds so as not to harass or accidentally strike wildlife.
- Housekeeping—No burning or burying of waste materials will occur at the Facility site. The contractor will be responsible for the removal of waste materials from the construction area. Contaminated soil and construction debris will be disposed of in approved landfills in accordance with appropriate environmental regulations. Garbage will be disposed of in appropriate covered waste bins.

Specific avoidance, minimization, mitigation, and monitoring measures for golden eagle are described in additional detail in Attachment P-8 (*submitted separately under confidential cover*).

### P.8.3 Mitigation Measures

The Applicant is consulting with ODFW to finalize a mitigation plan that compensates for unavoidable habitat impacts in accordance with the State of Oregon's wildlife habitat mitigation

goals and standards described in OAR 635-415-0025. A draft of the *Habitat Mitigation Plan* is Attachment P-9 to this Exhibit.

## P.9 MONITORING PLAN

*(H) A description of the applicant's proposed monitoring plans to evaluate the success of the measures described in (G).*

**Response**: The Applicant or third party responsible for mitigation will work with ODFW to develop a monitoring plan designed to evaluate the success of mitigation measures that address impacts on special-status and other species.

The Applicant or third party responsible for mitigation will consult with ODFW to finalize a monitoring program for certain wildlife resources and their habitats. A draft of the monitoring program is described in the *Habitat Mitigation Plan* (Attachment P-9). The Applicant or third party responsible for mitigation will implement the finalized monitoring program during the operations phase of the Facility to evaluate the success of measures described in Section P.8.

## P.10 REFERENCES

Bald and Golden Eagle Protection Act (BGEPA). 1940. 16 *United States Code* (U.S.C.) § 668-668d. Bald Eagle Protection Act of 1940, June 8, 1940, Chapter 278, Section (§) 2, 54 Statute (Stat.) 251; expanded to include the related species of the golden eagle October 24, 1962, Public Law (PL) 87-884, 76 Stat. 1246. As amended: October 23, 1972, PL 92-535, § 2, 86 Stat. 1065; November 8, 1978, PL 95-616, § 9, 92 Stat. 3114.

Bechard, M. J. and J. K. Schmutz. 1995. "Ferruginous Hawk (*Buteo regalis*)." A. Poole, ed. *The Birds of North America Online*. Cornell Lab of Ornithology. Ithaca, New York. Accessed September 2019. http://bna.birds.cornell.edu/bna/species/172.

Buehler, D. A. 2000. "Bald Eagle (*Haliaeetus leucocephalus*)." A. Poole, ed. *The Birds of North America Online*. Cornell Lab of Ornithology, Ithaca, New York. Accessed September 2019. http://bna.birds.cornell.edu/bna/species/506.

Cornell Lab of Ornithology. 2019a. *All About Birds Guide: Ferruginous Hawk*. Accessed July 2019. https://www.allaboutbirds.org/guide/Ferruginous_Hawk/id.

Cornell Lab of Ornithology. 2016b. *All About Birds Guide: Swainson's Hawk*. Accessed July 2019. https://www.allaboutbirds.org/guide/Swainsons_Hawk/id.

eBird. 2019. *eBird: An online database of bird distribution and abundance* [web application]. eBird, Ithaca, New York. Accessed July 2016. http://ebird.org.

ESRI. 2019. *World Street Map and Aerial Photos: World Imagery*. ArcGIS Resource Center. ESRI, producers of ArcGIS software, Redlands, California. Data accessed July 2019.

Homer, C. G., J. A. Dewitz, L. Yang, S. Jin, P. Danielson, G. Xian, J. Coulston, N. D. Herold, J. D. Wickham, and K. Megown. 2015. *Completion of the 2011 National Land Cover Database for the Conterminous United States-Representing a Decade of Land Cover Change Information*. Photogrammetric Engineering and Remote Sensing 81(5): 345-354. https://www.mrlc.gov/data.

Isaacs, F. B. 2015. *Golden Eagles (Aquila chrysaetos) Nesting in Oregon, 2011-2014*: Final Annual Report. Oregon Eagle Foundation, Inc., Klamath Falls, Oregon. February 10.

Jefferson County. 2018. *Jefferson County Comprehensive Plan*. Revision date: December 2018. https://www.co.jefferson.wa.us/578/Jefferson-County-Comprehensive-Plan

Kochert, M. N., K. Steenhof, C. L. Mcintyre, and E. H. Craig. 2002. "Golden Eagle (*Aquila chrysaetos*)." A. Poole, ed. *The Birds of North America Online*. Cornell Lab of Ornithology, Ithaca, New York. Accessed September 2019. http://bna.birds.cornell.edu/bna/species/684; doi: 10.2173/bna.684.

McKelvey, K. S., R. W. Perry, and L. S. Mills. 2013. *The Effects of Climate Change on Mammals*. U.S. Department of Agriculture, Forest Service, Climate Change Resource Center. www.fs.usda.gov/ccrc/topics/wildlife/mammals.

National Audubon Society (Audubon). 2015. *Audubon's Birds and Climate Change Report: A Primer for Practitioners.* National Audubon Society, New York. Contributors: Gary Langham, Justin Schuetz, Candan Soykan, Chad Wilsey, Tom Auer, Geoff LeBaron, Connie Sanchez, Trish Distler. Version 1.3.

National Audubon Society (Audubon). 2019. *The Important Bird Areas*. Data accessed July 2019. Important Bird Areas by State: http://www.audubon.org/bird/iba.

Oregon Biodiversity Information Center (ORBIC). 2019. *Rare, Threatened and Endangered Species of Oregon*. Institute for Natural Resources. Portland State University. http://inr.oregonstate.edu/orbic/rare-species/rare-species-oregon-publications.

Oregon Department of Agriculture (ODA). 2019. *Oregon Listed Plants by County*. Plant Conservation, ODA, Salem, Oregon. Accessed July 2019. http://www.oregon.gov/ODA/programs/PlantConservation/Pages/ListedPlants.aspx.

Oregon Department of Fish and Wildlife (ODFW). 2019. *Compass Online Fish and Wildlife Mapping Tool*. Accessed July 2019. http://dfw.state.or.us/maps/compass/.

Preston, C. R. 1990. "Distribution of Raptor Foraging in Relation to Prey Biomass and Habitat Structure." *Condor* 92: 107-112.

Rosenzweig, M. L. 1989. "Habitat Selection, Community Organization, and Small Mammal Studies." pp. 5-21. *In*: *Patterns in the Structure of Mammalian Communities*. D. W. Morris, Z. Abramsky, B. J. Fox, and M. R. Willig, eds. Texas Tech University Press, Lubbock, Texas.

U.S. Fish and Wildlife Service (USFWS). 2008. *Birds of Conservation Concern 2008*. December 2008. Division of Migratory Bird Management. Arlington, Virginia. http://www.fws.gov/migratorybirds/ NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf.

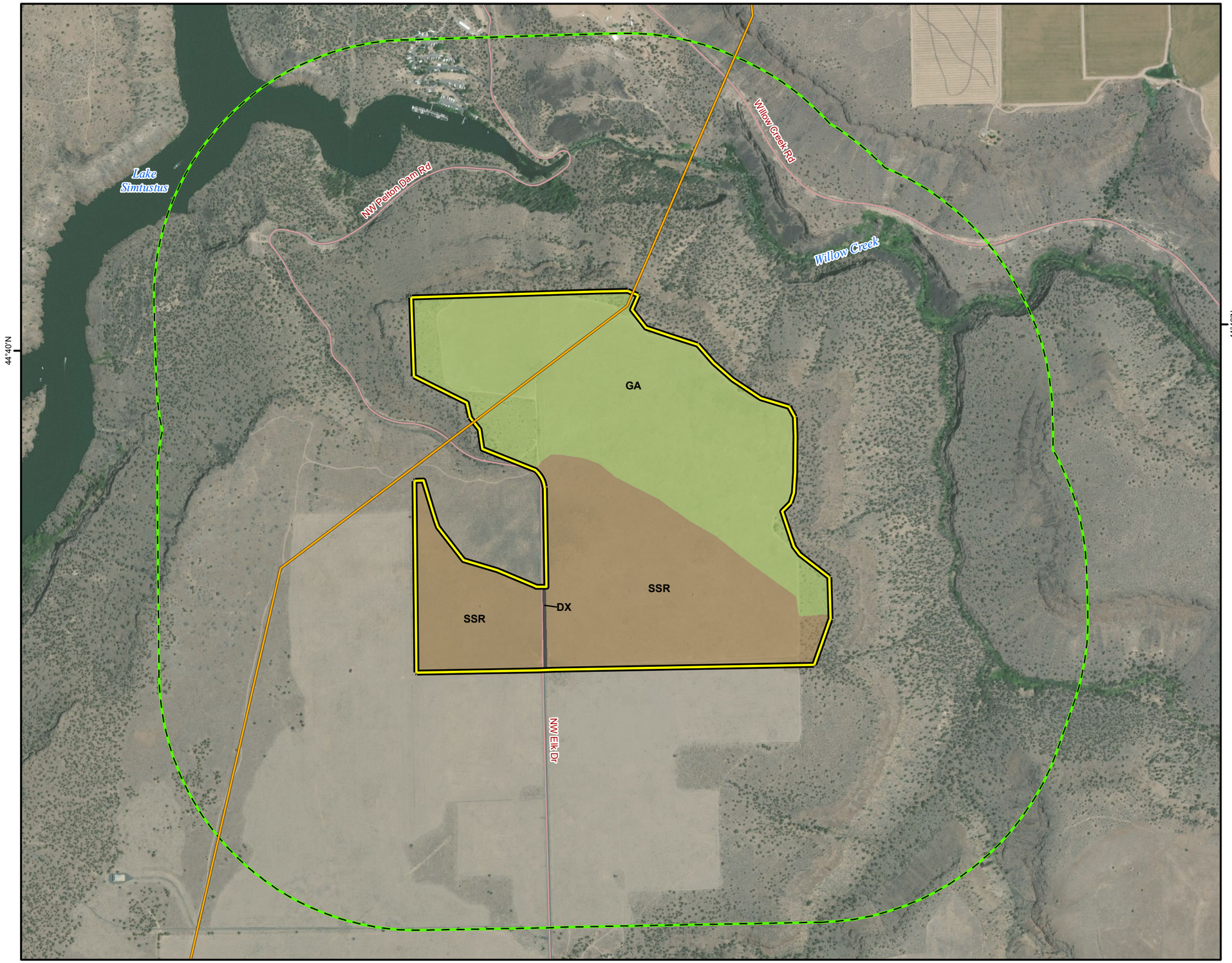
U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC). 2019. Resources for Project in Jefferson County, Oregon. Initial Project Scoping: IPaC, Environmental Conservation Online System (ECOS), USFWS.

U.S. Geological Survey (USGS). 2001. *North American BBS Methodology Training.* Accessed July 2019. USGS Breeding Bird Surveys (BBS), Patuxent Wildlife Research Center, Laurel, Maryland. Methodology Training: http://www.pwrc.usgs.gov/BBS/participate/training/; Description and Methods. http://www.pwrc.usgs.gov/BBS/ participate/training/1.html.

U.S. Geological Survey (USGS). 2019. *The National Map/U.S. Topo*. Last updated July 2019. http://nationalmap.gov/ustopo/index.html.

White, C. M., N. J. Clum, T. J. Cade, and W. G. Hunt. 2002. "Peregrine Falcon (*Falco peregrinus*)." A. Poole, ed. *The Birds of North America Online*. Cornell Lab of Ornithology, Ithaca. Accessed September 2019. http://bna.birds.cornell.edu/bna/species/660; doi: 10.2173/bna.660.

# Figure




VICINITY MAP


## LEGEND

- Madras Solar Energy Facility Site Boundary
- Analysis Area (0.5 mile)
- Existing Pelton Dam to Round Butte 230-kV Transmission Line
- Existing Road

**ODFW Subtypes and Categories**

- DX: Developed - Roadway (Category 6)
- GA: Exotic Annual Grassland (Category 4)
- SSR: Rabbitbrush Shrub-steppe (Category 4)

Coordinate System: NAD 1983 UTM Zone 10N

Data Sources: Habitat: Jacobs; Imagery: ESRI World Imagery

N

0 250 500 1,000 1,500 2,000
Feet

1 inch equals 1,000 feet

**Figure P-1**
Fish and Wildlife Habitat
Application for Site Certificate
Madras Solar Energy Facility
*Jefferson County, OR*

JACOBS

# Attachment P-1
# Agency Correspondence Record

# Meeting Minutes

1999 Bryan Street, Suite 1200
Dallas, Texas 75201
United States
T +1.214.638.01455000
F +1.214.638.04472000
www.jacobs.com

| | | | |
|---|---|---|---|
| **Subject** | **Conference Call to Discuss Field Surveys and Permitting of Madras Solar Energy Facility Project** | | |
| **Project** | Ecoplexus Madras Solar Energy Facility | | |
| **Project No.** | 709202 | **File** | |
| **Prepared by** | Paul Seilo and Forrest Parsons | **Phone No.** | Conference line |
| **Location** | Telephone Conference Call | **Date/Time** | Nov. 13, 2018, 11 am to noon |
| **Participants** | Matt Stuber, U.S. Fish and Wildlife Service (USFWS)<br>Greg Jackle, Oregon Department of Fish and Wildlife (ODFW)<br>Nathan Rogers, Heloise Hedlund, and Terrance Unrein, Ecoplexus Inc.<br>Paul Seilo and Forrest Parsons, Jacobs Engineering Group Inc. | | |

Nathan Rogers, Heloise Hedlund, Terrance Unrein, and Paul Seilo started the conference call with introductions, a description of Ecoplexus, and a description of the proposed Madras Solar Energy Facility in Jefferson County, Oregon. Forrest Parsons then described the environmental due diligence and field survey work conducted to date.

