

EXHIBIT P – Application for Site Certificate

FISH AND WILDLIFE HABITAT

OAR 345-021-0010(1)(p)

REVIEWER CHECKLIST

(p) Exhibit P. 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. The applicant shall include:

Rule Sections	Section	✓
(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.	P.2	
(B) Identification of all fish and wildlife habitat in the analysis area, classified by the general fish and wildlife 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.	P.3	
(C) A map showing the locations of the habitat identified in (B).	P.4	
(D) Based on consultation with the Oregon Department of Fish and Wildlife (ODFW) 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.	P.5	
(E) A baseline survey of the use of habitat in the analysis area by species identified in (D) performed according to a protocol approved by the Department and ODFW.	P.6	
(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.	P.7	

Rule Sections	Section	✓
(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 the general fish and wildlife habitat mitigation goals and standards described in OAR 635-415-0025 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.	P.8	
(H) A description of the applicant’s proposed monitoring plans to evaluate the success of the measures described in (G).	P.9	

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P.1 INTRODUCTION

Obsidian Solar Center LLC (Applicant) proposes to construct the Obsidian Solar Center (Facility) in Lake County, Oregon, with an alternating current generating capacity of up to 400 megawatts. Please refer to Exhibit B for Facility layout information and Exhibit C for Facility location information.

Exhibit P addresses the potential impacts of the proposed Facility on fish and wildlife species and their habitats within the analysis area, which the Project Order defines as the area within the site boundary (as defined in Exhibit B) and 0.5 miles from the site boundary. This exhibit provides the information required by Oregon Administrative Rules (OAR) 345-021-0010(1)(p): *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.*

As described in Exhibit B, the site boundary originally included four main Facility areas, referred to as Areas A through D, and associated generation tie (gen-tie) transmission line corridors. Applicant has since removed Area B from the site boundary to avoid or minimize potential impacts on cultural resources (refer to Exhibit S), big game winter range (refer to Section P.7.1), potential pygmy rabbit (*Brachylagus idahoensis*) habitat (refer to Section P.7.2.3), and large playas (refer to Exhibit J). Applicant also removed Area C from the site boundary. Applicant also removed four gen-tie transmission lines associated with Area B and Area C from the site boundary. This exhibit does not discuss Area B, Area C, or the removed transmission lines further; however, refer to Appendix P-1 for habitat assessment and raptor nest survey results and other wildlife observations in the removed areas.

Executive Summary

The analysis provided in this exhibit describes how 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, as well as the requirements of OAR 635-415-0025(7) and OAR 635-140-0000 through -0025, pertaining to greater sage-grouse.

Applicant proposes the following conditions of approval for the Site Certificate:

1. Applicant will avoid all three observed pygmy rabbit complexes during construction and operation of the Facility.
2. Applicant will conduct post-construction mortality monitoring of birds and bats at the Facility for the first year of operation, as detailed in Section P.8 and Appendix P-2.

P.2 DESCRIPTION OF BIOLOGICAL SURVEYS

OAR 345-21-0010(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: Four types of biological surveys were conducted to inform this exhibit: 1) a desktop and field-based habitat assessment, 2) a wetland and waterbody delineation survey, 3) a ground-based raptor nest survey, and 4) a species-specific pygmy rabbit survey. During field surveys, all sightings of noxious weeds and wildlife species and their signs were recorded if observed incidental to the primary objective of each survey. While the wetland and waterbody delineation survey is useful to support the habitat discussion in this exhibit, its primary purpose is to inform Exhibit J. Refer to Exhibit J for details about the timing and scope of the wetland and waterbody delineation survey. Sections P.2.1 through P.2.5 describe the habitat assessment, raptor nest survey, pygmy rabbit survey, incidental wildlife observations, and incidental noxious weed observations.

P.2.1 Habitat Assessment

The National Land Cover Database was used to prepare a preliminary habitat map of the analysis area prior to conducting a field-based habitat assessment (Homer et al. 2015). The desktop-based habitat map was verified and refined in the field from March 18 to March 22, 2018, resulting in the final map of habitat types in the analysis area presented in Section P.4. Dominant plant species were documented within each habitat type in the analysis area, and general habitat conditions, such as shrub heights and level of disturbance, were described. Habitats within some areas outside the site boundary but still within 0.5-mile buffer were not verified during the field survey because of limited access. In these areas, observations from public roads and a combination of satellite imagery (Google Earth 2014), the mapped National Land Cover Database data (Homer et al. 2015), and field-collected data from comparable habitat patches in the analysis area were used to map the inaccessible areas. Section P.3 describes the habitats mapped during the field-based assessment, and Section P.4 depicts the mapped habitats in the analysis area. Refer to Appendix P-1 for complete details about the habitat assessment methods and results.

P.2.2 Raptor Nest Survey

A raptor nest survey was conducted on foot and by vehicle in conjunction with the habitat assessment from March 18 to March 22, 2018. All potential raptor nest substrates were observed within the analysis area, including trees, transmission poles and towers, and other manmade structures. In inaccessible parts of the analysis area beyond the site boundary, potential nest substrates were observed from access roads using 10x-power binoculars. Identifying ground-based raptor nests for species such as northern harrier (*Circus hudsonius*) and burrowing owl

(*Athene cunicularia*) was not a primary objective of the raptor nest survey (Kaufman 2001; Marshall et al. 2006). At each observed raptor nest, the following was recorded: a global positioning system (GPS) reference point; activity status (i.e., active or inactive); nesting species, if applicable; and the nest site and conditions. Follow-up observations were made for raptor nests in and adjacent to Area A when the pygmy rabbit field surveys were conducted in June 2018.

Within the analysis area, nine raptor nests were documented, including four active nests with one active nest each for the following species: red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), ferruginous hawk (*Buteo regalis*), and common raven (*Corvus corax*). The other five nests were inactive stick nests. Area A contained three active nests and four inactive nests. Five of the nests within Area A occurred in western junipers, including an active Swainson's hawk nest. The remaining two nests included one red-tailed hawk nest on an artificial nesting platform adjacent to an irrigated crop circle along the western boundary and one common raven nest in a power pole along the northern boundary. Common ravens are not raptors, but the nest was recorded because this species uses nests and nest substrates that are similar in size to those of some raptor species, and nests used by ravens may be used by raptors in other years (Sullivan et al. 2011). One inactive raptor nest north of Area A was observed, along with one active ferruginous hawk nest in a western juniper 75 feet east of Area A. Refer to Figure P-1 for locations of raptor nests within the analysis area, and refer to Appendix P-1 for full details of the raptor nest surveys.

P.2.3 Pygmy Rabbit Survey

Species-specific pygmy rabbit surveys were conducted from June 18 to June 20, 2018. The surveys were conducted with methods used by the Bureau of Land Management (2014) in southeastern Oregon, per the recommendation of the Oregon Fish and Wildlife Department (ODFW) (Muir 2018a, 2018b). Meandering 660-foot-wide (0.125 miles) transects were walked in all sagebrush shrubland habitats within Area A. As a transect was walked, the tallest, densest stands of big sagebrush (*Artemisia tridentata*) were targeted. Big sagebrush is the species commonly associated with pygmy rabbits in southeastern Oregon. The ground underneath and around sagebrush plants was inspected for pygmy rabbit individuals, scat (i.e., pellets), and burrows. When pygmy rabbit burrows were observed, they were flagged, and the surrounding area was searched intensively to flag additional burrows. The intensive search was considered complete when no further activity was documented within approximately 50 meters in any direction of flagged burrows. The boundaries of burrow complexes were then delineated using tablet computers equipped with GPS, and lines were drawn around the outermost burrows in the complex. When drawing a complex boundary line around the outermost burrows, the entire shrub or cluster of shrubs associated with the burrows was included within the boundary.

At each burrow complex, the following was reported: the number of burrows, the relative age of pellets (fresh or old), and described vegetation and site conditions. Pygmy rabbit burrow

complexes were determined to be active or recently vacated by the presence or absence of fresh pellets. The pygmy rabbit surveys also included looking for white-tailed jackrabbits and burrowing owls and their sign, per ODFW's request (Muir 2018a, 2018b).

Three active pygmy rabbit burrow complexes and one recently vacated burrow were documented in Area A. Figure P-1 depicts the transects surveyed and the mapped boundaries of each of the active pygmy rabbit complexes, plus the recently vacated burrow. The three active burrow complexes and the recently vacated burrow are characterized as follows:

- **Burrow Complex 1** – This complex was located near the eastern boundary of Area A (Figure P-1). Five burrows were detected within this complex, each of which had fresh pygmy rabbit pellets at or near the burrow entrances. Fewer than 25 pellets were observed at each of the burrows. The burrows were at the bases of mature big sagebrush shrubs ranging in height from about 3 to 6 feet tall. The big sagebrush shrubs that supported burrow entrances were grouped in dense clusters. Burrow Complex 1 is about 0.36 acres.
- **Burrow Complex 2** – This complex was located near the central portion of Area A (Figure P-1). Sixteen burrows were detected within this complex, each of which had fresh pygmy rabbit pellets at or near the burrow entrances. Pellet density ranged from a few near some burrow entrances to hundreds near entrances and around surrounding shrubs. The burrows were at the bases mature big sagebrush shrubs ranging in height from 4 to 6 feet tall. The big sagebrush shrubs that supported burrow entrances were grouped together in dense clusters on raised mounds adjacent to flat sand dune habitat. Burrow Complex 2 is about 1.51 acres.
- **Burrow Complex 3** – This complex was located near the northern boundary of Area A (Figure P-1). More than 30 burrows were detected within this complex, each of which had fresh pygmy rabbit pellets at or near the burrow entrances. Pellet density ranged from medium coverage to hundreds of pellets near burrow entrances and around surrounding shrubs. The entire complex lay on a sandy hill raised about 10 to 15 feet above the adjacent flat sand dune area. The burrows were at the bases of mature big sagebrush shrubs ranging in height from 4 to 6 feet tall. The big sagebrush shrubs that supported burrow entrances were grouped together in dense clusters about 6 to 10 feet in diameter on raised mounds. Burrow Complex 3 is about 8.96 acres.
- **Recently Vacated Burrow** – This burrow was located near the eastern boundary of Area A (Figure P-1). An isolated pygmy-rabbit-sized burrow was detected at the base of a 4-foot-tall big sagebrush shrub with a single old pellet near the entrance. No other suitable burrow entrance or pellets were observed in proximity to this burrow entrance.

As requested by ODFW, white-tailed jackrabbits and burrowing owls were also searched for during pygmy rabbit surveys (Muir 2018a, 2018b). Black-tailed jackrabbits (*Lepus californicus*)

were observed in high numbers within the site boundary during the March and June biological surveys, but white-tailed jackrabbits were not detected. The likelihood of detecting white-tailed jackrabbits within the site boundary was low because this species is typically associated with bunchgrass grasslands and open fields in Oregon, which are habitats not present within the site boundary (OSU and INR 2014; ODFW 2016a). Burrowing owls or their sign were not observed within the analysis area.

Refer to Appendix P-1 for complete details about the pygmy rabbit survey methods and results.

P.2.4 Incidental Wildlife Observations

All wildlife or wildlife sign observed incidental to the primary tasks of the field-based habitat assessment, wetland and waterbody delineations, raptor nest survey, and pygmy rabbit survey were documented. During the March and June 2018 field surveys, nine mammal species, one reptile species, and 27 bird species were recorded. Three State Sensitive Species were observed in the analysis area, including pygmy rabbit (three active burrow complexes; refer to Section P.2.3), ferruginous hawk (five observations totaling seven individuals), and Swainson's hawk (two observations totaling three individuals). Two of the ferruginous hawks (one observation) and one of the Swainson's hawks were associated with active nests. GPS locations were recorded for each State Sensitive Species observation. Refer to Figure P-1 for locations of State Sensitive Species observations. Refer to Section P.5 for the full list of State Sensitive Species confirmed or potentially occurring in the analysis area. Refer to Appendix P-1 for a complete list of wildlife species observed in the analysis area.

P.2.5 Incidental Noxious Weed Observations

Noxious weeds were searched for as a secondary objective to the primary survey tasks of the field-based habitat assessment, wetland and waterbody delineations, raptor nest survey, and pygmy rabbit survey. None were observed within the analysis area.

P.3 IDENTIFICATION AND CLASSIFICATION OF FISH AND WILDLIFE HABITATS

OAR 345-21-0010(1)(p)(B) *Identification of all fish and wildlife habitat in the analysis area, classified by the general fish and wildlife 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: Section P.3.1 identifies and classifies, according to OAR 635-415-0025, the nine habitat types documented within the analysis area and describes the characteristics and conditions for each type. Section P.3.2 describes greater sage-grouse (*Centrocercus urophasianus*) habitat in analysis area.

P.3.1 Fish and Wildlife Habitat

The analysis area lies entirely within ODFW-mapped elk (*Cervus canadensis*) winter range, and portions of the analysis area lie within ODFW-mapped mule deer (*Odocoileus hemionus*) winter range. All areas of the ODFW-mapped mule deer winter range in the analysis area overlap with the ODFW-mapped elk winter range. ODFW designates these big game winter ranges as Category 2 (essential and limited) habitat under their Fish and Wildlife Habitat Mitigation Policy (the “Oregon Habitat Mitigation Policy”) (Figure P-2), which is not based on field-verified presence of vegetation (ODFW 2014, 2016a). Sections P.3.1.1 through P.3.1.4 below provide a description of the characteristics and condition of that habitat in the analysis area as required by OAR 345-21-0010(1)(p)(B). Table P-1 presents the permanent and temporary impact acreages for each habitat type and category.

P.3.1.1 Playa

A playa, also known as a playa lake or dry lake, is generally defined as the flat-floored bottom of an undrained desert basin that is periodically inundated (Brostoff et al. 2001). Playas are typically non-wetland waters, but may be classified as wetlands under certain conditions.

Playas represent a very small portion (0.4 percent) of the habitat mapped within the site boundary (Figure P-3). Very shallow inundation was present in a few playas within the site boundary during the March 2018 field survey (refer to Appendix J-1 of Exhibit J). Playa surfaces in the analysis area typically exhibited cracking, and a few were covered with salt crusts. Vegetation cover in the playas is generally sparse and mainly comprises a few scattered, non-hydrophytic shrubs rooted upon small mounds that rise 0.5 to 1.5 feet above the playa floor. All the playas in the analysis area are considered non-wetland waters due to the general lack of hydric soils and hydrophytic vegetation.

Playas are important and limited habitat.. Playas are important because they contribute to sustaining wildlife populations over time, especially migrating waterbirds, as ODFW indicated to Applicant during consultations (ODFW 2016a; Muir 2018b). Playas are limited in that they provide standing water seasonally in a region in which water is a limited resource for wildlife. Refer to “Playa” subsection in Section P.7.1 for a discussion of potential impacts on playas and associated wildlife.

P.3.1.2. Sagebrush Shrubland

Sagebrush shrubland accounts for almost 94 percent of the habitat mapped within the site boundary (Table P-1; Figure P-3). Shrubs dominate this habitat type, which is a mosaic of stand cover, plant heights, and levels of disturbance. Big sagebrush is a key component of sagebrush shrubland habitat within the analysis area, with estimated cover ranging from 15 to 30 percent and mature plants reaching heights of up to 6 feet tall. In some areas, apparent cattle grazing has defoliated big sagebrush plants, although defoliation is not extensive within the site boundary.

Rabbitbrush species also are a prominent part of the sagebrush shrubland habitat in the analysis area. In Area A, green rabbitbrush (*Chrysothamnus viscidiflorus*) cover ranges from 10 percent to 25 percent. Rabbitbrush cover is about 15 to 25 percent within sagebrush shrubland habitats in the gen-tie transmission line corridor. Herbaceous plants most commonly occurring in sagebrush shrubland habitats within analysis area include saltgrass (*Distichlis spicata*), clasping pepperweed (*Lepidium perfoliatum*), and cheatgrass (*Bromus tectorum*). A few isolated western junipers occur in the central and northern portions of Area A, and just inside the northernmost border of this parcel, about 20 to 30 western junipers encroached into the surrounding sagebrush shrubland. Refer to Appendix P-1 for detailed descriptions of sagebrush shrublands in the analysis area.

Sagebrush shrubland is important and limited habitat. Sagebrush habitats are important because they contribute to sustaining wildlife populations over time, including State Sensitive Species such as pygmy rabbits (*Brachylagus idahoensis*) and ferruginous hawks (refer to Table P-2). Sagebrush habitats are limited in that an estimated 59 percent of big sagebrush habitats in the Northern Basin and Range ecoregion, in which the analysis area lies, have been lost since the 19th century due to land use conversion, grazing, altered fire regimes, and invasive species (ODFW 2016a).

P.3.1.3 Non-sagebrush Shrubland

Non-sagebrush shrubland in the analysis area includes shrub-dominated habitats without a dominant sagebrush component. Within the site boundary, this habitat type is limited to the gen-tie transmission line corridor, where apparent mowing or other intensive vegetation maintenance occurred in recent years (Table P-1; Figure P-3). Rabbitbrush species dominate the shrub stratum in non-sagebrush shrubland habitats in the analysis area. Refer to Appendix P-1 for further details about non-sagebrush shrubland habitat in the analysis area, particularly within the gen-tie transmission line corridor.

Non-sagebrush shrubland in the analysis area is important because native shrubs are dominant and this habitat type contributes to sustaining wildlife populations over time. Several State Sensitive Species are associated with non-sagebrush shrubland habitats, such as burrowing owls and pallid bats (*Antrozous pallidus*) (refer to Table P-2).

P.3.1.4 Sand Dune

Sand dunes primarily occur in and around Area A in the northeastern portion of the analysis area (Table P-1; Figure P-3). Vegetative cover in sand dune habitat is less than 10 percent and typically consists of less than 5 percent shrubs, including big sagebrush and green rabbitbrush. The sand dunes have minimal herbaceous vegetation, but saltgrass is present at some locations. Sand dunes are important to wildlife as a naturally occurring habitat with native vegetative cover. Refer to Appendix P-1 for further details about sand dunes in the analysis area.