Questions and topics of discussion that occurred during the conference call are summarized as follows:

- After a discussion of golden eagle (GE) nest data and locations, Matt/USFWS said it would help to know which of the GE nest points have been active to determine any potential impacts from the project.

- Matt/USFWS stated his main concerns are: (1) GE nest disturbance from project construction noise; and (2) loss of GE foraging habitat.

- Matt/USFWS mentioned that other avian species may nest on the cliff and near the project site such as prairie falcons or ferruginous hawk etc. and Greg/ODFW concurred.

- Matt/USFWS said we could apply for an Incidental Take Permit (ITP) to “disturb the nest(s),” which is different than an ITP for mortality. Matt believes there is an existing programmatic environmental impact statement that the project/permit could fit under for compliance with the National Environmental Policy Act (NEPA) and will not require a formal Biological Opinion or other standalone NEPA document from USFWS (other than a concurrence statement for the existing programmatic Environmental Impact Statement). After submittal of an application for ITP, review and issuance takes about 2 months. Mitigation can be achieved by writing a check to a company named EDM who takes on the responsibility of mitigation. Power pole retrofits, use of non-barbed wire perimeter fencing, and installation of perching structures are also potential mitigation options. Staying outside of line of sight, maximizing distance from nests, and timing of construction potentially outside of the GE nesting season were all recommended to reduce impacts.

- Greg/ODFW indicated that Frank Isaacs/Oregon Eagle Foundation and biologist from Portland General Electric (PGE) should have information on which of the GE nests in the general vicinity have been active in recent years. Greg believes PGE has GE home range delineation maps, tagged/collar GE data in the project area, and has conducted a satellite tracking study in

connection with its existing Federal Energy Regulatory Commission permit associated with the Pelton Dam.

- Greg/ODFW said he thinks GE Category 1 nest buffer is 0.25 or 0.5 mile but based on information presented, the rest of the project is likely Cat. 3 and 4. Greg was not sure of the precise Category 1 GE nest buffer distances cited during the meeting and was going to confirm. He mentioned that buffers could be adjusted if outside of nest line of sight and if we are working with the USFWS (on permitting/mitigation items noted above).

- Greg/ODFW stated that recently burned areas on and adjacent to the project site could be available for potential mitigation through habitat restoration.

**ACTION ITEMS**

| Item | | Action Owner |
|---|---|---|
| 1 | Contact Frank Isaacs/Oregon Eagle Foundation and PGE biologist for more information including which GE nests are occupied or vacant in recent years, GE territory/home range, and tracking data | Jacobs |
| 2 | Greg Jackle to provide contact information for PGE biologists | Greg Jackle |
| 3 | Greg Jackle to provide more information on GE nest buffers and habitat categorization under the ODFW Habitat Mitigation Policy | Greg Jackle |

Oregon
Kate Brown, Governor

**Department of Fish and Wildlife**
**Prineville Field Office**
**High Desert Region**
2042 SE Paulina Hwy.
Prineville, OR 97754
(541) 447-5111
FAX (541) 447-8065
www.dfw.state.or.us

August 13, 2019

Chase McVeigh-Walker
Siting Analyst
Oregon Department of Energy
550 Capital St. NE
Salem, OR 97301-2567

RE: ODFW Comments - Notice of Intent – Madras Solar

Dear Chase:

The purpose of this letter is to provide Oregon Department of Energy (ODOE) with comments related to the Notice of Intent (NOI) to Apply for a site Certificate for the Madras Solar Energy Facility near Madras, OR.

**General Comments**

It is the policy of the Oregon Department of Fish and Wildlife (Department), as mandated by the state, to manage fish and wildlife to prevent serious depletion of indigenous species and to provide optimum recreational and aesthetic benefits for present and future generations of the citizens of this state (ORS 496.012). The Department recognizes ODOE's authority to approve this application, and offers the following comments and recommendations regarding potential impacts to wildlife and their habitats. I have summarized below a list of the most applicable statutes, administrative rules and policies administered by the Department that would pertain to the siting of this proposed facility.

**Oregon Revised Statutes (ORS)**

- ORS 496.012 Wildlife Policy
- ORS 506.036 Protection and Propagation of Fish
- ORS 496.171 through 496.192 Threatened and Endangered Wildlife and Fish Species. A listing of State and Federal threatened, endangered and candidate species can be found on ODFW's website at: http://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp
- ORS 498.301 through 498.346 Screening and By-pass devices for Water Diversions or Obstructions
- ORS 506.109 Food Fish Management Policy

- ORS 509.140 Placing Explosives in Water

- ORS 509.580 through 509.910 Fish Passage; Fishways: Screening Devices- a listing of requirements under ODFW's Fish Passage Program can be found on ODFW's website at http://www.dfw.state.or.us/fish/passage/

**Oregon Administrative Rules (OAR)**

- OAR Chapter 635, Division 100 provides authority for adoption of the State sensitive species list and the Wildlife Diversity Plan, and contains the State list of threatened and endangered wildlife and fish species. A current list of State sensitive species can be found on ODFW's website at: http://www.dfw.state.or.us/wildlife/diversity/species/sensitive_species.asp

- OAR Chapter 635, Division 415 ODFW's Fish and Wildlife Mitigation Policy found on ODFW's website at: http://www.dfw.state.or.us/lands/mitigation_policy.asp describes six habitat categories and establishes mitigation goals and standards for each wildlife habitat ranging from Category 1 (irreplaceable, essential, limited) to Category 6 (non-habitat)

- The Policy goal for Category 1 habitat is no loss of either habitat quantity or quality via avoidance of impacts through development alternatives, or an ODFW recommendation of no authorization of the proposed development action if impacts cannot be avoided. Categories 2-4 are essential or important, but not irreplaceable habitats. Category 5 habitat is not essential or important habitat, but has a high restoration potential. The application for a site certificate must identify the appropriate habitat category for all affected areas of the proposed project, provide justification for each habitat category selection, and provide an appropriate mitigation plan. All aspects are subject to ODOE and ODFW review and comment. ODOE has adopted this rule into OAR 345-022-0060 as an energy facility siting standard for Applicants to meet in order to obtain a site certificate.

- ODFW also provides technical review and recommendations on compliance with Oregon EFSC rules, particularly OAR 345-02100010(1) (p) and (q) and 345-022-040, 060 and 070.

**Specific Comments**

1) The Department requests that the applicant submit, as part of EFSC's siting standards, a detailed habitat mitigation plan, and revegetation plan for areas of temporary impact, that addresses any unavoidable impacts to wildlife and their habitats according to the ODFW Wildlife Habitat Mitigation Policy (OAR 635, Division 415) and EFSC's Siting Permit Conditions for Approval.
    a. Mitigation options were discussed at the field tour on 7/23/19. As discussed, ODFW is currently working on a long term mitigation plan with existing solar developments in Crook County and this project may have the ability to add on to that. Although ODFW is not currently accepting Payment to Provide (PTP) mitigation options right now, there may be opportunities for this project to work with our third party (Deschutes Land Trust) and provide funding to that entity as credit for mitigation. If there is interest in this option please let us know and we can set up a meeting with the Deschutes Land Trust.
    b. Other options discussed were securing properties proximate to PGE properties if available near Trout Creek, or the Metolius winter range.

2) The Department recommends that raptor nest surveys be completed within a 2 mile radius of the project area. In the event that active raptor nests are discovered within the project area, the Department recommends avoiding disturbance of those sites during construction. The Department also recommends the habitat surrounding raptor nests be given some additional consideration in terms of habitat categorization according to the Fish and Wildlife Habitat Mitigation Policy. Categorization and buffer distances can be discussed after surveys are completed. If construction activities are unavoidable during the nesting season in proximity to active nests, the following table provides recommendations for disturbance buffer distances on various species that may be found in or near the project site:

| Species | Spatial Buffer | Seasonal Restrictions | Release Date if Unoccupied |
|---|---|---|---|
| burrowing owl | 0.5 mile | April 1 - Aug 15 | 31-May |
| ferruginous hawk | 0.25 mile | Mar 15 - Aug 15 | 31-May |
| golden eagle | 0.5 mile | Feb 1 - Aug 15 | 15-May |
| red-tailed hawk | 300-500 ft | Mar 1 – Aug 15 | 31-May |
| prairie falcon | 0.25 mile | Mar 15 - July 1 | 15-May |
| Swainson's hawk | 0.25 mile | April 1 - Aug 15 | 31-May |
| short-eared owl | 0.25 mile | April 1 – Aug 15 | 15-May |
| northern harrier | 0.25 mile | April 1 – Aug 15 | 15-May |

**Golden Eagle**

1) The Department is aware of a long standing Golden Eagle territory located within the site boundary. Portland General Electric (PGE) had been studying one female Golden Eagle associated with this territory until May of 2014. Please reference the attached map of data provided by PGE and titled **Willow Creek Golden Eagle**. This map should serve as a starting point to negotiate potential impacts to current Eagles using the Willow Creek canyon as part of their home range.
2) The Department would recommend that the applicant survey for small mammal populations within the site boundary and report on whether or not they predict if the construction of this facility will increase or decrease the existing condition. Greater effort should be placed in surveying in proximity to the northern edge of the facility and in relation to the cluster of blue points referenced on the **Willow Creek Golden Eagle** map. There is concern that the site boundary may still be a viable hunting area for Golden Eagles and if that is the case, what minimization measures would be placed to prevent Eagles from colliding with panels, wires or any device within the facility.
3) From the **Willow Creek Golden Eagle** map it appears that this female eagle had utilized the rim habitat. Is there potential to "buffer" this project away from North rim to keep this important part of the home range and minimize this impact? It will be important to look at this data at a finer scale and compare it to the site boundary. This should be considered when categorizing the habitat.
4) It is strongly recommended that in future meetings, the Department meet with the applicants, ODOE, and the USFWS when negotiating impacts to this species. The Department wishes to

make our recommendations in line with the Federal agency and that is best accomplished when negotiations are held together.

Please let me know if you have any questions or concerns, and we look forward to meeting with you in the future.

Respectfully,

Greg Jackle
District Wildlife Biologist

cc. Sarah Reif,
Sara Gregory
Michael Harrington
Emily Weidner
Brad Nye
PGE

Oregon
Kate Brown, Governor

**Department of Fish and Wildlife**
**Prineville Field Office**
**High Desert Region**
2042 SE Paulina Hwy.
Prineville, OR 97754
(541) 447-5111
FAX (541) 447-8065
www.dfw.state.or.us

August 13, 2019

Chase McVeigh-Walker
Siting Analyst
Oregon Department of Energy
550 Capital St. NE
Salem, OR 97301-2567

RE: ODFW Comments - Notice of Intent – Madras Solar

Dear Chase:

The purpose of this letter is to provide Oregon Department of Energy (ODOE) with comments related to the Notice of Intent (NOI) to Apply for a site Certificate for the Madras Solar Energy Facility near Madras, OR.

**General Comments**

It is the policy of the Oregon Department of Fish and Wildlife (Department), as mandated by the state, to manage fish and wildlife to prevent serious depletion of indigenous species and to provide optimum recreational and aesthetic benefits for present and future generations of the citizens of this state (ORS 496.012). The Department recognizes ODOE's authority to approve this application, and offers the following comments and recommendations regarding potential impacts to wildlife and their habitats. I have summarized below a list of the most applicable statutes, administrative rules and policies administered by the Department that would pertain to the siting of this proposed facility.

**Oregon Revised Statutes (ORS)**

- ORS 496.012 Wildlife Policy
- ORS 506.036 Protection and Propagation of Fish
- ORS 496.171 through 496.192 Threatened and Endangered Wildlife and Fish Species. A listing of State and Federal threatened, endangered and candidate species can be found on ODFW's website at: http://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp
- ORS 498.301 through 498.346 Screening and By-pass devices for Water Diversions or Obstructions
- ORS 506.109 Food Fish Management Policy

- ORS 509.140 Placing Explosives in Water

- ORS 509.580 through 509.910 Fish Passage; Fishways: Screening Devices- a listing of requirements under ODFW's Fish Passage Program can be found on ODFW's website at http://www.dfw.state.or.us/fish/passage/

**Oregon Administrative Rules (OAR)**

- OAR Chapter 635, Division 100 provides authority for adoption of the State sensitive species list and the Wildlife Diversity Plan, and contains the State list of threatened and endangered wildlife and fish species. A current list of State sensitive species can be found on ODFW's website at: http://www.dfw.state.or.us/wildlife/diversity/species/sensitive_species.asp

- OAR Chapter 635, Division 415 ODFW's Fish and Wildlife Mitigation Policy found on ODFW's website at: http://www.dfw.state.or.us/lands/mitigation_policy.asp describes six habitat categories and establishes mitigation goals and standards for each wildlife habitat ranging from Category 1 (irreplaceable, essential, limited) to Category 6 (non-habitat)

- The Policy goal for Category 1 habitat is no loss of either habitat quantity or quality via avoidance of impacts through development alternatives, or an ODFW recommendation of no authorization of the proposed development action if impacts cannot be avoided. Categories 2-4 are essential or important, but not irreplaceable habitats. Category 5 habitat is not essential or important habitat, but has a high restoration potential. The application for a site certificate must identify the appropriate habitat category for all affected areas of the proposed project, provide justification for each habitat category selection, and provide an appropriate mitigation plan. All aspects are subject to ODOE and ODFW review and comment. ODOE has adopted this rule into OAR 345-022-0060 as an energy facility siting standard for Applicants to meet in order to obtain a site certificate.