P.3.1.5 Juniper Woodland

Woodlands dominated by western juniper occur along the northeastern boundaries of the analysis area, but do not occur within the site boundary (Table P-1; Figure P-3). While not accessible during the field surveys, juniper woodlands were observed with binoculars from nearby public roads. In general, juniper woodlands in the analysis area were moderately dense, with trees ranging from 15 feet to 25 feet in height. Juniper woodland in the analysis contributes to sustaining wildlife populations, including State Sensitive Species such as California myotis (*Myotis californicus*) and ferruginous hawks (Table P-2). Juniper habitats are not limited in the Northern Basin and Range ecoregion, with the exception of habitats with large-diameter individuals, and ODFW (2016b) considers the expansion of juniper woodlands a threat to other more limited, native habitats like sagebrush habitats. Refer to Appendix P-1 for further details about juniper woodlands in the analysis area.

P.3.1.6 Non-native Forb

Non-native forb habitats in the analysis area are moderately to severely disturbed areas adjacent to actively managed agricultural lands. In many cases, these areas appear to have been mowed or tilled and actively managed for agricultural use in the past. Area D and portions of the gen-tie transmission line corridor are the only areas within the site boundary that include non-native forb habitat (Table P-1; Figure P-3). Cattle have recently grazed in Area D, and this parcel appears to have been graded in the past. Tall tumbled mustard (*Sysimbrium altissimum*) (70 percent cover) dominates the parcel. Rubber rabbitbrush (*Ericameria nauseosa*), green rabbitbrush, Russian thistle (*Salsola kali*), and cheatgrass also are present. Non-native forb habitat in the analysis area have high potential for restoration to important habitats. Refer to Appendix P-1 for further details about non-native forb habitat in the analysis area.

P.3.1.7 Non-native Grassland

Non-native grassland habitats in the analysis area are adjacent to actively managed agricultural lands and have been tilled or mowed in recent years (Table P-1; Figure P-3). No non-native grassland occurs within the site boundary. Crested wheatgrass (*Agropyron cristatum*) is the most common plant in the non-native grassland habitats. Non-native grassland habitat in the analysis

area is not important, according to the definition set forth in OAR 635-415-0005, due to the levels of disturbance and non-native vegetation dominance. Non-native grassland has potential for restoration to important habitats. Refer to Appendix P-1 for further details about non-native grassland habitat in the analysis area.

P.3.1.8 Agricultural Lands

Agricultural lands within the analysis area primarily consist of actively managed spigot-irrigated crop circles and adjacent lands; however, some areas identified as agricultural lands serve as storage areas for hay bales or livestock holding areas (Table P-1; Figure P-3). Agricultural lands within the site boundary are limited to the gen-tie transmission line corridor and a very small portion of Area D. Agricultural land has low potential to become important wildlife habitat. Refer to Appendix P-1 for further details about agricultural lands in the analysis area.

P.3.1.9 Developed

Developed lands within the analysis area consist of residences, commercial agriculture building complexes, and other parcels with buildings and/or paved or gravel parking areas (Table P-1; Figure P-3). Developed lands within the site boundary are limited to the gen-tie transmission line corridor and have low potential to become important wildlife habitat. Refer to Appendix P-1 for further details about developed lands in the analysis area.

Table P-1 Temporary and Permanent Disturbance Areas (in acres) for Habitat Types within the Site Boundary^(a)

Habitat Type	Temporary Disturbance ^a	Permanent Disturbance ^a	Total Disturbance
Category 2 Habitat (as defined by OAR 635-415-0025)^b			
ODFW-mapped elk and mule deer winter range ^b	1.20	3,588.47	3,589.67
Habitat by Characteristic^b			
Sagebrush Shrubland	0.00	3,419.21	3,419.21
Playa	0.00 ^c	16.91 ^c	16.91^c
Sand Dune	0.03	108.78	108.81
Non-sagebrush Shrubland	0.15	0.00	0.15
Non-native Forb	0.05	42.77	42.82

Table P-1 Temporary and Permanent Disturbance Areas (in acres) for Habitat Types within the Site Boundary^(a)

Habitat Type	Temporary Disturbance ^a	Permanent Disturbance ^a	Total Disturbance
Agricultural Lands	0.56	1.00	1.56
Developed	0.21	0.00	0.21
Total	1.20	3,588.47	3,589.67

Notes:

- ^a The entirety of Area A and Area D will be permanently impacted (i.e., for the life of the project), with the exception of about 332 acres of expected avoidance areas that include, but are not limited to, cultural areas and pygmy rabbit complexes. The gen-tie transmission line impact acreages assume that monopoles will be sited at 300-foot intervals. The permanent disturbance at each pole will be 6 feet in diameter, and the temporary disturbance will be a 20- by 80-foot rectangle centered on the monopole location.
- ^b Although various vegetation communities and land uses are present in the facility site, the entire site falls within ODFW-designated elk winter range and a portion of the site falls within mule deer winter range; both are considered to be Category 2 habitat by ODFW.
- ^c Some portions of playas are located in areas that will not contain permanent Facility components; therefore, permanent impacts will not occur in these locations. However, for purposes of analyzing impacts conservatively and to allow greater flexibility when finalizing the final Facility design, Applicant assumes that all areas of playas that are not located in an avoidance area will be permanently impacted (refer to Section P.7.1 below and Exhibit J for further details regarding impacts on playas).

P.3.2 Greater Sage-Grouse Habitat

The analysis area does not lie within greater sage-grouse Core Area or Low Density area habitats (ODFW 2016b). Core Areas are areas that the Oregon Sage-Grouse Conservation Planning Team has identified as necessary for protection from habitat loss and fragmentation (Hagen 2011). Low Density Areas are areas for which habitat loss and fragmentation may be of less consequence to the statewide population of greater sage-grouse. The nearest Core Area habitat is about 10 miles south of the Facility site boundary (nearest Area A), while the nearest Low Density area habitat is about 7.5 miles north of the Facility site boundary (nearest Area D) (Figure P-4). Refer to Section P.3.1.1 for discussion of sagebrush shrublands in the analysis area.

P.4 HABITAT MAPS

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

Response: This exhibit provides three maps depicting fish and wildlife habitats in the analysis area. Figure P-2 shows the ODFW-mapped elk and mule deer winter range in and adjacent to the analysis area (refer to Section P.3.1). Figure P-3 depicts the fish and wildlife habitats mapped in the analysis area during the field-based habitat assessment and classified in Section P.3.1. Figure P-4 displays the greater sage-grouse Core Area and Low Density area habitats relative to the analysis area (refer to Section P.3.2).

P.5 STATE SENSITIVE SPECIES IN THE ANALYSIS AREA

OAR-345-021-0010(1)(p)(D) *Based on consultation with the Oregon Department of Fish and Wildlife (ODFW) 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.*

Response: The ODFW's Compass tool was used to identify State Sensitive Species that may occur in the analysis area (2016a). Compass is an online data and planning tool in which one of the features is the Oregon Conservation Strategy (OCS) Reporting Tool. The OCS Reporting Tool affords users the ability to map their project area and receive a downloadable report of OCS Strategy Species that have been observed or are possible in that project area (ODFW 2016a, 2016b). The analysis area for the Facility was mapped using the OCS Reporting Tool, and a full list of Strategy Species was retrieved. The State Sensitive Species List (ODFW 2016c) is a subset of the Strategy Species list (2016b); therefore, all State Sensitive Species are also Strategy Species. As such, Compass and its OCS Reporting Tool are useful tools in identifying State Sensitive Species for projects in Oregon.

State Sensitive Species are designated by species management units for fish and ecoregions for amphibians, reptiles, birds, and mammals (ODFW 2016b, 2016c). The Strategy Species list provided by the OCS Reporting Tool identifies any species that have been observed or may potentially occur in a project area that are designated as State Sensitive Species, regardless of whether their status applies to that particular ecoregion. For this reason, some species identified by the OCS Reporting Tool list for the Facility are not State Sensitive Species in the ecoregion where the analysis area lies, i.e., Northern Basin and Range. Species identified on the OCS Reporting Tool list that are not State Sensitive Species in the Northern Basin and Range ecoregion were eliminated. A literature review of habitats used by the remaining list of State Sensitive Species observed or potentially occurring in the analysis area was conducted, and one species, American pika (*Ochotona princeps*), was removed from the list. The analysis area does not provide talus and fields in alpine and subalpine areas, which the American pika prefers (USFWS 2014; ODFW 2016a, 2016b, 2016c).

After the desktop analysis identified a draft list of State Sensitive Species observed or potentially occurring in the analysis area using the methods described above, ODFW was consulted on February 27, 2018, to verify the list's accuracy. ODFW indicated that the American white pelican (*Pelecanus erythrorhynchos*) would not likely use the analysis area due to lack of suitable habitat, as this species would likely only be observed flying over the analysis area, and not interacting with the habitats within it (Muir 2018c). Based on this conversation with ODFW, the American white pelican was removed from draft list of State Sensitive Species.

The field-based habitat assessment conducted in March 2018 confirmed that suitable habitat is present for the draft list of State Sensitive Species that was developed through desktop analysis

and ODFW consultation, as described in Section P.2. Table P-2 presents the list of State Sensitive Species documented or potentially occurring in the analysis area based on the desktop analysis and confirmed by the field surveys.

Table P-2 State Sensitive Species^(a) Documented or Potentially Occurring in the Analysis Area

Common Name	Latin Name	Habitat	Potential to Occur	Annual Occurrence
Amphibians				
Western Toad	<i>Anaxyrus boreas</i>	Variety of habitats including ponds, lakes, slow-moving streams, desert springs, seeps, marshes, meadows, woodlands, mountain wetlands, and agricultural lands.	Possible	Year-round
Birds				
Black-necked Stilt	<i>Himantopus mexicanus</i>	Nests at vegetated edges of alkaline wetlands and freshwater ponds and lakes. Forages shallow water and muddy edges.	Possible	March–October
Burrowing Owl (Western)	<i>Athene cunicularia hypugaea</i>	Open grasslands, shrub-steppe, pastures, golf courses, and airports.	Possible	April–October
Ferruginous Hawk	<i>Buteo regalis</i>	Sagebrush plains and grasslands with low tree density, less common in cultivated areas.	Observed ^(b)	Year-round
Greater Sage-Grouse	<i>Centrocercus urophasianus</i>	Sagebrush habitats.	Possible	Year-round
Long-billed Curlew	<i>Numenius americanus</i>	Nests in shortgrass and mixed-prairie habitats. Uses agricultural fields during migration, and occasionally for nesting.	Possible	March–September
Swainson’s Hawk	<i>Buteo swainsoni</i>	Open habitats with few trees, most commonly bunchgrass prairie and irrigated farmland.	Observed ^(b)	April–September
Willow Flycatcher	<i>Empidonax traillii</i>	Shrubby thickets, typically willows (<i>Salix</i> sp.) in riparian zones. May occur in other scrubby habitats or agricultural fields during migration.	Possible	May–September
Mammals				
California Myotis	<i>Myotis californicus</i>	Variety of coniferous and deciduous forest or woodland habitats. Roosts in rock crevices, mine tunnels, buildings, and hollow trees.	Possible	Year-round
Hoary Bat	<i>Lasiurus cinereus</i>	Deciduous and coniferous forests and woodlands.	Possible	June–October
Pallid Bat	<i>Antrozous pallidus</i>	Dry, open habitats, e.g., shrublands and grasslands. Roosts in cliffs, caves, mines, bridges, and hollows of live and dead trees.	Possible	Year-round

Table P-2 State Sensitive Species^(a) Documented or Potentially Occurring in the Analysis Area

Common Name	Latin Name	Habitat	Potential to Occur	Annual Occurrence
Pygmy Rabbit	<i>Brachylagus idahoensis</i>	Sagebrush habitats.	Observed ^b	Year-round
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	Mature or old growth forested habitats. Hibernates in trees, buildings, and rock crevices.	Possible	Year-round
Townsend’s Big-eared Bat ^d	<i>Corynorhinus townsendii</i>	Roosts in caves, mines, and buildings. Associated with desert scrub in eastern Oregon.	Possible	Year-round
White-tailed Jackrabbit	<i>Lepus townsendii</i>	Bunchgrass grasslands and open fields.	Possible	Year-round

Sources: Cryan 2003; Marshall et al. 2006; Hagen 2011; OSU and INR 2014; Rodewald 2015; ODFW 2016a, 2016b, 2016c; NatureServe 2017; eBird 2018; USFWS 2018

Note:

- ^(a) All species listed in Table P-2 are Sensitive, except Townsend’s big-eared bat, which is Sensitive-Critical.
- ^(b) “Observed” species are those documented within the analysis area during the March and June 2018 biological resources surveys.

Site-specific Issues of Concern to ODFW

During communications with Applicant and with the Oregon Department of Energy, ODFW expressed several concerns about wildlife potentially occurring in the analysis area (Muir 2018b, 2018c). ODFW indicated that seasonally flooded playas, which are present within the site boundary, have significant value for migratory waterfowl and shorebirds as feeding stopover sites and recommended that the Facility’s potential impacts on shorebird migration be evaluated (Muir 2018b). Section P.7 addresses potential impacts on playas (including potential waterfowl and shorebird use) and black-necked stilts, a State Sensitive shorebird species that may use playas in the analysis area. ODFW also asked that Applicant conduct post-construction monitoring to evaluate whether any “lake effect” from the Facility resulted in bird mortality, which Section P.7 addresses (Muir 2018b, 2018c).

ODFW requested that Applicant conduct targeted surveys for three State Sensitive Species: pygmy rabbit, white-tailed jackrabbit, and burrowing owl (Muir 2018a, 2018b). ODFW asked that Applicant conduct pygmy rabbit surveys according to the protocol they provided (refer to Section P.2.3), and document sightings of white-tailed jackrabbits or burrowing owls (or their sign) concurrently with those surveys (Muir 2018a, 2018b). Refer to Section P.2.3 and Appendix P-1 for further details regarding pygmy rabbit (including white-tailed jackrabbit and burrowing owl) survey methods and results. Applicant will also document burrowing owl nesting activity during migratory bird nesting searches prior to construction (refer to Section P.8).

P.6 BASELINE SURVEYS OF STATE SENSITIVE SPECIES

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

Response: Targeted, protocol-level surveys were conducted for pygmy rabbits, during which ecologists also looked for white-tailed jackrabbits and burrowing owls and their sign. Refer to Section P.2.3 and Appendix P-1 for details about these State Sensitive Species surveys. In addition to the pygmy rabbit surveys, data collected from the field-based habitat assessment, wetland and waterbody delineation, and raptor nest survey were used in combination with published life history information and publicly available occurrence data to determine the potential for presence, assess habitat use, and evaluate potential impacts of the Facility for State Sensitive Species. Table P-2 identifies the State Sensitive Species confirmed or potentially present in the analysis area, and Section P.7 describes each species' potential use of the analysis area and evaluates potential impacts.

P.7 POTENTIAL ADVERSE IMPACTS

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: As described in Exhibit B, this Application for Site Certificate (ASC) analyzes the potential impacts from two design scenarios: a stand-alone photovoltaic (PV) solar power generation build-out, and a PV solar power generation plus battery storage build-out. This exhibit analyzes the PV plus storage design scenario, which will likely have a greater potential impact on fish and wildlife resources than stand-alone PV due to the larger footprint and inclusion of battery storage enclosures. This exhibit describes temporary impacts as short term (less than one year) and long term (more than one year). Permanent impacts refer to impacts lasting for at least the life of the Facility, i.e., 30 years. Section P.7.1 describes potential adverse impacts on fish and wildlife habitats identified in Section P.3, and Section P.7.2 describes potential adverse impacts on State Sensitive Species listed in Table P-2.

P.7.1 Fish and Wildlife Habitat

Table P-1 identifies the acreages of disturbances (i.e., the extent of potential adverse impacts) on habitat types in the analysis area. In total, the Facility will permanently impact 3,588.5 acres and temporarily impact 1.2 acres of fish and wildlife habitats. This section expands on the information presented in Table P-1 and provides details on the nature and duration of potential adverse impacts for each habitat type within the site boundary.

Playa

Applicant removed Area B from consideration for development, in part to avoid potential impacts on the relatively large playas in that parcel (refer to Section P.1 and Appendix B for further discussion of removal of Area B). Construction of solar PV panels will occur within some of the playas in Area A. The resulting area of direct, permanent impacts will be relatively small (16.9 acres); however, the impact on the function of the playas as habitat for wildlife may be less than the reported impact acreage, because some wildlife could still use the playas in the rows between the solar modules. In addition, the playas in Area A are relatively small, ranging in size from 0.01 to 3.40 acres and averaging 0.42 acres, compared to other playas in the region, such as those in Area B, which was removed from development consideration.

Indirect impacts on playas as a wildlife habitat may result from the construction and operation of solar PV panels and other aboveground structures in adjacent habitats. According to ODFW, playas provide valuable feeding stopover sites for migrating waterbirds (i.e., waterfowl and shorebirds) in the Christmas Valley (Muir 2018b). Waterbirds could continue to use playas within the site boundary in the rows between solar modules to feed and rest during migration, but some waterbirds may avoid foraging in proximity to human-made structures (e.g., solar panels) (Piersma et al. 1993; White and Main 2005; Armitage et al. 2007; Piersma 2012). Solar panels and other aboveground structures could obstruct waterbirds' views of predators, particularly approaching raptors (Piersma et al. 1993; Piersma 2012). In general, the obstructive cover created by the solar panels (about 7 feet tall) will not differ substantially from the existing shrubs, which reach heights of up to 7 feet. If the Facility uses battery storage, enclosures up to 30 feet in height placed in proximity to playas could increase the potential obstructive cover in some areas, although enclosures will be set back from playas, to the extent practicable, in the final Facility design.

Some waterbirds could also avoid using the playas because the solar panels and other aboveground structures may attract raptors by serving as potential hunting perches (Reinert 1984; Whitfield 2003; Prather and Messmer 2010). While existing shrubs are comparable in height to proposed solar panels, they may not provide the stability that panels would as a perch, particularly for larger raptors. In addition, battery storage enclosures would create potential perches that are notably taller than existing shrubs. Waterbird use of playas within the site boundary would be limited to migrating birds stopping for short periods of time when playas are flooded in the late winter and spring. In other words, waterbirds using the playas would be a limited food source for raptors in the area. Conversely, ground squirrels (*Urocitellus* sp.) are an abundant food source in the surrounding agricultural lands, as are jackrabbits and other rodents in the analysis area. Raptors may not invest as much time hunting the playas, even with added perches, given the consistent prey alternatives available in the analysis area (Preston 1990; Thirgood et al. 2003).

In summary, the playas within the site boundary, particularly with the removal of Area B, are relatively small, with 35 playas comprising 17.24 acres. The introduction of potential perches via solar panels and other aboveground structures will not have adverse impacts on waterbirds' use of the playas within the site boundary, given that the playas within the site boundary are relatively small, the existing shrubs provide perches for raptors that are about the same size as those provided by the solar panels, and the local raptors have a consistently abundant food source in the surrounding agricultural lands.