- ODFW also provides technical review and recommendations on compliance with Oregon EFSC rules, particularly OAR 345-02100010(1) (p) and (q) and 345-022-040, 060 and 070.

**Specific Comments**

1) The Department requests that the applicant submit, as part of EFSC's siting standards, a detailed habitat mitigation plan, and revegetation plan for areas of temporary impact, that addresses any unavoidable impacts to wildlife and their habitats according to the ODFW Wildlife Habitat Mitigation Policy (OAR 635, Division 415) and EFSC's Siting Permit Conditions for Approval.
    a. Mitigation options were discussed at the field tour on 7/23/19. As discussed, ODFW is currently working on a long term mitigation plan with existing solar developments in Crook County and this project may have the ability to add on to that. Although ODFW is not currently accepting Payment to Provide (PTP) mitigation options right now, there may be opportunities for this project to work with our third party (Deschutes Land Trust) and provide funding to that entity as credit for mitigation. If there is interest in this option please let us know and we can set up a meeting with the Deschutes Land Trust.
    b. Other options discussed were securing properties proximate to PGE properties if available near Trout Creek, or the Metolius winter range.

2) The Department recommends that raptor nest surveys be completed within a 2 mile radius of the project area. In the event that active raptor nests are discovered within the project area, the Department recommends avoiding disturbance of those sites during construction. The Department also recommends the habitat surrounding raptor nests be given some additional consideration in terms of habitat categorization according to the Fish and Wildlife Habitat Mitigation Policy. Categorization and buffer distances can be discussed after surveys are completed. If construction activities are unavoidable during the nesting season in proximity to active nests, the following table provides recommendations for disturbance buffer distances on various species that may be found in or near the project site:

| Species | Spatial Buffer | Seasonal Restrictions | Release Date if Unoccupied |
|---|---|---|---|
| burrowing owl | 0.5 mile | April 1 - Aug 15 | 31-May |
| ferruginous hawk | 0.25 mile | Mar 15 - Aug 15 | 31-May |
| golden eagle | 0.5 mile | Feb 1 - Aug 15 | 15-May |
| red-tailed hawk | 300-500 ft | Mar 1 – Aug 15 | 31-May |
| prairie falcon | 0.25 mile | Mar 15 - July 1 | 15-May |
| Swainson's hawk | 0.25 mile | April 1 - Aug 15 | 31-May |
| short-eared owl | 0.25 mile | April 1 – Aug 15 | 15-May |
| northern harrier | 0.25 mile | April 1 – Aug 15 | 15-May |

**Golden Eagle**

1) The Department is aware of a long standing Golden Eagle territory located within the site boundary. Portland General Electric (PGE) had been studying one female Golden Eagle associated with this territory until May of 2014. Please reference the attached map of data provided by PGE and titled **Willow Creek Golden Eagle**. This map should serve as a starting point to negotiate potential impacts to current Eagles using the Willow Creek canyon as part of their home range.
2) The Department would recommend that the applicant survey for small mammal populations within the site boundary and report on whether or not they predict if the construction of this facility will increase or decrease the existing condition. Greater effort should be placed in surveying in proximity to the northern edge of the facility and in relation to the cluster of blue points referenced on the **Willow Creek Golden Eagle** map. There is concern that the site boundary may still be a viable hunting area for Golden Eagles and if that is the case, what minimization measures would be placed to prevent Eagles from colliding with panels, wires or any device within the facility.
3) From the **Willow Creek Golden Eagle** map it appears that this female eagle had utilized the rim habitat. Is there potential to "buffer" this project away from North rim to keep this important part of the home range and minimize this impact? It will be important to look at this data at a finer scale and compare it to the site boundary. This should be considered when categorizing the habitat.
4) It is strongly recommended that in future meetings, the Department meet with the applicants, ODOE, and the USFWS when negotiating impacts to this species. The Department wishes to

make our recommendations in line with the Federal agency and that is best accomplished when negotiations are held together.

Please let me know if you have any questions or concerns, and we look forward to meeting with you in the future.

Respectfully,

Greg Jackle
District Wildlife Biologist

cc. Sarah Reif,
Sara Gregory
Michael Harrington
Emily Weidner
Brad Nye
PGE

# Attachment P-2
# Critical Issues Analysis

[***Submitted Separately Under Confidential Cover; Not for Public Distribution***]

# Attachment P-3A
# Species Occurrence Data from U.S. Fish and Wildlife Service

**IPaC** **U.S. Fish & Wildlife Service**

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.



## Location

Jefferson County, Oregon


## Local office

Oregon Fish And Wildlife Office

(503) 231-6179
(503) 231-6195

2600 Southeast 98th Avenue, Suite 100
Portland, OR 97266-1398

https://www.fws.gov/oregonfwo/articles.cfm?id=149489416

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

| NAME | STATUS |
|---|---|

| | |
|---|---|
| Fisher Pekania pennanti<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/3651 | Proposed Threatened |

# Fishes

| NAME | STATUS |
|---|---|
| Bull Trout Salvelinus confluentus<br>There is **final** critical habitat for this species. Your location overlaps the critical habitat.<br>https://ecos.fws.gov/ecp/species/8212 | Threatened |

# Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

| NAME | TYPE |
|---|---|
| Bull Trout Salvelinus confluentus<br>https://ecos.fws.gov/ecp/species/8212#crithab | Final |



# Migratory birds

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

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

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

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

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

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



| NAME | BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.) |
|---|---|
| Bald Eagle *Haliaeetus leucocephalus*<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.<br>https://ecos.fws.gov/ecp/species/1626 | Breeds Dec 1 to Aug 31 |
| Brewer's Sparrow *Spizella breweri*<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA<br>https://ecos.fws.gov/ecp/species/9291 | Breeds May 15 to Aug 10 |
| Golden Eagle *Aquila chrysaetos*<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA<br>https://ecos.fws.gov/ecp/species/1680 | Breeds Dec 1 to Aug 31 |

Green-tailed Towhee Pipilo chlorurus — Breeds May 1 to Aug 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9444

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Long-billed Curlew Numenius americanus — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Pinyon Jay Gymnorhinus cyanocephalus — Breeds Feb 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9420

Sage Thrasher Oreoscoptes montanus — Breeds Apr 15 to Aug 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9433

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

White Headed Woodpecker Picoides albolarvatus — Breeds May 1 to Aug 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9411

Willow Flycatcher Empidonax traillii Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/3482

# Probability of Presence Summary

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

**Probability of Presence (■)**

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

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

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

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

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

## Survey Timeframe

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

Long-billed Curlew
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

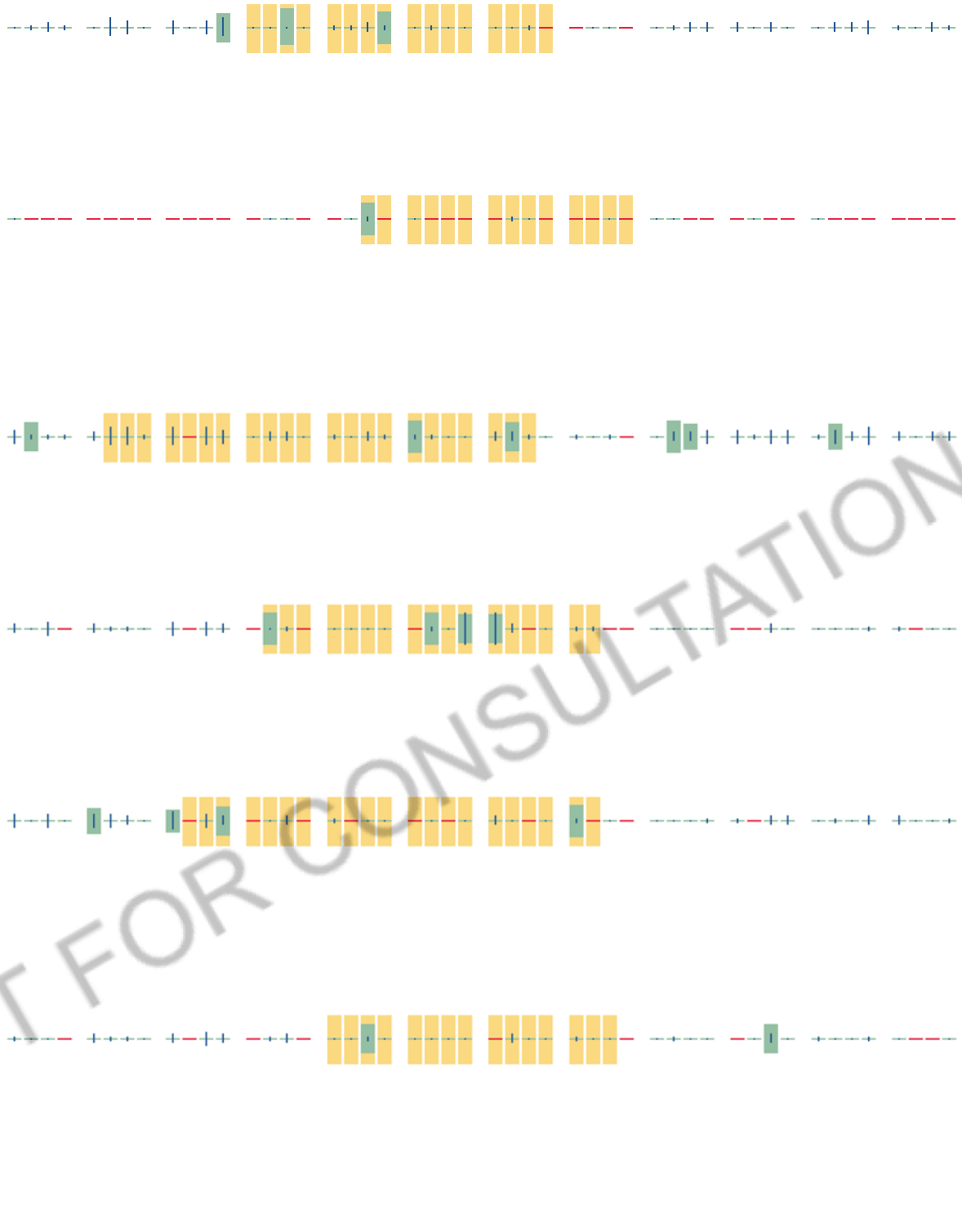
Olive-sided Flycatcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Pinyon Jay
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Sage Thrasher
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Tricolored Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

White Headed Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)




Willow Flycatcher
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

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

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

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

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

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

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

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

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

**What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

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

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

**Details about birds that are potentially affected by offshore projects**

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

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

**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

**Proper Interpretation and Use of Your Migratory Bird Report**

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



# Facilities

## National Wildlife Refuge lands

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

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

# Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

# Wetlands in the National Wetlands Inventory

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

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

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

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1C
- PEM1Cx
- PEM1Ah
- PEM1B
- PEM1A
- PEM1Fb
- PEM1F
- PEM1Ch
- PEM1Ax

FRESHWATER FORESTED/SHRUB WETLAND

- PSSC
- PSS1A
- PFOC
- PSSCh
- PFOA
- PSSCx
- PFOAh
- PSSB

FRESHWATER POND

- PABFx
- PUBFx
- PUBKx
- PABHx

- PUSCx
- PABFh
- PUBHx
- PUBFh
- PUSAx
- PUBHh
- PUSCh
- PABHh

LAKE

- L1UBHh
- L2USCh

RIVERINE

- R3UBH
- R4SBA
- R4SBCx
- R4SBC
- R5UBFx
- R4SBAx
- R5UBH
- R3USA

A full description for each wetland code can be found at the National Wetlands Inventory website



**Data limitations**

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

**Data exclusions**

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

**Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this

inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

# Attachment P-3B
# Species Occurrence Data from Oregon Biodiversity Information Center [*Submitted Separately Under Confidential Cover; Not for Public Distribution* ]

# Attachment P-4
# Baseline Field Survey Protocol

# Madras Solar Energy Facility

## Field Survey Protocol for Special-Status Wildlife Species and Habitats

August 2019

Prepared for:
Ecoplexus Inc.

# Madras Solar Energy Facility

| | |
|---|---|
| Project No: | 709202CH |
| Document Title: | Field Survey Protocol for Special-Status Wildlife Species and Habitats |
| Revision: | 1 |
| Date: | August 2019 |
| Client Name: | Ecoplexus Inc. |
| Project Manager: | Paul Seilo |
| Author: | Forrest Parsons |

Jacobs Engineering Group Inc.

2020 SW 4th Avenue, Suite 300
Portland, Oregon 97201
United States
T +1.503.235.5000
F +1.503.736.2000
www.jacobs.com

# Contents



**Figure**

# 1. Introduction

Jacobs Engineering Group Inc. (Jacobs) is working with Ecoplexus Inc. (Ecoplexus) to explore development of a photovoltaic solar power generation project in Jefferson County, Oregon, called the Madras Solar Energy Facility (Project). This document presents the protocol used for wildlife and habitat surveys associated with permitting, construction, and operation of the Project.

# 2. Project Description

The purpose of the Project is commercial-scale photovoltaic energy generation. The proposed Project site is located west of Madras, Oregon in Jefferson County, as shown on Figure 1. The Project will entail construction of solar arrays (i.e., panels) and related components (i.e., substation and access road). At this stage, Ecoplexus has conducted multiple field surveys and a site visit to identify existing natural resources located on the Project site.