Sagebrush Shrubland

Facility construction and operation will result in a permanent impact of 3,419 acres of sagebrush shrubland (Table P-1). Permanent impacts will occur in sagebrush shrubland areas where aboveground structures (e.g., solar panels, battery storage buildings), permanent access roads, and permanent parking areas will be sited, and in areas where vegetation will be actively maintained during operation. Permanent impacts on sagebrush shrubland habitat will also occur in any other locations where construction crews excavate, clear, mow, or crush vegetation to construct Facility components such as substations, inverter pads, battery storage enclosures, and operations and maintenance buildings. Applicant will actively restore and/or allow these disturbed areas within sagebrush shrublands to revegetate during the operation phase; however, impacts on these areas are still considered permanent because, while they will have vegetative cover including sagebrush, they are not likely to recover to pre-existing conditions during the life of the Facility. Big sagebrush is slow-growing and may take in excess of 30 years to recover from disturbances under favorable conditions (Kitchen and McArthur 2007).

Although the Facility will have adverse impacts on sagebrush shrublands within the analysis area, Applicant will mitigate habitat impacts to meet the goals of the Oregon Habitat Mitigation Policy (ODFW 2014). Refer to Section P.8 and Appendix P-2 for full details regarding habitat mitigation.

Non-sagebrush Shrubland

Facility construction and operation will result in a temporary impact of 0.15 acres of non-sagebrush shrubland habitat (Table P-1). Temporary impacts will occur in areas where Applicant excavates, clears, or mows vegetation during construction of the gen-tie transmission line and then actively restores and/or allows revegetation to occur during operation. Temporary impact areas will not be subject to vegetation maintenance during operations. Unlike big sagebrush, the other dominant shrubs within the site boundary are relatively fast growing. Once rubber rabbitbrush and green rabbitbrush are established, they could return to heights comparable to pre-construction conditions within five years (Tirmenstein 1999; Scheinost et al. 2010). Given the expected recovery times for these species, temporary impacts on non-sagebrush shrublands will be long term. While the Facility will have adverse impacts non-sagebrush shrublands, Applicant

will mitigate habitat impacts to meet the goals of the Oregon Habitat Mitigation Policy (ODFW 2014). Refer to Section P.8 and Appendix P-2 for full details regarding habitat mitigation.

Sand Dune

Facility construction and operation will result in a permanent impact of about 109 acres of sand dune habitat (Table P-1). Permanent impacts will occur where aboveground structures or permanent access roads and parking areas are sited. Vegetation maintenance will not be necessary in sand dune habitats during operation due the sparse, low-growing nature of plants in these areas. Applicant will mitigate habitat impacts to meet goals of the Oregon Habitat Mitigation Policy (ODFW 2014). Refer to Section P.8 and Appendix P-2 for full details regarding habitat mitigation.

Juniper Woodland

Juniper woodland does not occur within the site boundary, and the Facility will not impact this habitat type.

Non-native Forb

Facility construction and operation will result in a permanent impact of about 43 acres and temporary impact of less than 0.1 acres of non-native forb habitat, but this is not an important wildlife habitat (refer to Section P.3.1.3). Given the site conditions of these habitats, specifically Area D, the Facility will not have adverse impacts on non-native forb habitat use by wildlife. Refer to Table P-1 for acreages of permanent and temporary impacts on non-native forb habitats within the site boundary.

Non-native Grassland

Non-native grasslands do not occur within the site boundary, and the Facility will not impact this habitat type.

Agricultural Lands

Facility construction and operation will result in a permanent impact of 1 acre and temporary impact of 0.6 acres of agricultural lands. Although agricultural lands provide food for some wildlife, they are actively managed for human use and are not important wildlife habitat (refer to Section P.3.1.4). In addition, the Facility will have relatively small permanent and temporary impacts on agricultural lands (Table P-1). For these reasons, the Facility will not have adverse impacts on agricultural land use by wildlife.

Developed

Facility construction and operation will result in the temporary impact of about 0.2 acres of developed lands, which are not important wildlife habitat (refer to Section P.3.1.4). The Facility

will not have an adverse impact on developed land use by wildlife. Refer to Table P-1 for acreages of permanent and temporary impacts on developed lands within the site boundary.

ODFW Big Game Winter Range

Complete build-out of the Facility will result in a permanent impact of 3,588.5 acres of elk winter range habitat and 348.7 acres of mule deer winter range habitat.¹ These acreages will be updated based on final Facility design. A permanent impact on big game winter range habitat will be caused by the perimeter fences around the solar arrays in Area A and the Facility components in Area D. Facility components will be surrounded by chain-link fencing high enough to prevent big game from using the sites during construction and operation. Temporary impacts will occur in unfenced portions of the Facility (i.e., along gen-tie transmission line corridors) where vegetation is disturbed during construction but permitted to revegetate. Although the Facility will have adverse impacts on big game winter range habitat, Applicant will mitigate the impacts of big game winter range habitat, as described in Section P.8 and Appendix P-2, to meet the goals of the Oregon Habitat Mitigation Policy (ODFW 2014).

Greater-Sage Grouse Habitat

Facility impacts on potential greater sage-grouse habitat will be equivalent to its impacts on sagebrush shrubland (Table P-1; also refer to “sagebrush shrubland” impacts discussion above). Although greater sage-grouse individuals could occur in sagebrush shrublands within the analysis area, the nearest Core Area and Low Density greater sage-grouse habitats are about 10 miles and 7.5 miles from the Facility, respectively (Figure P-3) (ODFW 2016b). Applicant will mitigate impacts associated with potential loss of sagebrush shrubland in the site boundary to meet the goals of the Oregon Habitat Mitigation Policy (ODFW 2014). Refer to Section P.8 and Appendix P-2 for full details regarding habitat mitigation. Given the lack of Core Area or Low Density habitat in the analysis area and Applicant’s habitat mitigation efforts, the Facility will not have significant adverse impacts on greater sage-grouse habitat.

P.7.2 State Sensitive Species

Sections P.7.2.1 through P.7.2.3 below evaluate the nature, extent, and duration of potential adverse impacts on each of the State Sensitive Species listed in Table P-2.

Climate Change

OAR-345-021-0010(1)(p)(F) requires that the ASC discuss the Facility’s potential adverse impacts on the State Sensitive Species in this section, but it is also important to acknowledge the potential impacts that wildlife face from climate change and how renewable energy

¹ Mule deer winter range lies entirely within elk winter range in the analysis area.

developments, such as utility-scale solar farms, reduce carbon emissions and benefit wildlife. For amphibians, the effects of climate change may vary among taxa, but rare species may be at greater risk of climate-related impacts (Olson and Saenz 2013). For mammals, researchers found that climate change negatively affected nearly half of 873 terrestrial species (non-bats) studied worldwide (Pacifi et al. 2017). Little is known about the potential effects of climate change on bats, but experts suspect that changes may affect species survival, diversity, and distribution (Bogan 2016). The National Audubon Society (2015) predicted climate change impacts on 588 species of North American birds and determined that 314 species are at risk of losing more than 50 percent of their current range by 2050 (Climate Endangered) or 2080 (Climate Threatened), a list that includes six of the seven State Sensitive birds listed in Table P-2. The proposed Facility will contribute to stemming climate change and reducing associated impacts on wildlife, including State Sensitive Species.

P.7.2.1 Amphibians

Western Toad

Western toads breed in wetlands, lakes, ponds, reservoirs, and other still or slow-moving waters with sandy bottoms (British Columbia Ministry of Land, Air, and Water Protection n.d.; AmphibiaWeb 2018). In summer, after breeding, adult western toads may migrate, sometimes long distances, to terrestrial habitats, but typically remain near water or in damp areas (British Columbia Ministry of Land, Air, and Water Protection n.d.; AmphibiaWeb 2018). During the winter, western toads hibernate in small mammal burrows and other underground crevices below the frost line, often several feet below the surface (Bull 2006; Browne and Paszkowski 2010; Environment and Climate Change Canada 2016). Hibernacula may be located several miles from breeding sites in a variety of natural habitats, including dry shrublands, and proximity to water is not required (Bull 2006; Browne and Paszkowski 2010). The maximum distance Bull (2006) recorded western toads traveling between breeding sites and hibernacula in eastern Oregon was 3.87 miles (6,230 meters), but the mean distance was 1.22 miles (1,968 meters).

There are no aquatic habitats suitable for western toad breeding within the site boundary; therefore, the Facility will not affect breeding toads. In addition, western toads would have a low probability of occurrence in the summer after breeding, because the habitats within the site boundary are not near water and damp areas would be unlikely to exist at this time of year. Suitable habitat for western toad hibernation occurs within the site boundary in the form of sagebrush and non-sagebrush shrubland habitats; however, their occurrence is unlikely due to the distance of the site boundary from the nearest potentially suitable western toad breeding habitat (ODFW 2016b). ODFW Compass habitat modeling indicates that the nearest modeled potential breeding habitat to the site boundary is more than 5 miles southwest of the gen-tie transmission line corridor. These modeled suitable habitat areas are very small and are not field verified. If western toads use these modeled areas, they would need to travel more than a mile longer than the maximum distance reported by Bull (2006) across agricultural fields and several roads,

including Connley Lane. Given the distance to the relatively small patches of potentially suitable habitat and the high rate of mortality for western toads at road crossings (Dulisse and Boulanger 2013), the species would be unlikely to occur within the site boundary. For this reason, the Facility will not have significant adverse impacts on western toads.