# 3. Regulatory Framework

**OAR 345-021-0010(1)(p)(E)** *A baseline survey of the use of the habitat in the analysis area by species identified in (D) performed according to a protocol approved by the Department and ODFW.*

# 4. Methods

Jacobs prepared a critical issues analysis (CIA) for the Project to identify biological resources present within and surrounding the Project and to categorize habitat both within the Project site and within 0.5 mile following ODFW policy in OAR 635-415 (ODFW, 2016). Biologists familiar with Blue Mountains ecoregion habitat types, wildlife, and flora used a combination of historical land cover data (Homer et al., 2015), color aerial image interpretation (ESRI, 2019), topographic information (USGS, 2019), and onsite verification to characterize habitat types present within the site boundary from the perspective of wildlife use, both general assemblages [e.g., shrub-steppe obligates]) and specific species (for individual taxa [e.g., special-status species]).

**Information Review**

A USFWS Information for Planning and Conservation (IPaC) Trust Resources Report was generated for federal special-status species within the site boundary and 5 miles of the Facility (USFWS, 2019). In addition, the Oregon Biodiversity Information Center (ORBIC) database was queried for records of state and federal special-status species within the site boundary and within 5 miles of the Facility (ORBIC, 2019).

The Oregon Department of Agriculture (ODA) *Oregon Listed Plants by County* (ODA, 2019) and the USFWS IPaC report (USFWS, 2019) was used to identify federally or state-listed plants that are documented to occur in Jefferson County, Oregon.

To help make a determination on whether there is suitable habitat within the site boundary and potential for impacts within the analysis area for special status species, additional sources were consulted to supplement the USFWS report and ORBIC database query. The following sources provided additional information on species that could potentially occur in the analysis area and critical information such as habitat preferences, morphological characteristics, phonologic development timelines, and species ranges:

- *Jefferson County Comprehensive Plan* (Jefferson County, 2018)
- Deer and Elk Winter Range Maps (ODFW, 2019)
- eBird, an online database of bird distribution and abundance (eBird, 2019)
- The National Audubon Society (Audubon) Important Bird Areas (Audubon, 2019)

- USGS Breeding Bird Survey (BBS; USGS, 2001)
- *Golden Eagles (Aquila chrysaetos) Nesting in Oregon, 2011-2014: Final Annual Report* (Isaacs, 2015)

The following two USGS Breeding Bird Survey routes within 20 miles of the site boundary were also reviewed for species occurrence:

- Madras, approximately 10 miles southeast in Jefferson, Deschutes and Crook County, OR
- Sisters, approximately 20 miles southwest in Jefferson and Deschutes County, OR.

Table P-1 below lists special status species with a potential to occur within 0.5 miles of the Facility based on the information review.

**Table P-1. State Sensitive and Other Nonlisted Special-status Species with Potential to Occur within 0.5 Miles of the Facility Site Boundary – State of Oregon**

| Species | Scientific Name | State Status[a,b] | Federal Status[a,b] | Potential Habitat within the Facility Site Boundary | Potential Impact within the 0.5-mile Analysis Area (Yes/No) |
|---|---|---|---|---|---|
| **Mammals** | | | | | |
| California bat | *Myotis californicus* | SV | -- | No; no foraging or roosting habitat | Yes |
| Pallid bat | *Antrozous pallidus* | SV | SOC | Yes; foraging habitat in grassland and shrub steppe, no roosting habitat | Yes |
| Spotted bat | *Euderma maculatum* | SV | SOC | Yes; foraging habitat in shrub steppe, no roosting habitat | Yes |
| Townsend's big-eared bat | *Corynorhinus townsendii* | SC | SOC | No; no foraging or roosting habitat | Yes |
| **Birds** | | | | | |
| Bald eagle | *Haliaeetus leucocephalus* | -- | BGEPA | No suitable foraging or nesting habitat | Yes |
| Ferruginous hawk | *Buteo regalis* | SC | BCC, SOC | Yes; foraging habitat in grassland and shrub steppe, no nesting habitat | Yes |
| Golden eagle | *Aquila chrysaetos* | -- | BGEPA | Yes; foraging habitat in grassland and shrub steppe, no nesting habitat | Yes |
| Peregrine falcon | *Falco peregrinus anatum* | SV | BCC | No suitable foraging or nesting habitat | Yes |
| Swainson's hawk | *Buteo swainsoni* | SV | -- | Yes; foraging habitat in grassland, no nesting habitat | Yes |
| **Fish** | | | | | |
| Bull Trout (Coastal Recovery Unit) | *Salvelinus confluentus* | SC | T, CH | No suitable habitat; nearest habitat is Lake Simtustus located 900 feet from the site boundary | Yes |

**Table P-1. State Sensitive and Other Nonlisted Special-status Species with Potential to Occur within 0.5 Miles of the Facility Site Boundary – State of Oregon**

| Species | Scientific Name | State Status[a,b] | Federal Status[a,b] | Potential Habitat within the Facility Site Boundary | Potential Impact within the 0.5-mile Analysis Area (Yes/No) |
|---|---|---|---|---|---|
| Chinook Salmon (Deschutes River ESU) | *Oncorhynchus tshawytscha* | SV | | No suitable habitat; nearest habitat is Lake Simtustus located 900 feet from the site boundary | Yes |
| Steelhead (Middle Columbia River ESU) | *Oncorhynchus mykiss* | SC | T, CH | No suitable habitat; nearest habitat is Lake Simtustus located 900 feet from the site boundary | Yes |

[a] ORBIC, 2019 ODFW, 2019; USFWS, 2019; USFWS, 2008; BGEPA, 1940; ODA, 2019;

[b] Status Definitions

-- = No status.

**Oregon**

SV = Sensitive-vulnerable; listing as threatened or endangered is not believed to be imminent and can be avoided through continued or expanded use of adequate protective measures and monitoring.

SC = Sensitive-critical; listing as threatened or endangered is pending or may be appropriate if immediate conservation actions are not taken.

**Federal**

SOC = Species of Concern; being reviewed by USFWS for consideration as candidates for listing.

BCC = USFWS Birds of Conservation Concern.

BGEPA = Protected under the Bald and Golden Eagle Protection Act.

CH = Critical Habitat.

T = Threatened.

Note: All non-game migratory birds are protected by the Migratory Bird Treaty Act.

## Field Surveys

Table P-2 summarizes field surveys and site visits that have been conducted at the Madras Solar Energy Facility.

**Table P-2. Summary of Field Surveys for Madras Solar Energy Facility**

| Date | Description |
|---|---|
| October 9, 2018 | Habitat Categorization and Wildlife Survey |
| October 30, 2018 | Wetland Delineation |
| March 8, 2019 | Raptor and Eagle Nest Survey |
| May 15, 2019 | Raptor and Eagle Nest Survey |
| June 13, 2019 | Raptor and Eagle Nest Survey |
| July 1, 2019 | Raptor and Eagle Nest Survey |
| July 23, 2019 | Agency Site Visit |

**Wildlife and Habitat Surveys**

A field survey was conducted on October 9, 2018. The survey focused on identifying the potential presence of special-status species and potentially suitable habitats for fish, wildlife, and plants. The Madras site was viewed from vehicle and on foot, with special targeting of wildlife and habitats (e.g., aquatic resources and vegetation communities with potential to provide suitable habitat for special-status species) that had been identified during the information review and initial desktop mapping conducted prior to the site visit. Qualified wildlife biologists walked meandering survey transects no more than 660 feet (0.125 mile) apart stopping periodically to listen for wildlife. Transects were narrowed where suitable habitat for special status species was present. Information was recorded that included habitat types (i.e. shrub steppe and grasslands), dominant vegetation, concentrations of invasive plants, observations of wildlife, wildlife sign (e.g., tracks, scat, burrows, nests, hair, bones, and feathers), and evidence of disturbance.

**Raptor and Eagle Surveys**

Ground and helicopter field surveys were conducted on March 8, May 15, June 13, and July 1, 2019, by Western Ecosystem Technologies (WEST), Inc., biologists to identify nesting raptors within 2 miles of the site boundary.

**Aerial Raptor and Eagle Surveys**

The objective of the aerial raptor and eagle surveys was to locate any new, previously unknown eagle and raptor nests, as well as update the status of all known historical nests within the half mean inter-nest distance (MIND) of the Project. The half MIND was calculated using USFWS historical golden eagle nest data within a 10-mile radius of the Project area (Isaacs 2018). Eight occupied nesting areas (single nests or nest clusters) were used to calculate the MIND. The entire half MIND radius was surveyed twice during the breeding season for new nests. Any stick nest that appeared to be large enough to support nesting eagles was marked on the first round and rechecked on the second round.

The surveys were conducted with an R44 helicopter on March 8 and May 15, 2019, flown by a pilot experienced in aerial wildlife surveys. Survey methodology followed the protocols described by the US Fish and Wildlife Service (USFWS) Eagle Conservation Plan Guidance (ECPG) (USFWS 2013) and *Golden Eagle Inventory and Monitoring Protocols* (Pagel et al. 2010). Two WEST biologists, experienced in aerial raptor nest surveys, conducted the surveys. The helicopter was flown approximately 46 – 61 m (150 – 200 ft) above ground level at airspeeds of approximately 60-75 mi (97-121 km) per hour. Surveys involved a comprehensive search of suitable habitat (e.g., rocky outcrops, cliffs, wooded areas, riparian corridors), and the helicopter was positioned to allow thorough visual inspection of the habitat. When a potential nest was spotted, the helicopter approached slowly and was positioned such that the nest could be clearly seen.

Data recorded for each observed nest site included a unique nest ID, species occupying the nest (when possible), nest condition (i.e., remnant, poor, fair, good), nest size, nest substrate, nest status (i.e., occupied, unoccupied, active, or inactive), number of adults and young present, nest location (marked with a hand-held global positioning system unit), and any relevant information about the nest or raptor sightings and behavior near the nest. Photographs were taken of all nests and are available upon request.

Categories used to describe nest status were consistent with the definitions contained in the ECPG (USFWS 2013). Nests were classified as occupied if any of the following were observed at the nest structure: 1) an adult on the nest structure; 2) eggs; 3) nestlings or fledglings; 4) occurrence of a pair of adults or sub-adults; 5) a newly constructed or refurbished stick nest in the area where territorial behavior of a raptor 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 one or more eggs had been laid or chicks were observed, or inactive if no eggs or chicks were present. A nest that did not meet the above criteria for occupied during at least two surveys was classified as unoccupied. If a nest was only surveyed once during the 2017 nesting season and no evidence of occupancy was observed, the nest status was classified as unknown-inactive.

### Ground-based Nest Surveys

Two ground-based nest surveys were conducted on June 13 and July 1, 2019 with a focus on occupied, active golden eagle and raptor nests to determine nest success and productivity. Biologists walked north from the north portion of the Project area toward nests previously identified during prior aerial surveys. Nests were observed from approximately 300 meters away. The number and approximate age of nestlings was recorded.

### Agency Site Visit

A site visit was conducted on July 23, 2019, by Jacobs and West biologists, USFWS and ODFW biologists, and ODOE staff. The visit focused on the potential presence of special-status species and potentially suitable habitats for fish, wildlife, and plants. The site boundary and vicinity was viewed from vehicle and on foot in areas with the highest potential to support special-status species. No federally or state-listed threatened or endangered species or their sign (e.g., prints, scat, burrows, nests, hair, and feathers) were identified during the site visit. No special-status species were identified during the site visit.

### Habitat Categorization

On October 9, 2018, a Jacobs biologist familiar with regional flora and fauna conducted a field survey to ground-truth habitat occurrence and quality. During the field surveys, habitat boundaries were delineated and distinct habitats were categorized according to the habitat definitions in ODFW's Fish and Habitat Mitigation Policy, based on a combination of vegetative structure, habitat functionality, and overall ecological condition for wildlife, in particular for special-status species. Habitat boundaries were revised during the site visit that was conducted on July 23, 2019 with USFWS and ODFW biologists to reflect current habitat conditions (See Figure 1).

# 5. References


Bald and Golden Eagle Protection Act (BGEPA). 1940. 16 United States Code (U.S.C.) § 668-668d. Bald Eagle Protection Act of 1940, June 8, 1940, Chapter 278, Section (§) 2, 54 Statute (Stat.) 251; Expanded to include the related species of the golden eagle October 24, 1962, Public Law (PL) 87-884, 76 Stat. 1246. As amended: October 23, 1972, PL 92-535, § 2, 86 Stat. 1065; November 8, 1978, PL 95-616, § 9, 92 Stat. 3114.

eBird. 2019. *eBird: An online database of bird distribution and abundance* [web application]. eBird, Ithaca, New York. Accessed January 2019. http://ebird.org.

ESRI. 2019. *World Street Map and Aerial Photos: World Imagery*. ArcGIS Resource Center. ESRI, producers of ArcGIS software, Redlands, California. Data accessed July 2019.

Homer, C. G., J. A. Dewitz, L. Yang, S. Jin, P. Danielson, G. Xian, J. Coulston, N. D. Herold, J. D. Wickham, and K. Megown. 2015. *Completion of the 2011 National Land Cover Database for the Conterminous United States-Representing a Decade of Land Cover Change Information*. Photogrammetric Engineering and Remote Sensing 81(5): 345-354. https://www.mrlc.gov/data.

Isaacs, F. B. 2015. Golden Eagles (*Aquila chrysaetos*) Nesting in Oregon, 2011-2014: Final Annual Report. Oregon Eagle Foundation, Inc., Klamath Falls, Oregon. February 10.

Isaacs, F.B. 2018. Golden eagles (*Aquila chrysaetos*) nesting in Oregon, 2011–2017: Draft Annual Report, 25 February 2018. Oregon Eagle Foundation, Inc., Klamath Falls, Oregon, USA.

Jefferson County. 2018. *Jefferson County Comprehensive Plan*. Revision date: December, 2018. Comprehensive Plan. https://www.co.jefferson.wa.us/578/Jefferson-County-Comprehensive-Plan

National Audubon Society (Audubon). 2019. *The Important Bird Areas*. Data accessed January 2019. Important Bird Areas by State: http://www.audubon.org/bird/iba.

Oregon Biodiversity Information Center (ORBIC). 2019. *Rare, Threatened and Endangered Species of Oregon*. Institute for Natural Resources. Portland State University. http://inr.oregonstate.edu/orbic/rare-species/rare-species-oregon-publications.

Oregon Department of Agriculture (ODA). 2019. *Oregon Listed Plants by County*. Plant Conservation, ODA, Salem, Oregon. Accessed July 2019. http://www.oregon.gov/ODA/programs/PlantConservation/Pages/ListedPlants.aspx.

Oregon Department of Fish and Wildlife (ODFW). 2016. *Fish and Wildlife Habitat Mitigation Policy*. Oregon Administrative Rules Division 415. OAR 635-415-0000 through OAR 635-415-0025. Amended March 2016. https://www.dfw.state.or.us/OARs/415.pdf.

Oregon Department of Fish and Wildlife (ODFW). 2019. *Compass Online Fish and Wildlife Mapping Tool*. Accessed July 2019. http://dfw.state.or.us/maps/compass/.

Pagel, J.E., Whittington, D.M. and Allen, G.T. 2010. Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations. Division of Migratory Bird Management.

U.S. Fish and Wildlife Service (USFWS). 2008. *Birds of Conservation Concern 2008*. December 2008. Division of Migratory Bird Management. Arlington, Virginia. http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf.

US Fish and Wildlife Service (USFWS). 2013. Eagle Conservation Plan Guidance, Module 1 - Land-based Wind Energy. Version 2. Division of Migratory Bird Management.

U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC). 2019. Resources for Project in Jefferson County, Oregon. Initial Project Scoping: IPaC, Environmental Conservation Online System (ECOS), USFWS.

U.S. Geological Survey (USGS). 2001. *North American BBS Methodology Training.* Accessed July 2019. USGS Breeding Bird Surveys (BBS), Patuxent Wildlife Research Center, Laurel, Maryland. Methodology Training: http://www.pwrc.usgs.gov/BBS/participate/training/; Description and Methods: http://www.pwrc.usgs.gov/BBS/ participate/training/1.html.

U.S. Geological Survey (USGS). 2019. *The National Map/U.S. Topo*. Last updated July 2019. http://nationalmap.gov/ustopo/index.html.

# Attachment P-5
# Technical Memorandum: Madras Solar 2019 Eagle Nest Surveys (WEST, 2019)

**[*Submitted Separately Under Confidential Cover; Not for Public Distribution*]**

# Attachment P-6
# Revegetation Plan

# Madras Solar Energy Facility: Revegetation Plan

**[NOVEMBER 2019]**

## I. Introduction

This plan describes methods, success criteria, monitoring, and reporting requirements for restoration of areas temporarily disturbed during the construction of the Madras Solar Energy Facility (Facility), excluding areas occupied by permanent Facility components (the "footprint"). The objective of revegetation is to restore the disturbed areas to predisturbance conditions or better. The evaluation of predisturbance conditions is based upon evaluation of the revegetated area conditions compared to conditions of approved, fixed-point reference sites, which serve as a proxy for predisturbance conditions. Restoration of disturbed areas is required to satisfy the requirements of the Fish and Wildlife Habitat standard (OAR 345-022-0060).

Where Facility activities result in damage to or removal of existing vegetation, the certificate holder must restore suitable vegetation. In addition, the certificate holder shall maintain erosion and sediment control measures put in place during construction until the affected areas are restored as described in this plan and the revegetation efforts have succeeded enough to control erosion. When there is enough grass in place to hold the soil the control measures can be removed. The plan specifies monitoring procedures to evaluate revegetation success of disturbed wildlife habitat areas. Remedial action may be necessary for wildlife habitat areas that do not show revegetation progress. Compensatory mitigation may be necessary if revegetation is unsuccessful.

## II. Description of the Facility Site

The Facility site encompasses approximately 284 acres of land in the center of Jefferson County, just west of the City of Madras. The site is on a plateau about one-half mile east of the Deschutes River Canyon. The rim of Dry Canyon occurs along the eastern site boundary and the rim of Willow Canyon occurs along the northern site boundary. Elevation of the study area ranges from 2,370 feet to 2,400 feet near the northwest study area boundary. The topography of the study area is nearly level (0 to 1 percent). Steep slopes occur along the northwest, north, and eastern edge of the study area as the topography transitions into the adjacent canyons.

The Facility is in the Deschutes River Valley physiographic province, a Level IV ecoregion designated by the U.S. Environmental Protection Agency (Thorson et al., 2003). This ecoregion is influenced by the Columbia Plateau to the north and Eastern Cascades slopes and foothills to the east. A basalt cap found in the southern region is absent in the northern region and the terrain is more rolling and dissected. The climate is somewhat less arid than the similarly high lava plains of the northern basin and range ecoregion to the southeast.

The Facility is in the shrub-steppe and *Juniperus occidentalis* vegetation zone of the Columbia Basin as described by Franklin and Dyrness (1988). Specifically, the Facility site boundary is in the part of that zone characterized by the *Artemisia tridentata-Agropyron spicatum* (big sagebrush-bluebunch wheatgrass) plant association (Franklin and Dyrness, 1988; Chatters, 1998). This association occurs in the driest settings of the Columbia Basin (Chatters, 1998) and conforms to the eastside shrubland and grassland wildlife habitat area defined by Vander Haegen et al. (2001). Potential natural vegetation includes Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), antelope bitterbrush (*Purshia tridentata*), basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) , mountain big sagebrush (*Artemisia tridentata*

ssp. *vaseyana*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), and needle-and-thread (*Hesperostipa comata*) on the sagebrush steppe, with western juniper (*Juniperus occidentalis*) on shallow, rocky soils. However, vegetation within the Facility area has been altered by past and present land use practices such as grazing, range fire, and agricultural cultivation, which have affected native vegetation such that no sagebrush species occur within the Facility area. Review of historic aerial imagery indicates the vegetation on the flat portion of the Facility study area was previously modified by dryland wheat or ranching/grazing activities. A recent fire in August 2018 left much of the northern portion of the study area burned and void of vegetation.

Two soil types are present within the Facility area. On the upper flat portions, the soils consist of Madras loam, an Aridic Argixerolls. Argixerolls consist of material displaced across a soil profile through illuviation in xeric (dry) environments. Typical soil profiles for these soils suggest that the A horizon consists of a brown (10YR 5/3) loam and the B horizon consists of a 10YR 5/4 yellowish brown loam. Below the B horizon is the 2Crk horizon (from 23 to 27 inches) consisting of consolidated gravels and cobbles of the Deschutes Formation. Below this layer of sand and gravel, basalt bedrock is generally encountered. The sloped portions along drainages consist of Simas-Ruckles-Rock Outcrop complexes, which show no soil development. Annual precipitation in the region averages approximately 10.38 inches with an average snowfall of approximately 9.4 inches (NRCS, 2018).

## 1. Description of the Wildlife Habitat Types

Habitat types within the site boundary include non-native grassland, shrub-steppe, and developed as shown in Table 1.

**Table 1. Habitat Types within the Site Boundary**

| General Land Cover Type and Codes | Specific Habitat Type ("Subtype") and Mapping Codes | Description | Acres in Site Boundary |
|---|---|---|---|
| Developed (D) | Paved Roads (DX) | Includes NW Pelton Dam Road and NW Elk Drive | 0.36 |
| Grassland (G) Steppe dominated by non-native grasses (<10% shrub cover) | Exotic Annual Grassland (GA) | Includes areas that burned in August 2018 and were planted with non-native crested wheatgrass (*Agropyron cristatum*) in spring of 2019. Other dominant grass species include cheatgrass (*Bromus tectorum*) and medusahead rye (*Taeniatherum canput-medusae*). | 150.03 |
| Shrub-steppe (SS) dominated by native and/or non-native grasses and forbs (<20% shrub cover) | Rabbitbrush Shrub-steppe (SSR) | Dominated by early successional gray rabbitbrush (*Ericameria nauseosa*). Understory was dominated by cheatgrass, crested wheatgrass, and some native forbs and is regularly grazed. | 133.74 |
| Total | | | 284.13 |

The habitats within the Facility site boundary were categorized as 4 or 6. Table 2 shows the areas of disturbance in each habitat category and subtype. The permanently disturbed acres represent maximum impacts that could occur during operations and the temporarily disturbed acres represent additional maximum impacts during construction, which will be restored following construction.

**Table 2. Temporary and Permanent Disturbance by Habitat Category and Subtype**

| Habitat Category | Habitat Subtype | Permanently Disturbed | Temporarily Disturbed | Total Disturbed |
|---|---|---|---|---|
| 4 | Grassland | 142.19 | 5.56 | 147.84 |
| | Shrub-steppe | 127.99 | 1.10 | 129.09 |
| | **Subtotal** | 270.18 | 6.66 | 276.93 |
| 6 | Paved roads | 0 | 0.02 | 0.02 |
| | **Subtotal** | 0 | 0.02 | 0.02 |
| **Total** | | **270.18** | **6.68** | **276.95** |

Signs of common wildlife species identified during site visits included deer, pronghorn, coyote, rabbit, and a variety of birds. Higher concentrations of birds and signs of wildlife were identified in areas that were not recently burned.

## III. Revegetation Methods

The certificate holder shall consult with ODFW, ODOE, and Jefferson County Weed Control Authority prior to construction to discuss the area(s) to be restored, habitat category and habitat subtype conditions, reference plot location and conditions, topsoil restoration and revegetation methods, erosion and sediment control measures, and implementation schedule. During construction, the certificate holder will implement site stabilization measures, including seeding of temporarily disturbed areas according to its NPDES permit.

To the extent practicable, existing vegetation will be preserved and open areas will be revegetated or placed with stable ground cover. When practicable, open areas will be revegetated or stabilized before and after grading or construction. Erosion and sediment control and perimeter sediment control measures will be in place before vegetation is disturbed and will remain in place and be maintained, repaired, and promptly implemented for the duration of construction.

The certificate holder shall restore temporarily disturbed areas by preparing the soil and seeding using common application methods. The certificate holder may implement topsoil salvage and restoration methods as recommended by ODFW, the Jefferson County Weed Control Authority, and the contractor, and could include measures such as scraping and stockpiling the upper 6 inches of topsoil containing the fertile nutrients, to be segregated in windrows and kept intact and protected for use as the top-dressing for the area of disturbance. Additional site-specific soil preparation and seeding methods may be determined during the agency consultation period. The certificate holder may use mulching and other appropriate practices to control erosion and sediment during both construction and revegetation work. The

certificate holder shall select the seed mixes to apply based on the preconstruction land use, as described below.

The certificate holder shall consult with ODFW, Jefferson County Weed Control Authority, the landowner, and the contractor to determine the appropriate seed mix and application rate for these areas based on the characteristics of the affected area. At the recommendation of ODFW, the grass seed mix will be comprised of grasses only in order to maximize flexibility for weed control. The mix should contain native or native like species selected based on relative availability and compatibility with local growing conditions. Seed mix selection should consider soil erosion potential, soil type, seed availability, and the need for using native or native-like species. The certificate holder shall obtain approval of the composition of the seed mix from the Department. The certificate holder shall use seed provided by a reputable supplier and complying with the Oregon Seed Law.

## 1. Revegetation Seed Mix

In order to reestablish plant communities of most value to wildlife, only native species are used. Species were selected based on their tolerance to xeric conditions, the availability of their seed, and as representative species of natural vegetation communities in the region. As recommended by ODFW, the grass seed mix comprises grasses only in order to maximize flexibility for weed control. Tables 3 and 4 show the recommended seed mix (these species may by updated based on input from Jefferson County staff).