P.7.2.2 Birds

ODFW requested that Applicant evaluate the Facility's potential impacts on birds from lake effects (Muir 2018b). The discussion of lake effect impacts, below, precedes species-specific impact evaluations for each species listed in Table P-2.

Lake Effect

“Lake effect” refers to the phenomenon in which polarized light reflection by solar PV cells causes birds to mistake large utility-scale solar arrays, particularly in desert landscapes, for bodies of water and collide with the panels or nearby ground during landing attempts (Kagan et al. 2014; Smith and Dwyer 2016). Birds may also collide with panels while chasing aquatic insect prey that are attracted to the panel surfaces (Grippio et al. 2015; Smith and Dwyer 2016). Publicly available information about bird collisions with PV panels is currently limited. In general, bird collisions with PV solar panels have included a wide range of ecologically diverse species; however, a relatively high number of collisions of water-dependent birds indicates that they may be at higher risk (Kagan et al. 2014; Smith and Dwyer 2016). The presence of waterbodies at or near a facility may increase the potential for waterbirds to collide with PV solar panels (Kagan et al. 2014).

Collisions may result in mortality, injuries, or stranded birds. Some waterbirds require water in order to take off, and may become stranded if they land at a solar facility they mistook for water. Stranded birds and those with non-fatal injuries may be prone to predation (Kagan et al. 2014). Collision rates likely vary on a site-specific basis, and some studies have demonstrated limited observations of bird collisions with PV solar panels (DeVault et al. 2014; Visser 2016; Walston Jr. et al. 2016). Researchers have indicated that the general lack of information and lack of standardized monitoring protocols make it difficult to provide meaningful assessments of bird mortality or population-level effects associated with solar energy facilities (Grippio et al. 2015; Loss et al. 2015; Smith and Dwyer 2016; Visser 2016; Walston Jr. et al. 2016). However, Walston Jr. et al. (2016) indicated that bird mortalities at solar energy facilities may be considerably lower than around most other human activities.

The PV solar panels associated with the Facility could result in mortalities or injuries to birds, including waterbirds. A number of waterbird species occur in the analysis area at various points during the year (eBird 2018), and playas (Figure P-2) may attract these birds to areas within the site boundary, particularly during periods of spring flooding. The potential for lake effect-related impacts at the Facility are uncertain, given the lack of conclusive information available about

bird collisions with solar PV facilities (Grippio et al. 2015; Loss et al. 2015; Smith and Dwyer 2016; Visser 2016; Walston Jr. et al. 2016). Presumably, the relatively small playas in Area A would attract fewer waterbirds than the much larger playas that occur in the Christmas Valley area and Lake County in general. Therefore, the risk of collision would likely be reduced compared to developing nearer to larger waterbodies or playas (Kagan et al. 2014), such as those in Area B, which Applicant removed from the proposed Facility, in part to avoid impacts on biological resources (refer to Exhibit B).

The solar PV panel design will also contribute to reducing the potential for lake effect impacts at the Facility. The solar panel surfaces will be dark bluish in color and have very low reflectivity due to the use of an anti-reflective coating, dimpling of the panel glass surface, and the overall light-absorption character of the low-iron glass typically used in solar PV modules. Modern solar PV panels are designed to reflect as little as 2 percent of incoming sunlight, depending on the angle of the sun (Federal Aviation Administration 2010).

The potential for lake effect impacts on birds at the Facility is uncertain, but likely low given the PV panel design and the relatively small areas of aquatic habitat available to attract waterbirds, which may be at higher risk, within the site boundary. For these reasons, the Facility will not have significant adverse impacts on birds related to lake effects; however, Applicant will conduct post-construction monitoring of bird mortalities at the Facility, as requested by ODFW (Muir 2018b).

Black-necked Stilt

Black-necked stilts have not been documented in the analysis area, but could occur from spring through fall (ODFW 2016a; eBird 2018). They would be unlikely to nest in the analysis area due to lack of alkaline wetlands and freshwater lakes and ponds with emergent vegetation (Table P-2) (ODFW 2016a). The playas in the analysis area, while not suitable for nesting, would be suitable foraging habitat for migrating or other non-breeding individuals during periods of flooding. Solar PV panels will be constructed in some portions of the playas in Area A (refer “Playa” in Section P.7.1), which would limit the available foraging habitat for this species within the site boundary; however, black-necked stilts could still forage in the rows between the solar modules. Black-necked stilts may also avoid playas when nearby noise and visual (e.g., human presence) disturbances occur during construction and operation. Black-necked stilts would be less likely to stop at playas within the site boundary, as they are much smaller than other larger playas in the region, such as those in Area B, which Applicant formerly considered for development and is now avoiding (refer to Exhibit B). In addition, noise and visual disturbance impacts will be short term, ceasing when Facility personnel and equipment complete their activities.

If black-necked stilts forage in playas within the site boundary during the operations phase, they could potentially collide with PV solar panels or other aboveground structures (refer to “Lake

Effect” discussion above). Black-necked stilts are a water-dependent species, which may be more prone to collisions with PV panels than terrestrial bird taxa (Kagan et al. 2014; Smith and Dwyer 2016). However, black-necked stilts are shorebirds, which typically occur near the water’s edge, and would not land with the force of a species that makes water landings (e.g., plunging) in deeper waters. For example, about 30 percent of identified bird carcasses Kagan et al. (2014) reported at a PV solar facility in California were diving waterbirds that land in deeper waters, whereas only one shorebird carcass was identified (less than 2 percent). Thus, black-necked stilts may be less prone to mortality or injury from collisions with solar panels than other waterbird species.

Black-necked stilts would likely have limited presence within the site boundary, potentially occurring during spring migration when playas may be ponding. They may also be more likely to use much larger playas in the region than the small playas within the site boundary. Given that the Facility will impact a relatively small amount of possible foraging habitat in the Fort Rock and Christmas Valley region, the short-term nature of potential noise and visual disturbances, and the limited number of documented shorebird collisions mortalities at solar PV farms, the Facility will not have significant adverse impacts on black-necked stilts.

Burrowing Owl

Burrowing owls breed in the Fort Rock and Christmas Valley region and have the potential to occur in the analysis area (refer to Appendix P-1; eBird 2018). Their nest burrows typically occur in areas of low vegetation, bare ground, and sparse shrubs (Marshall et al. 2006). Burrowing owls often select nest sites with elevated perches nearby to improve predator detection.

Shrubland habitats cover most of the site boundary (refer to Table P-1 and Figure P-3). These habitats may provide areas of suitable habitat for burrowing owls, particularly along the transmission line rights-of-way; however, shrubs are likely too dense and tall in most of the shrubland habitats to provide suitable nesting for the species. Therefore, the Facility’s potential impacts on suitable nesting habitat would likely be much smaller than the impact acreages for shrubland habitats reported in Table P-1. In addition, removal of vegetative cover during construction may create nesting habitat that did not previously exist, as burrowing owls sometimes nest in open, human modified habitats, such agricultural fields, fence lines, roadside ditches, golf courses, and airports (Marshall et al. 2006; Poulin et al. 2011).

The presence of construction personnel, vehicles, and equipment could disturb nesting burrowing owls, if present, and potentially affect nesting success. Applicant will conduct pre-construction surveys for bird nests, including burrowing owls, and will prohibit Facility activities within 0.25 miles of active nests to avoid impacts (refer to Section P.8 and Appendix P-2 for measures). Applicant will also impose speed limits within the site boundary during all Facility phases to

minimize the risk of vehicle collisions with burrowing owls (refer to Section P.8 and Appendix P-2).

The Facility may result in some habitat loss, but may also create new potential nesting areas. Applicant will avoid or minimize direct impacts on burrowing owls with the implementation of the proposed measures detailed in Section P.8 and Appendix P-2, such as nest avoidance buffers. In addition, the Facility will potentially benefit burrowing owls, a Climate Endangered bird species (National Audubon Society 2015), by contributing to reduction of carbon emissions. For these reasons, the Facility will not have adverse significant impacts on this species.

Ferruginous Hawk

Ferruginous hawks occur in the analysis area year round (eBird 2018), and their nesting activity has been confirmed (refer to Section P.2.2 and Figure P-1). Potential nest substrates within the site boundary are limited to the 500-kilovolt transmission line towers in Area D and the western junipers in Area A. While Applicant will remove a few potential nest substrates within the site boundary (i.e., junipers in Area A), a number of trees and high-voltage transmission towers will remain in the analysis area. In addition, Applicant will prohibit Facility-related activities within 0.25 miles of ferruginous hawk active nests in the analysis area, based on the results of pre-construction raptor nest surveys, as recommended by ODFW (Muir 2018b) (refer to Section P.8 and Appendix P-2 for measures). Applicant will also implement the nest avoidance buffer, where practicable, if Facility personnel observe active ferruginous hawk nests during maintenance activities.

Most of the site boundary is suitable foraging habitat for ferruginous hawks, as they hunt rabbits, hares, and ground squirrels in shrublands, grasslands, and agricultural areas (Marshall et al. 2006; Ng et al. 2017). The Facility would impact up to 3,420 acres of potential foraging habitat (refer to Table P-1); however, some of the ferruginous hawk's preferred prey species may continue to use the Facility site during operations, as areas under and/or around the PV panels and associated aboveground structures would revegetate. The Facility's aboveground structures may also provide elevated perches from which ferruginous hawks can hunt. Even if the impacted areas are no longer suitable for hunting, ample foraging opportunities exist in the analysis area beyond the site boundary. Ground squirrels are abundant in the surrounding agricultural lands, where which ferruginous hawks were observed hunting on several occasions during March 2018 field surveys. In addition, sagebrush shrublands outside of the site boundary likely support black-tailed jackrabbits and mountain cottontails (*Sylvilagus nuttallii*).

The Facility has the potential to cause direct mortality or injury of ferruginous hawks through collisions with vehicles and power line electrocutions; however, Applicant will impose speed limits within the site boundary during all Facility phases to minimize the risk of vehicle collisions with ferruginous hawks. In addition, Applicant will minimize potential for electrocution by constructing gen-tie transmission lines for the Facility in accordance with the

Avian Power Line Interaction Committee suggested practices (APLIC 2006). For these reasons, the potential for direct mortality or injury of ferruginous hawks will be low. Refer to Section P.8 and Appendix P-2 for full details of proposed avoidance and minimization measures.

The Facility will have minimal impact on nesting habitat for this species and may result in some loss of foraging habitat, but Applicant will mitigate impacts associated with the potential loss of habitats in the site boundary to meet the goals of the Oregon Habitat Mitigation Policy (ODFW 2014). Refer to Section P.8 and Appendix P-2 for full details regarding habitat mitigation. Applicant will also avoid or minimize direct impacts on ferruginous hawks with the implementation of the proposed measures detailed in Section P.8 and Appendix P-2. In addition, the Facility will potentially benefit ferruginous hawks, a Climate Endangered bird species (National Audubon Society 2015), by contributing to reduction of carbon emissions. For the above noted reasons, the Facility will not have significant adverse impacts on ferruginous hawks.

Greater Sage-Grouse

The Facility will not have adverse impacts on greater sage-grouse habitat, as discussed in Section P.7.1. Greater sage-grouse Core Areas and Low Density habitats encompass lek sites, breeding habitat, winter habitat, and connectivity corridors and are intended to aid in conserving at least 90 percent of the State's population of the species (Hagen 2011). Given that the Facility is 7.5 miles from the nearest Low Density habitat and 10 miles from the nearest Core Area (ODFW 2016b; Figures P-3), greater sage-grouse use of the analysis area would be minimal and breeding activity would be unlikely. In the unlikely event that greater sage-grouse are present within the site boundary, potential direct impacts on greater sage-grouse could include noise and visual disturbances from Facility personnel and equipment or collisions with Facility vehicles. Noise and visual disturbances will have minimal impact given that individuals could move away from disturbances without potential impacts on breeding or displacement from important habitat (i.e., Core Area and Low Density habitats). The potential for direct mortality or injury will be minimized by the speed limits at the Facility (refer to Section P.8 and Appendix P-2). For the reasons noted above, the Facility will not have significant adverse impacts on greater sage-grouse. In addition, the Facility will potentially benefit greater sage-grouse, a Climate Endangered bird species (National Audubon Society 2015), by contributing to reduction of carbon emissions.

Long-billed Curlew

Long-billed curlews nest in grassland habitats and are unlikely to breed in the analysis area as the limited existing grasslands are heavily disturbed and dominated by non-native grasses (refer to Section P.3.1.3) (Marshall et al. 2006). The agricultural lands in the analysis area may provide potential foraging and roosting habitat for long-billed curlews during spring and fall migration (Figure P-3). Limited agricultural lands (in Area D and the gen-tie transmission line corridor) and no suitable grasslands occur within the site boundary, and long-billed curlews tend to avoid

areas with dense shrubs, which make up most of the proposed areas of ground disturbance (Marshall et al. 2006). It is possible that construction along the gen-tie transmission line or in Area D near agricultural lands could disturb nearby foraging or roosting curlews during migration periods, but the birds could easily move a short distance away from the disturbance to other suitable agricultural lands. For the above noted reasons, the Facility's potential impacts on long-billed curlews will be negligible. In addition, the Facility will potentially benefit long-billed curlews, a Climate Endangered bird species (National Audubon Society 2015), by contributing to reduction of carbon emissions.

Swainson's Hawk

The Facility's potential impacts on Swainson's hawks would be similar to these related to ferruginous hawks, though Swainson's hawks are not present during the winter (Marshall et al. 2006; eBird 2018). Refer to the ferruginous hawk impact discussion above for a more detailed discussion of potential impacts comparable to the Swainson's hawk. Swainson's hawks rarely nest on manmade structures (Marshall et al. 2006; Bechard et al. 2010), so potential nest sites within the site boundary would be limited to the western junipers in Area A, in which an active Swainson's hawk nest was documented during the June 2018 field surveys (refer to Section P.2.2 and Figure P-1). Swainson's hawks most commonly hunt in alfalfa fields with abundant ground squirrel populations (Marshall et al. 2006), indicating that they are less likely to forage in the shrubland habitats within the site boundary than the agricultural lands outside of it. The addition of new potential perches (i.e., Facility aboveground structures) will not benefit Swainson's hawks or encourage them to hunt within the site boundary, as they primarily hunt in flight (Marshall et al. 2006).

Applicant will avoid direct impacts on Swainson's hawks by implementing the nest avoidance buffer (0.25 miles), Facility speed limits, and APLIC (2006) measures described in Section P.8 and Appendix P-2. In addition, Applicant will mitigate habitats impacted by the Facility according to the mitigation plan detailed in Section P.8 and Appendix P-2. For the reasons noted above, the Facility will not have significant adverse impacts on Swainson's hawks. In addition, the Facility will potentially benefit Swainson's hawks, a Climate Endangered bird species (National Audubon Society 2015), by contributing to reduction of carbon emissions.

Willow Flycatcher

Willow flycatchers do not have suitable nesting habitat (i.e., riparian zones) in the analysis area and would not occur during the breeding season (Marshall et al. 2006; eBird 2018). Migration habitats are generally riparian woodlands and moist, shrubby habitats near water, but willow flycatchers may also occur in nearby agricultural fields (Sedgwick 2000; Marshall et al. 2006). Willow flycatchers are unlikely to occur within the site boundary during migration due to the lack of suitable habitat, but they may be rare visitors to portions of the analysis area outside the site boundary where agricultural fields have adjacent trees (Sedgwick 2000). Given their very

low likelihood of occurrence within the site boundary, the Facility will have negligible impacts on willow flycatchers. In addition, the Facility will potentially benefit willow flycatchers, a Climate Threatened bird species (National Audubon Society 2015), by contributing to reduction of carbon emissions.

P.7.2.3 Mammals

California Myotis

In Oregon, California myotis are associated with a variety of coniferous and deciduous forest or woodland habitats, often near water (OSU and INR 2014; ODFW 2016a). They roost in rock crevices, mine tunnels, buildings, and hollow trees. Potentially suitable habitat in the analysis area is limited to juniper woodlands north and east of Area A (refer to Figure P-3). Juniper woodland habitats do not occur within the site boundary, nor do potential roosts; therefore, construction and operation of the Facility will not have significant adverse impacts on the California myotis.

Hoary Bat

Hoary bats breed and roost in middle to older aged coniferous and deciduous forests and woodlands (OSU and INR; ODFW 2016a; NatureServe 2017). They forage along riparian corridors and forest openings (OSU and INR 2014). Potentially suitable habitat in the analysis area is limited to juniper woodlands north and east of Area A (refer to Figure P-3). Juniper woodlands do not occur within the site boundary; therefore, construction and operation of the Facility will not have significant adverse impacts on hoary bats.

Pallid Bat

Pallid bats occur in dry, open habitats like grasslands, shrublands, and open woodlands (OSU and INR 2014; ODFW 2016a). They roost in cliffs, caves, mines, bridges, abandoned buildings, and tree snags. The Facility will impact sagebrush and non-sagebrush shrubland habitats within the site boundary that may be potential foraging habitat for pallid bats (refer to Figure P-3 for habitat locations and Table P-1 for impact acreages). However, this species' prey—insects and small invertebrates (OSU and INR 2014)—would likely continue to use the site boundary during Facility operations, given that vegetation will remain in and around the solar panels and associated permanent aboveground structures. Thus, pallid bats would likely continue to forage within the post-disturbance site boundary.

The Facility will have minimal potential for direct impacts on pallid bats, because there are no potential roosts within or adjacent to the site boundary. It is possible that Facility activities, during any phase, could disturb foraging pallid bats if activities occurred at night, but these potential impacts would be short term and bats could move to nearby areas and forage free of Facility disturbances. For the reasons noted above, construction and operation of the Facility will not have significant adverse impacts on pallid bats.

Pygmy Rabbit

Pygmy rabbits are sagebrush obligates and require big sagebrush for food and cover (Bureau of Land Management 2014; OSU and INR 2014; ODFW 2016a). Though they prefer tall, dense stands of big sagebrush, pygmy rabbits may occur in sagebrush habitats with a variety of vegetation associations and disturbance conditions. Common variables among occupied sites in southeast Oregon are the presence of some big sagebrush and deep, loose soils for burrowing (Bureau of Land Management 2014; ODFW 2016a). Pygmy rabbit surveys were conducted in potentially suitable habitat (i.e., sagebrush shrubland) within the site boundary and documented three active pygmy rabbit burrow complexes in Area A (refer to Section P.2.3 and Figure P-1).