**Table 3. Revegetation Seed Mix #1: Grassland - Native**

| Specified Seed Mix | | Minimum lbs/acre Pure Live Seed (PLS) |
|---|---|---|
| Needle and Threadgrass | *Hesperostipa comata* | 7 |
| Secar Bluebunch Wheatgrass | *Pseudoroegneria spciata* ssp. *spicata* | 7 |
| Sherman Big Bluegrass | *Poa ampla (secunda)* | 6 |
| Whitmar Beardless Wheatgrass | *Pseudoroegneria spicata* ssp. *inermis* | 6 |
| Critana Thickspike Wheatgrass | *Elymus lanceolatus* | 6 |
| Sandberg's Bluegrass | *Poa secunda* | 1 |
| | **Total:** | **33 lbs/acre** |

**Table 4. Revegetation Seed Mixture #2: Shrub-Steppe – Rabbitbrush**

| Specified Seed Mix | | Minimum lbs/acre Pure Live Seed (PLS)* |
|---|---|---|
| Common Name | Scientific Name | |
| Gray rabbitbrush | *Ericameria nauseosa* | 1.2 |
| Secar Bluebunch Wheatgrass | *Pseudoroegneria spciata* ssp. *spicata* | 6 |
| Sherman Big Bluegrass | *Poa ampla (secunda)* | 6 |
| Critana Thickspike Wheatgrass | *Elymus lanceolatus* | 6 |
| Whitmar Beardless Wheatgrass | *Pseudoroegneria spicata* ssp. *inermis* | 6 |
| Squirreltail | *Elymus elymoides* | 4 |
| Sandberg's Bluegrass | *Poa secunda* | 0.4 |
| Appar Lewis Blue Flax | *Linum perrene* | 0.5 |

| | | |
|---|---|---|
| Fernleaf desert parsley | *Lomatium dissectum* | 0.5 |
| Shaggy fleabane | *Erigeron pumilis* | 0.5 |
| Silky lupine | *Lupinus sericeus* | 0.5 |
| Western yarrow | *Achillea millefolium* var. *occidentalis* | 0.5 |
| | **Total:** | **32.1 lbs/acre** |

## 2. Seed Planting Methods

Planting should be done based on ODFW and Jefferson County Weed Control Authority recommendations and in consultation with the seeding contractor at the appropriate time of year to facilitate seed germination, based on weather conditions and the time of year when construction-related ground disturbance occurs. The certificate holder shall choose planting methods based on site-specific factors such as slope, erosion potential, and the size of the area in need of revegetation. Disturbed ground may require chemical or mechanical weed control before weeds have a chance to go to seed. Two common application methods are described as follows.

(a) Broadcasting

Broadcast the seed mix at the specified application rate. Where feasible, apply half of the total mix in one direction and the second half of mix in the direction perpendicular to first half. Apply weed-free straw from a certified field or sterile straw at a rate of two tons per acre immediately after applying seed. Crimp straw into the ground to a depth of two inches using a crimping disc or similar device. As an alternative to crimping, a tackifier may be applied using hydroseed equipment at a rate of 100 pounds per acre. Prior to mixing the tackifier, visually inspect the tank for cleanliness. If remnants from previous hydroseed applications exist, wash tank to remove remnants. Include a tracking dye with the tackifier to aid uniform application. Broadcasting should not be used if winds exceed 5 miles per hour.

(b) Drilling

Using an agricultural or range seed drill, drill seed at 70 percent of the recommended application rate to a depth of ¼ inch or as recommended by the seed supplier. Where feasible, apply half of the total mix in one direction and the second half of mix in the direction perpendicular to first half. If mulch has been previously applied, seed may be drilled through the mulch provided the drill can penetrate the straw resulting in seed-to-soil contact conducive for germination.

## I. Noxious Weed Prevention and Control

The certificate holder shall implement weed prevention and control measures prior to and during revegetation efforts. The construction contractor will take the following measures to avoid, minimize, or reduce the impacts of noxious weeds:

- Use weed-free Facility staging areas.
- Clean equipment prior to entry into revegetation areas.
- Existing infestations of noxious weed shall be treated prior to revegetation.

- Infestation of noxious weeds that appear during revegetation efforts shall be spot treated immediately to prevent expansion.
- Ground application of herbicides will be with a dripless wand applicator carried over the site either on foot in a backpack sprayer or in a tank on a rubber-tired all-terrain vehicle. Herbicide(s) used will be limited to types that do not move through the soil and whose affect is immediate but short-lived. Herbicide(s) used within 200 feet of waterbodies will be approved for use near or in wetlands to avoid unintentional affects to aquatic species.
- Herbicide mixes will be colored with dye to aid in post-application monitoring.
- Following completion of revegetation, weed monitoring and any necessary control efforts will be completed annually.

## IV. Monitoring

### 1. Revegetation Record

The certificate holder shall maintain a record of revegetation work for wildlife habitat areas. In the record, the certificate holder shall include the date that construction activity was completed in the area to be restored, a description of the affected area and supporting figures representing the location (location, acres affected and predisturbance condition), the date that revegetation work began, and a description of the work done within the affected area. The certificate holder shall report restoration activities to the Department for the first 5 years after the completion of facility construction. After 5 years, any restoration actions will be described in the annual report per OAR 345-026-0080(e).

### 2. Monitoring Procedures

The certificate holder shall identify reference sites in consultation with ODFW. Reference sites shall be chosen to represent each of the revegetated habitat types. Once the reference sites are approved by ODFW, the certificate holder shall monitor those sites to establish baseline conditions as they relate to the success criteria for the Facility. Documentation of baseline conditions at reference sites shall occur prior to commencement of revegetation efforts. The certificate holder shall monitor the revegetation of wildlife habitat areas as described in this section, unless the landowner has converted the area to a use inconsistent with the success criteria. The certificate holder shall employ a qualified investigator (a botanist or revegetation specialist) to examine all revegetation areas to assess vegetation cover of the reference sites prior to construction (species, structural stage, etc.); and following completion of construction, the qualified investigator shall assess the progress of disturbed areas toward meeting the success criteria described below.

*Weed Control*

A qualified investigator shall inspect each revegetation area on an annual basis during the first 5 years following initial seeding to assess weed growth and to recommend weed control measures. The investigator shall report to the certificate holder, the Department, and ODFW in the semiannual revegetation monitoring report following each inspection, describing weed growth and the success of control measures. If control measures are ineffective, the certificate holder will confer with the Department, ODFW, and the Jefferson County Weed Control Authority to develop alternative control measures.

*Wildlife Habitat Recovery*

After the first growing season following initial seeding (Year 1), a qualified investigator shall inspect each revegetation area to assess revegetation success based on the success criteria and to recommend remedial actions, if needed. The qualified investigator shall reinspect these areas annually for the first 5 years following the completion of construction. The certificate holder shall submit, electronically, to the Department and ODFW the investigator revegetation inspection report in the semiannual revegetation monitoring report following each inspection. The report shall include the investigator's assessment of whether the revegetated areas are trending toward meeting the success criteria; assessment of factors impacting the ability of the revegetated area to trend towards meeting the success criteria; description of appropriate weed control measures as recommended by the Department, ODFW and Jefferson County Weed Control Authority; and, any remedial actions recommended.

Following the Year 5 revegetation monitoring the certificate holder shall confer with the Department and ODFW to develop an action plan for subsequent years. If an area is not trending toward meeting the success criteria at Year 5 and has not been converted by the landowner to an inconsistent use, the certificate holder may propose and the Department may require remedial action and additional monitoring based on an evaluation of site capability. As an alternative, the certificate holder or the Department may conclude that revegetation of the area was unsuccessful and propose appropriate mitigation for the permanent loss of habitat quality and quantity. The certificate holder shall implement the action plan, subject to the approval of the Department.

The certificate holder's qualified investigator shall evaluate whether a wildlife habitat area is trending toward meeting the success criteria by comparing the revegetation area to an approved reference area. In consultation with the Department and ODFW, prior to construction, the investigator shall choose reference sites near the revegetation area to represent the target conditions for the revegetation effort. The investigator shall select one or more reference sites that closely resemble the predisturbance characteristics of the revegetation area as indicated by site conditions, including vegetation density, relative proportion of desirable vegetation, and species diversity of desirable vegetation. "Desirable vegetation" means those species included in the seed mix or native or native-like species, excluding noxious weeds. "Noxious weeds" are defined as non-native species as identified as noxious on state or county noxious weed lists. The investigator shall consider land use patterns, soil type, local terrain, and noxious weed densities in selecting reference sites. It is likely that different reference sites will be needed to represent different predisturbance habitat conditions of the disturbed areas. Once reference sites are selected by the certificate holder and approved by the Department and ODFW, the reference site shall remain in the same location unless approval for use of a differing reference site is obtained by the Department and ODFW. In the first semiannual revegetation monitoring report submitted to the Department, the certificate holder shall provide a map and table presenting the latitude and longitude of the reference sites.

During the initial 5 years of annual monitoring, the certificate holder's qualified investigator shall compare the revegetation area to the selected reference sites, unless some event (such as wildfire, tilling, or intensive livestock grazing) has changed the vegetation conditions of a reference site so that it no longer represents undisturbed conditions of the revegetation area. If such events have eliminated all suitable reference sites for a revegetation area, the investigator, in consultation with the Department and ODFW, shall select one or more new reference sites. Following the selection of a new reference site, an updated table and latitude/longitudinal data

shall be provided to the Department within the semiannual monitoring report or annual compliance report, whichever report is submitted first.

The certificate holder will submit its vegetation monitoring methodology to ODFW and ODOE for approval prior to assessing baseline conditions and prior to annual monitoring. Within each revegetation area, the investigator shall evaluate the progress of wildlife habitat recovery in comparison to the reference sites. The investigator shall evaluate the following site conditions (both within the revegetation area and within the reference sites):

- Degree of erosion due to disturbance activities (high, moderate, or low).
- Vegetation density.
- Relative proportion of desirable vegetation as determined by a visual scan of the area, noting overall recovery status.
- Species diversity of desirable vegetation.
- Presence/absence of noxious weeds

The certificate holder shall report the investigator's findings and recommendations regarding wildlife habitat recovery and revegetation success in the semiannual revegetation monitoring report to the Department and to ODFW.

### 3. Success Criteria

In each revegetation monitoring report to the Department, the certificate holder shall provide an assessment of revegetation success for all previously-disturbed wildlife habitat areas. A wildlife habitat area is successfully revegetated when its habitat quality is equal to, or better than, the habitat quality of the reference site as follows:

- Vegetation density is equal to or greater than that of the reference site.
- Relative proportion of desirable vegetation is equal to or greater than that of the reference site.
- Species diversity of desirable vegetation is equal to or greater than that of the reference site.

When the Department finds that the condition of a wildlife habitat area satisfies the criteria for revegetation success, the Department shall conclude that the certificate holder has met its restoration obligations for that area. If the Department finds that the landowner has converted a wildlife habitat area to a use that is inconsistent with these success criteria, the Department shall conclude that the certificate holder has no further obligation to restore the area for wildlife habitat uses.

### 4. Remedial Action

After each monitoring visit, the certificate holder's qualified investigator shall report to the certificate holder regarding the revegetation progress of each wildlife habitat area. The investigator shall make recommendations to the certificate holder for reseeding, weed control or other remedial measures for areas that are not showing progress toward achieving revegetation success based upon consultation with the Department, ODFW, the Jefferson County Weed Control authority, and the contractor. The investigator shall provide a description of causal factors that may be contributing to the lack of revegetation success. The certificate holder shall

take appropriate action to meet the objectives of this revegetation plan. The certificate holder shall report the investigator's recommendations and the remedial measures taken to the Department in the semiannual revegetation monitoring report. The Department may require reseeding, weed control, or other remedial measures in those areas that are not trending towards meeting the success criteria by year 5.

If a wildlife habitat area is damaged by wildfire during the first 5 years following initial seeding, the certificate holder shall work with the landowner to restore the damaged area. The certificate holder shall continue to report on revegetation progress during the remainder of the 5-year period. The certificate holder shall report to the Department and ODFW the area impacted by the fire (map or figure), damage caused by wildfire (including acreage and facility components impacted), and the cause of the fire, if known.

## V. Amendment of the Plan

This Revegetation Plan may be amended from time to time by agreement of the certificate holder and the Oregon Energy Facility Siting Council ("Council"). Such amendments may be made without amendment of the site certificate. The Council authorizes the Department to agree to amendments to this plan. The Department shall notify the Council of all amendments, and the Council retains the authority to approve, reject or modify any amendment of this plan agreed to by the Department.

## VI. References

Franklin, J. F., and C. T. Dyrness. 1988. *Natural Vegetation of Oregon and Washington*. Oregon State University Press, Corvallis, Oregon.

Natural Resources Conservation Service (NRCS). 2018. WETS Madras, Oregon Precipitation: 1909-02-01 to 2018-12-07. Accessed November 2018. http://agacis.rcc-acis.org/?fips=41031

Thorson, T. D., S. A. Bryce, D. A. Lammers, A. J. Woods, J. M. Omernik, J. Kagan, D. E. Pater, and J. A. Comstock. 2003. Ecoregions of Oregon (color poster with map, descriptive text, summary tables, and photographs). U.S. Geological Survey, Reston, VA. (map scale 1:1,500,000).

Vander Haegen, W. M., Scott M. McCorquodale, Charles R. Peterson, Gregory A. Green, and Eric Yensen. 2001. "Wildlife of Eastside Shrubland and Grassland Habitats." *Wildlife-Habitat Relationships in Oregon and Washington.* D. H. Johnson and T. A. O'Neil, managing directors. Corvallis: Oregon State University Press.

# Attachment P-7
# Noxious Weed Control Plan

# Madras Solar Energy Facility

## Noxious Weed Control Plan for Madras Solar Energy Facility in Jefferson County, Oregon

November 2019

Madras PV1, LLC

## Madras Solar Energy Facility

| | |
|---|---|
| Project No: | 709202CH |
| Document Title: | Noxious Weed Control Plan for Madras Solar Energy Facility in Jefferson County, Oregon |
| Document No.: | GES0923191628PDX |
| Date: | November 2019 |
| Client Name: | Madras PV1, LLC |
| Project Manager: | Paul Seilo/Jacobs |
| Author: | Peggy O'Neill/Jacobs |

Jacobs Engineering Group Inc.

2020 SW Fourth Avenue
Portland, Oregon 97201
United States
T +1.503.235.5000
F +1.503.736.2000
www.jacobs.com

# Contents



**Table**

# Acronyms and Abbreviations

| | |
|---|---|
| Applicant | Madras PV 1, LLC |
| Facility | Madras Solar Energy Facility |
| ODA | Oregon Department of Agriculture |
| Plan | Noxious Weed Control Plan |

# 1. Introduction

The purpose of this Noxious Weed Control Plan (Plan) is to provide clear measures to prevent, control, and mitigate the introduction or spread of designated noxious weeds within the Madras Solar Energy Facility (Facility) area during and following construction of the Facility. Madras PV 1, LLC (Applicant) and its contractors will be responsible for implementing the measures described in this Plan. This Plan is applicable to the preconstruction, construction, and future retirement and restoration phases of the Facility major components and related or supporting facilities, yards, access roads, or staging areas.

Noxious weed control measures described in this plan have been developed in consultation with the following sources or agency contacts:

- Oregon Department of Agriculture (ODA) – Noxious Weed Control Program
- Jefferson County Weed Control Program

The measures described in this Plan are designed to prevent the introduction of new noxious weed species to the Facility area and to control existing populations of noxious weeds. Existing populations should be prevented from growing in size and density and should not be allowed to spread to new sites. Where possible and feasible, existing populations of noxious weeds should be eradicated. Weed prevention and control measures should be implemented in all Facility areas. In addition, if it is determined that noxious weeds have invaded areas immediately adjacent to Facility areas (e.g., areas visible just beyond the Facility site boundary or along access roads) as a result of construction, the Applicant would contact the landowner and seek approval to treat those weed populations.

## 1.1 Background Information

The Jefferson County Weed Department works to keep noxious weeds at a minimum on roadways and throughout the county, assists area landowners with land maintenance needs, and follows the ODA noxious weed policy and classification system as part of ODA's Noxious Weed Control Program (ODA, 2019). Noxious weeds are identified on the State of Oregon noxious weed list and mapped by ODA as occurring in Jefferson County. "A" listed weeds are economically important, non-native species with limited distribution in the county. "B" listed weeds are economically important, non-native species that are regionally abundant. At the County level, eradication is required for "A" listed weeds at an intensive level, with containment being the goal for "B" listed weeds. "T" listed weeds are a designated group of weed species that are selected and will be the focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority.

For the purposes of this weed control plan, the term "weed" refers to any species on the Jefferson County weed list regardless of its status. Noxious weeds may be present within the site boundary, and construction activities could spread these weeds. This plan outlines the measures the Applicant will implement to control weeds within areas disturbed by Facility construction and operation. The Facility will temporarily disturb approximately 5.56 acres of Category 4 Grassland habitat and approximately 1.10 acres of Category 4 Shrub-steppe habitat during Facility construction. Temporarily disturbed areas will be revegetated as described in the site *Revegetation Plan* (ODOE, 2019).

## 1.2 Weed Control Goals

Weed species can adversely affect the structure and composition, and therefore the inherent values of the revegetation and habitat mitigation areas. Overarching goals of post-construction operations are prevention, identification, and control of weeds. Guidance and best management practices to accomplish these goals are provided in Section 3.

# 2. Weed Species of Concern

Noxious weeds are opportunistic and often nonindigenous plant species that readily colonize disturbed areas and can prevent or inhibit native plant species from reestablishing. Many invasive weeds have significant adverse effects on agricultural operations and on natural resources, including soil and water,

natural vegetation communities, and wildlife habitat. Designated noxious weeds are those invasive weed species that are of elevated economic or environmental concern to the State of Oregon or local jurisdictions and receive priority during weed management planning and operations. The ODA lists 44 Class A species and 93 Class B species for 2019, class A being the highest priority. In addition, ODA lists 44 of these Class A and B species as Target species for focused management efforts (ODA, 2019). Jefferson County specifically recognizes 24 Class A, 21 Class B, and 8 Class C species of noxious weeds (Jefferson County, 2019). Class C indicates that species eradication is not likely and the species needs control.

Table 1 lists designated noxious weeds that have been identified and documented in Jefferson County.

**Table 1. Noxious Weed Species Potentially Occurring in the Vicinity of the Facility Site Boundary**

*Madras Solar Energy Facility, Jefferson County, Oregon*

| Common Name | Scientific Name | State Weed Designation[a] | County Weed Designation[b] |
|---|---|---|---|
| Buffalobur | *Solanun rostratum* | B | A |
| Canada Thistle | *Cirsium arvense* | B | B |
| Canadian Goldenrod | *Solidago canadensis* | | B |
| Catchweed bedstraw | *Galium aparine* | | B |
| Common Groundsel | *Senecio vulgaris* | | B |
| Common Mullein | *Verbascum thapsus* | | C |
| Common St. Johnswort | *Hypericum perforatum* | B | C |
| Curly Dock | *Rumex crispus* | | B |
| Dalmation Toadflax | *Linaria dalmatica* | B, T | A |
| Diffuse Knapweed | *Centaurea diffusa* | B | B |
| Eurasian Watermilfoil | *Myriophyllum spicatum* | B | A |
| Field Bindweed | *Convolvulus arvensis* | B, T | B |
| Field dodder | *Cuscuta campestris* | B | B |
| Flixweed | *Descurainia sophia* | | B |
| Henbit | *Lamium amplexicaule* | | C |
| Iberian Starthistle | *Centaurea iberica* | A, T | A |
| Japanese Knotweed | *Polygonum cuspidatum* | B | A |
| Jointed Goatgrass | *Aegilops cylindrica* | B | A |
| Kochia | *Kochia scoparia* | B | B |
| Leafy Spurge | *Euphorbia esula* | B, T | A |
| Marestail | *Conyza canadensis* | | B |
| Meadow Knapweed | *Centaurea debeauxii* | B | A |
| Mediterranean sage | *Salvia aethiopis* | B | A |
| Medusahead | *Taeniatherum caput-medusae* | B | C |
| Musk Thistle | *Carduus nutans* | B | A |
| Myrtle Spurge | *Euporbia myrsinites* | B | B |
| Perennial Pepperweed | *Lepidium latifolium* | B,T | A |
| Puncturevine | *Tribulus terrestris* | B | B |
| Purple Loosestrife | *Lythrum salicaria* | B | A |

**Table 1. Noxious Weed Species Potentially Occurring in the Vicinity of the Facility Site Boundary**

*Madras Solar Energy Facility, Jefferson County, Oregon*

| Common Name | Scientific Name | State Weed Designation[a] | County Weed Designation[b] |
|---|---|---|---|
| Purple Mustard | *Choripora tenella* | | C |
| Purple starthistle | *Centaurea calcitrapa* | A, T | A |
| Quack Grass | *Elymus repens* | | B |
| Rattail Fescue | *Vulpia myuros* | | C |
| Ribbongrass[1] | *Phalaris arundinaceae var. picta* | B, T | A |
| Rush Skeletonweed | *Chondrilla juncea* | B, T | A |
| Russian Knapweed[4] | *Acroptilon repens* | B | B |
| Russian Thistle | *Salsola tragus* | | B |
| Scotch Broom | *Cytisus scoparius* | B | A |
| Scotch Thistle | *Onopordum acanthium* | B | A |
| Slender false brome[1] | *Brachypodium sylvaticum* | B | A |
| Spotted Knapweed | *Centaurea stoebe ssp. micranthos* | B, T | A |
| Squarrosa Knapweed | *Centaurea virgata ssp. squarrosa* | A, T | A |
| Tansy Ragwort | *Senecio jacobaea* | B, T | A |
| Tumble Mustard | *Sisymbrium altissimum* | | B |
| Ventanata[2] | *Ventenata dubia* | | A, B |
| Water hemlock | *Cicuta douglasii* | | B |
| Western salsify | *Tragopogon dubius* | | B, C |
| White Top | *Cardaria draba* | B | B |
| Wild Carrot | *Daucus carota* | | A |
| Wild Oats | *Avenua fatua* | | C |
| Yellow flag iris[3] | *Iris pseudacrorus* | B | A, B |
| Yellow Starthistle | *Centaurea solstitialis* | B | A |
| Yellow Sweet Clover[5] | *Melilotus officinalis* | | C |

[a] ODA, 2019

**A-List** - A weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent. Recommended action: Infestations are subject to eradication or intensive control when and where found.

**B-List -** A weed of economic importance which is regionally abundant, but which may have limited distribution in some counties. Recommended action: Limited to intensive control at the state, county or regional level as determined on a site specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.

**T-List -** A designated group of weed species that are selected and will be the focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority. T-designated noxious weeds are determined by the Oregon State Weed Board, which directs ODA to develop and implement a statewide management plan. T-designated noxious weeds are species selected from either the A or B list.

[b] Jefferson County, 2019

**A-List** - Highest priority for eradication
**B-List** - Found in abundance, need to be localized

**Table 1. Noxious Weed Species Potentially Occurring in the Vicinity of the Facility Site Boundary**

*Madras Solar Energy Facility, Jefferson County, Oregon*

| Common Name | Scientific Name | State Weed Designation[a] | County Weed Designation[b] |
|---|---|---|---|
| **C-List** - Eradication not likely, needs control | | | |

[1] False brome and ribbongrass are A-rated weeds outside an ornamental site.
[2] Ventenata is an A-rated weed within the North Unit Irrigation Boundary.
[3] Yellow flag iris is an A-rated weed when north of Haystack Reservoir and Round Butte Dam.
[4] A-rated weed when found north of Madras, west of Highway 26.
[5] Yellow sweetclover is only a noxious weed when on the road right-of-way.

# 3. Weed Control Plan

## 3.1 Overview

Long-term weed control will be accomplished through the seeding of perennial grasses known to compete well with noxious weeds, such as thickspike wheatgrass (*Elymus lanceolatus*) and Sherman big bluegrass (*Poa secunda*), or by maintaining the existing cover in the buffers. Short-term weed control will be through herbicide use. However, it will be important to ensure that the short-term herbicide use does not affect the establishment of the perennial grass cover intended to provide long-term control. Early detection and management of small populations before they can expand into larger populations is extremely important for successful control.

Weed control will continue until the disturbed areas meet the success criteria described above with respect to the designated reference sites. Supplemental seeding may be needed to achieve this goal. Subsequent fertilizer application will be limited in areas treated for weeds, and the timing of the seeding will need to be coordinated with any herbicide applications.

The herbicides used and the timing of application will differ depending on whether the species are (1) perennial, broad-leaved, or dicot weeds (knapweeds and thistles, field bindweed, whitetop), or (2) annual grasses or monocots (goatgrass and medusahead). Appropriate herbicides differ substantially between dicots and monocots.

## 3.2 Best Management Practices

The Applicant will implement best management practices during Facility construction and operation to help prevent the invasion and spread of noxious weeds onsite. These may include the following:

- Information regarding target weed species will be provided at the operations and maintenance enclosure.
- Weed prevention and control measures, including Facility inspection and documentation, will be included in operations plans.
- Temporary ground-disturbing operations in weed-infested areas will be inspected and documented in accordance with Facility monitoring plan (see Section 4 Monitoring).
- Vehicles and equipment will be cleaned prior to entry into revegetation areas to help minimize introduction of noxious weed seeds to the site.
- To prevent conditions favoring weed establishment, temporarily disturbed areas will be revegetated as soon as possible.
- The site will be revegetated with appropriate, locally-collected native seed or native plants; when these are not available, noninvasive and nonpersistent non-native species may be used.

Seed and straw mulch to be used for site rehabilitation will be inspected and certified free of weed seed and propagules.

### 3.3 Treatment of Disturbed Areas

Before the initial weed treatment begins, the herbicide applicator personnel will meet with a botanist for a ½-day session to review the target species and their identification and to identify native species to be avoided, such as the native thistle (*Cirsium undulatum*) onsite. Following the initial meeting between the botanist and herbicide applicators, the applicators will be responsible for identifying and treating the target species.

Control will be accomplished through use of herbicides targeted to the individual weed species. The herbicide is to be applied by a licensed applicator, using appropriate best management practices. Herbicide application will occur twice in year 1, in the spring (knapweeds, thistles, bindweed) and fall (other species), and once a year thereafter during the spring (mid to late May), if necessary, until the success criteria are met. Herbicide will be applied with a spreader sticker surfactant (e.g., Dynamic Green Concepts, Phase). Rush skeletonweed will be treated throughout the growing season as it occurs. Information on identification of this and other target weed species will be included in the environmental training materials to be provided to Facility operations staff. If rush skeletonweed is observed during routine operations activities at any time during the growing season, the licensed applicator will be contacted to treat this species as soon after it is observed as practicable. Tables 3 and 4 in the *Revegetation Plan* (ODOE, 2019) provides a summary of recommended treatment by target species.

## 4. Monitoring

Monitoring will be conducted on an annual basis by a qualified botanist for the first 5 years following initial seeding to assess weed growth and to recommend weed control measures. The weed monitoring will consist of two general components:

- Site survey to identify weed species that have established within the disturbed areas
- Inspections of treated areas to assess the success of the weed treatments

The site survey will be a pedestrian survey of disturbed areas in mid to late May. The survey will be scheduled to be initiated slightly before the herbicide application to identify any weed species. The focus will be on weed species observed prior to construction on the site (knapweed, starthistle, field bindweed, whitetop, jointed goatgrass, medusahead rye), as well as any other species on the Jefferson County weed list that might require different control methods.

The results of the site survey will be summarized in a short memorandum in which (1) any new weed species observed and treatment protocols are identified, (2) the location and weed species within the buffers are described, and (3) reference plot cover values are listed.

Subsequent monitoring results will be summarized in short memorandums in which the treatment success is described, any recommendations to improve treatment success (if necessary) are made, and any new weed species or emergence are noted.

## 5. References

Jefferson County. 2019. *Jefferson County Weed Control Ordinance. Ordinance No. 0-091-12.* Jefferson County, Oregon. https://www.jeffco.net/publicworks/page/jefferson-county-weed-control-ordinance.

Oregon Department of Agriculture (ODA). 2019. *Noxious Weed Policy and Classification System.* Noxious Weed Control Program, Salem, Oregon. February. http://www.oregon.gov/ODA/shared/Documents/Publications/Weeds/NoxiousWeedPolicyClassification.pdf.

Oregon Department of Energy (ODOE). 2019. *Madras Solar Energy Facility: Revegetation Plan.* December.

# Attachment P-8
# Application for Incidental Eagle Take Permit

[***Submitted Separately Under Confidential Cover; Not for Public Distribution***]

# Attachment P-9
# Habitat Mitigation Plan

# Madras Solar Energy Facility Draft Habitat Mitigation Plan

November 2019

## 1. Introduction

This *Habitat Mitigation Plan* (Plan) describes a preliminary strategy that Madras PV1, LLC (Applicant or Certificate Holder) will follow to mitigate potential adverse impacts to wildlife habitat from the construction and operation of the Madras Solar Energy Facility (Facility). This Plan addresses mitigation for the permanent impacts of Facility components. The Plan identifies two options for mitigating unavoidable habitat impacts from the Facility: 1) payment in lieu to a third party for habitat acquisition and maintenance, or 2) protection or enhancement of a mitigation area, including monitoring procedures to evaluate the success of those actions. Payment in lieu to a third party for habitat acquisition and maintenance is the Applicant's preferred mitigation option. The Facility site boundary encompasses portions of Sections 030 and 031, in Township 10 South and Range 13 East. The site is located on private land just east of Lake Simtustus, south and west of Willow Creek, and approximately 0.5 mile from the eastern boundary of the Warm Springs Reservation.

## 2. Description of the Impacts Addressed by the Plan

Approximately 270.18 acres of Category 4 habitat consisting of exotic annual grasslands and rabbitbrush shrub-steppe will be permanently occupied by Facility components (the "footprint"). In addition to the footprint impacts, construction of the Facility could temporarily disturb approximately 6.66 acres of similar Category 4 habitat, resulting in a temporary loss of habitat during construction that will be restored following construction. The Applicant has developed a revegetation plan to offset temporary construction-related impacts that occur within the Facility site boundary. The actual areas of disturbance will be determined based on the final design layout of the Facility. The final design layout of the Facility will be provided to the Oregon Department of Energy (ODOE) and Oregon Department of Fish and Wildlife (ODFW), along with the associated permanent and temporary impact acreages prior to the beginning of construction.

The Applicant is committed to mitigating impacts to Category 4 grassland and shrub-steppe habitat that cannot be avoided or minimized with in-kind or out-of-kind habitat mitigation measures in proximity or off-proximity to the Facility site boundary with input from ODFW. Details on habitat types, subtypes, categories, and potential impacts to habitat and special-status species from construction and operation of the Facility, as well as avoidance and minimization measures, can be found in the Application for Site Certificate Exhibits P and Q.

A site visit was conducted on July 23, 2019, by Jacobs and WEST biologists, U.S. Fish and Wildlife Service and ODFW biologists, and ODOE staff, which focused on the potential presence of special-status species and potentially suitable habitats for fish, wildlife, and plants. Based on this site visit, additional wildlife surveys, and an informational review, it was collectively determined that no high concentrations of special-status species, nor federally or state-listed threatened or endangered species, are expected to inhabit the Facility site boundary. Conference calls held on October 2, 2019, with an ODFW biologist and an ODOE representative and on October 9, 2019, with an ODFW biologist and the Deschutes Land Trust identified potential mitigation options that are consistent with ODFW Habitat Mitigation Policy (Oregon Administrative Rule [OAR] 635-415-0025).

## 3. Mitigation

The standards for Category 4 mitigation require "no net loss of either habitat quantity or quality." For unavoidable permanent impacts of Category 4 habitat, the Applicant will use in-kind or out-of-kind habitat mitigation measures in-proximity or off-proximity to the Facility to effectively offset impacts in consultation with ODFW and consistent with ODFW Habitat Mitigation Policy (OAR 635-415-0025). The Certificate Holder shall therefore select a 270.18-acre habitat mitigation area (HMA) either in the same home range

or physiographic province of the Facility and either lease or purchase the area to benefit similar or different habitat than those at the Facility or provide payment to a third party who will be responsible for the expense of developing, evaluating, and implementing the mitigation plan and successfully monitoring the HMA. The Applicant proposes to arrange protection or enhancement of 1 acre for every 1 acre of Category 4 habitat that is permanently impacted (1:1 mitigation ratio) to meet the ODFW goal of "no net loss." The offsite HMA selected for the Facility will be large enough to achieve, within a reasonable time, the ODFW habitat mitigation goals and standards described in OAR 635-415-0025.

In addition to any other information that may be required by law, the final Plan submitted to ODOE and ODFW will include the following:

- Description of the mitigation actions that will be taken to achieve the fish and wildlife habitat mitigation goals and standards.
- Description and map of the location of the mitigation actions including the latitude and longitude, township, range, section, quarter section, and county.
- Description of protocols and methods, and a reporting schedule for monitoring the effectiveness of mitigation measures. Monitoring efforts will continue for a duration and at a frequency needed to ensure that the goals and standards in OAR 635-415-0025 are met, unless ODFW determines that no significant benefit will result from such monitoring.
- Description of mitigation actions intended to be effective throughout the Facility life or the duration of Facility impacts, whichever is greater.
- Description of future modifications of mitigation measures if the goals and standards of OAR 635-415-0025 are not met within a reasonable time.

More specifically, the Plan will contain the following mitigation plan performance measures:

- Success criteria: The mitigation plan will clearly define the methods to meet the mitigation goals and standards and list the criteria for measuring success.
- Timeline for formal determination that the mitigation goals and standards have been met.
- Provisions for long-term protection and management of the site, if appropriate.
- A reporting schedule for identifying progress toward achieving the mitigation goals and standards and any modification of mitigation measures. Mitigation goals and standards must be achieved within a reasonable timeframe to benefit the affected fish and wildlife species.

The Applicant will implement habitat mitigation actions as described in the final approved version of this Plan prior to the Facility commercial operational date (COD).

# 4. Description of Potential Mitigation Areas

The Applicant will select a mitigation area in the same home range or physiographic province of the Facility in which habitat protection or enhancement are feasible, consistent with this Plan. The Applicant will determine the location and boundaries of the mitigation area in consultation with ODFW, ODOE, and the affected landowners and subject to the approval of ODOE. Conference calls held on October 9, 2019, with ODFW biologists and the Deschutes Land Trust identified three potential mitigation areas that are consistent with ODFW Habitat Mitigation Policy. The final mitigation area will contain suitable habitat to achieve the ODFW goals of no net loss of Category 4 habitat. Prior to COD of the Facility, the Applicant or third party will acquire the legal right to create, maintain, and protect the HMA for the life of the Facility by means of an outright purchase, conservation easement, or similar conveyance and will provide a copy of the documentation to ODFW and ODOE.

# 5. Monitoring

The following sections outline the monitoring procedures and success criteria that the designated third party will implement following identification and acquisition of the habitat mitigation land. Under the alternative option in which the Applicant would either acquire or lease (or place under a conservation easement) and protect the mitigation area, these same monitoring procedures will be implemented.

## 5.1 Monitoring Procedures

Pursuant to the Certificate Holder's agreement with the designated third party, the third party will protect, restore, and maintain the HMA for the useful life of the Facility (estimated 35 years) or duration of impacts, whichever is greater, after receiving payment from the Applicant.

Monitoring of the HMA will be conducted by a qualified investigator (independent botanist, wildlife biologist, or revegetation specialist) to ensure that final Plan mitigation goals and standards are achieved within a reasonable timeframe to benefit the affected fish, wildlife, and plant species. The investigator will evaluate protection of the habitat conditions, the results of any enhancement actions, and the use of the area by avian and mammal species, especially during the wildlife breeding season. Monitoring will occur annually for the first 5 years and then at a minimum of every 5 years after that.

The third party will report its findings and recommendations regarding the monitoring of the HMA to ODOE and ODFW after the first growing season (Year 1), and then reinspect these areas at 2-year and 4-year intervals after the first inspection (Year 3 and Year 5). The report will describe the habitat mitigation actions carried out within the HMA during the reporting year.

If the third party cannot demonstrate that the HMA is trending toward meeting the final Plan goals and standards within 5 years after the date construction of the Facility begins, then remedial action will be proposed. ODOE may require corrective measures, which could include increasing the size of the HMA.

The following are examples of activities the investigator may undertake depending on the final mitigation plan and mitigation goals:

1) Annually assess vegetation cover (e.g., species and structural stage) and progress toward meeting the success criteria.
2) Annually enforce habitat protections to ensure restricted uses are not occurring on the property (e.g., unauthorized grazing practices, off-highway vehicle (OHV) trespassing, construction of dwellings or fences).
3) Annually record environmental factors (such as precipitation at the time of surveys and precipitation levels for the year).
4) Annually record any wildfires that occur within the mitigation area and any remedial actions taken to restore habitat quality in the damaged area.
5) Annually assess the success of any weed control programs and recommend remedial action, if needed.
6) Assess the recovery of vegetation resulting from any removal of livestock grazing pressure or post-fire recovery by comparing the quality of vegetation cover at the time of each monitoring visit with the quality observed in previous monitoring visits and as observed when the mitigation area was first established. Alternatively, a nearby mitigation reference area may be monitored to compare monitoring results and guide activities at the mitigation area in order to account for regional climatic temporal changes. The investigator would determine the extent of successful recovery of native vegetation based on measurable indicators (such as structural growth and signs of more abundant seed production) and would report on the progress of recovery within the HMA. The investigator would report on the timing and extent of any livestock grazing disturbance that has occurred within the mitigation area since the previous monitoring visit.

7) Assess the survival rate and growth of any planted vegetation. A minimum of three 100-foot-long transects will be permanently established within the HMA. A Global Positioning System (GPS) unit will be used to mark and then relocate the starting and ending locations of each transect. A Daubenmire frame will be placed every 10 feet along each transect to measure herbaceous canopy cover. Ten Daubenmire measurements will be collected from each transect and average canopy cover of native vegetation (vegetative percent cover) will be calculated. A photograph will be taken along each transect from the starting stake. In each monitoring year, the investigator will determine and report the survival rate of planted vegetation. Shrub planting will be considered successful if a 20-percent survival rate is achieved after 5 years. The investigator will recommend remedial action when, in the investigator's judgment, the survival rate of planted vegetation is inadequate to demonstrate a trend toward an improvement in habitat quality.
8) Beginning within 12 months after the start of ground-clearing activities at the Facility and repeating every 5 years during the life of the Facility, the investigator will record any observations of special-status plant or wildlife species (state threatened or endangered species and state sensitive species) during appropriate seasons for detection of these species.

The Applicant or third party will report the investigator's findings and recommendations regarding the monitoring of the mitigation area to ODOE and ODFW after the first growing season (Year 1), and then reinspect these areas at 2-year and 4-year intervals after the first inspection (Year 3 and Year 5). In the mitigation area report, the Applicant or third party will describe all habitat mitigation actions carried out during the reporting time period. The mitigation area report may be included as part of other reporting on the Facility that will be required by the site certificate.

## 5.2 Success Criteria

Mitigation of the permanent and temporary habitat impacts of the Facility may be considered successful if the Applicant or third party protects or enhances sufficient habitat within the mitigation area to meet the ODFW goals of no net loss of Category 4 habitat. The Certificate Holder may demonstrate success based on evidence that the habitat quality at the HMA is maintained as Category 4 or higher. If the quality of the HMA habitat has degraded to worse than Category 4, as determined during regular monitoring or at any time the Certificate Holder becomes aware of degradation, the Certificate Holder shall describe if/why the maintenance actions were not effective and then propose and implement remedial action. Success criteria will be developed that reflect the existing land use of area impacted by the Facility footprint. The Applicant will protect the quantity and quality of habitat within the mitigation area for the life of the Facility or the life of impacts, whichever is greater.

The Applicant will protect a sufficient quantity of habitat to meet the mitigation area requirements (1:1 mitigation ratio) based on the final configuration of the Facility. The Applicant will determine the actual mitigation area requirements for the Facility, subject to ODFW and ODOE approval, before beginning construction of the Facility. If the land selected for the mitigation area does not already contain sufficient habitat to meet these requirements, then the Applicant will demonstrate improvement of habitat quality sufficient to change lower-value habitat to a higher value (for example, to convert Category 5 or 6 habitat to Category 4). The Applicant may demonstrate preservation or improvement of habitat quality based on evidence of indicators described in the monitoring requirement (e.g., vigorous, healthy herbaceous layers that have a typical stature for the species and show no stresses resulting from environmental conditions, pests, or disease and evidence of reproduction visible from mature plants). If the Applicant cannot demonstrate that the HMA is trending toward the habitat quality goals within 5 years, the Applicant will propose and implement remedial actions. ODOE may require additional corrective measures.

# 6. Plan Amendment

This Plan may be amended from time to time by agreement of the Applicant and the Oregon Energy Facility Siting Council (EFSC) or ODOE, acting within its delegated authority of EFSC. Such amendments may be made without amendment of the site certificate. EFSC authorizes ODOE to agree to amendments to this Plan. ODOE will notify EFSC of all amendments, and EFSC retains the authority to approve, reject, or modify any amendment of this Plan agreed to by ODOE.