Applicant will avoid all areas of confirmed occupied pygmy rabbit habitat—Complex 1, Complex 2, and Complex 3, as shown on Figure P-1. In addition, Applicant removed Area B from consideration for development, in part because of the large amount of potential pygmy rabbit habitat within the parcel (refer to Exhibit B for further details about the removal of Area B). In the event that personnel observe new occupied pygmy rabbit habitat during pre-construction or construction activities within the site boundary, Applicant will notify ODFW immediately and activities will halt in that area until an approach has been determined (refer to Section P.8.2.2 and Appendix P-2). Applicant proposed measures, such as implementing speed limits, will also reduce the potential for impacts on pygmy rabbits in work areas near active complexes. Applicant's habitat mitigation efforts may also benefit pygmy rabbit populations in the region (refer to Section P.8.2.2 and Appendix P-2). Given Applicant's avoidance, minimization, and mitigation efforts, the Facility will not have population-level significant adverse impacts on pygmy rabbits in the Northern Basin and Range ecoregion.

Silver-haired Bat

Silver-haired bats are associated mature or old growth forests, typically coniferous, where they roost in crevices under bark or in snags (OSU and INR 2014; ODFW 2016a; NatureServe 2017). They use mines, caves, buildings, rock crevices, and trees for winter hibernation (OSU and INR 2014). Potentially suitable habitat in the analysis area is limited to juniper woodlands north and east of Area A (refer to Figure P-3). Juniper woodlands and potential winter hibernacula do not occur within the site boundary; therefore, the Facility will not likely have significant adverse impacts on silver-haired bats.

Townsend's Big-eared Bat

In eastern Oregon, Townsend's big-eared bats are associated with desert scrub habitats (OSU and INR 2014). They use caves, mines, and isolated buildings for maternity roosts and hibernacula, and may also use bridges or hollow trees for summer day or night roosts (OSU and INR 2014; ODFW 2016a). The Facility will impact desert scrub habitats (i.e., sagebrush and non-sagebrush shrubland) within the site boundary that may be potential foraging habitat for Townsend's big-eared bats (refer to Figure P-3 for habitat locations and Table P-1 for impact acreages). However,

moths, which are this species' primary prey (OSU and INR 2014), would likely continue to use the area within the site boundary during Facility operations, given that the site will remain largely vegetated in and around the solar panels and associated aboveground structures. Thus, Townsend's big-eared bats would likely continue to forage within the post-disturbance site boundary.

The Facility will have minimal potential for direct impacts on this species, because there are no potential roosts or hibernacula within or adjacent to the site boundary. It is possible that Facility activities, during any phase, could disturb foraging Townsend's big-eared bats if activities occurred at night, but these potential impacts will be short term and bats could move to nearby areas and forage free of Facility disturbances. For the reasons noted above, the Facility will not have significant adverse impacts on Townsend's big-eared bats.

White-tailed Jackrabbit

In Oregon, white-tailed jackrabbits are typically associated with bunchgrass grasslands and open fields (OSU and INR 2014; ODFW 2016a). Black-tailed and white-tailed jackrabbits use different habitats where their distributions overlap, as they do in the analysis area, and only black-tailed jackrabbits were observed during the 2018 field surveys (refer to Section 3.3 of Appendix P-1). Potentially suitable habitat in the analysis area may be limited to non-native grasslands in areas outside the site boundary (refer to Section P.3.1.3 and Figure P-3). Non-native grasslands are likely to have limited value to white-tailed jackrabbits, as they are heavily disturbed and dominated by non-native vegetation.

In the unlikely event that white-tailed jackrabbits are present during construction or operation, they would be able to move away from disturbances to other nearby areas of non-native grassland. Applicant will implement speed limits within the site boundary to minimize the potential for vehicle collisions with wildlife, including white-tailed jackrabbits (refer to Section P.8 and Appendix P-2). Given the species' likelihood of occurrence within the site boundary and the proposed minimization measures, the Facility will not have significant adverse impacts on white-tailed jackrabbits.

P.8 PROPOSED MEASURES AND MITIGATION

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 the general fish and wildlife habitat mitigation goals and standards described in OAR 635-415-0025 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: Applicant proposes to avoid, reduce, or mitigate the potential impacts on State Sensitive Species discussed in Section P.7.2 and other wildlife in the analysis area using a combination of best management practices, taxon-specific measures, and compensatory mitigation of habitat loss. Best management practices (Section P.8.1) are Applicant-proposed measures intended to avoid or minimize the Facility's impacts on multiple resources, including wildlife. Applicant developed taxon-specific measures (Section P.8.2) in consultation with ODFW and/or the United States Fish and Wildlife Service (USFWS) to avoid or minimize impacts on a particular species or group of species. Applicant consulted with ODFW to detail the compensatory mitigation strategy (Section P.8.3) for the Facility's impacts on wildlife habitats in accordance with the goals and standards described in OAR 636-415-0025. Sections P.8.1 through P.8.3 outline the measures detailed in the Wildlife Measures, Monitoring, and Mitigation Plan. Refer to Appendix P-2 for the full plan. Applicant does not propose measures or mitigation specific to greater sage-grouse because the Facility will not have adverse impacts on this species or its habitat based on the Facility's siting outside of Core Areas and Low Density areas (refer to Section P.7.1 and Section P.7.2.2).

P.8.1 Best Management Practices

1. Applicant shall conduct environmental awareness training for all Facility personnel and on-site contractors before they begin activities within the site boundary. The training program shall discuss State Sensitive Species and all other environmental issues related to the Facility, including information about pygmy rabbit identification information and reporting procedures.
2. Applicant will clearly demarcate boundaries of environmentally sensitive areas to be avoided during construction to increase visibility to construction crews.
3. Applicant will impose and enforce a speed limit of 15 miles per hour within the site boundary during construction, operation, and retirement phases. In addition to dust control and health and safety benefits, this measure will reduce the risk of vehicle collisions with wildlife.
4. Applicant will conduct construction and retirement activities on the Facility during daylight hours, to the extent practicable. If nighttime work is necessary, personnel will shield night lighting downward.
5. Trenching and back-filling construction crews will work proximately to each other to the extent practicable to minimize the number of open trenches at any given time. Applicant will avoid leaving trenches open overnight to the extent practicable. Where trenches remain open overnight, construction crews will construct wildlife escape ramps approximately every 90 meters with slopes of less than 45 degrees. Trenches will be inspected, and any wildlife found removed prior to backfilling.

6. Applicant will install jump-out points around the perimeter of the site as appropriate to facilitate egress but not ingress of large mammals from within the site. Applicant will consult with ODFW on jump-out design and placement.
7. Facility personnel shall practice good housekeeping. Waste shall be disposed of in designated trash bins and removed from Facility work areas regularly.
8. Applicant shall implement the *Revegetation and Noxious Weed Control Plan* (Appendix P-3), which includes measures for revegetating areas of soil disturbance, preventing topsoil loss, and controlling and minimizing the spread of non-native, invasive species and noxious weeds.

P.8.2 Taxon-specific Measures

P.8.2.1 Bird-specific Measures

1. Applicant shall conduct pre-construction shrub and tree vegetation clearing activities in all proposed construction areas prior to the nesting season for migratory birds, to the extent practicable. Vegetation clearing refers to removing trees, shrubs, and tall grasses to stubs, but leaving low grasses, roots, and soil intact until the onset of construction. Applicant will make an effort to clear vegetation between September 1 and March 31 for shrubs and trees shorter than 15 feet, and September 1 to January 15 for trees over 15 feet tall. Clearing vegetation prior to the nesting season will discourage most birds from nesting. Applicant shall remove only vegetation, where necessary, retaining grasses and small plants, to the extent practicable. Applicant shall discourage birds from nesting in slash piles by removing all vegetation slash material off site to an approved location or chipping slash in place prior to March 31.
2. Because construction activities will occur during the (non-raptor) migratory bird nesting season (April 1–August 31), a qualified biologist shall conduct pre-construction ground surveys for active nests. Nest surveys for non-raptor species shall be conducted within 50 feet of all proposed disturbance areas, including the gen-tie transmission line and access roads. If the biologist detects active migratory bird nests during pre-construction surveys, Applicant shall implement and maintain 30-foot disturbance buffers around the nests in which construction activities are prohibited until the nest has been abandoned/depredated or the eggs hatch and young have fledged. Applicant shall consult ODFW or the USFWS for prior approval for exceptions to nest buffers.
3. Because construction activities will occur during the raptor nesting season (February 1 to August 31), a qualified biologist shall conduct pre-construction raptor nest surveys within 0.5 miles of proposed Facility disturbance areas. Raptor nest surveys shall be conducted no more than two weeks prior to the start of construction activities. If the biologist detects active raptor nests, Applicant shall implement and maintain disturbance buffers around nests around the nests in which construction activities are prohibited until the nest has

been abandoned/depredated or the eggs hatch and young have fledged. All raptor nests shall have a buffer of 0.25 miles except for golden eagle (*[Aquila chrysaetos]* 0.5 miles) and red-tailed hawk (300 to 500 feet). In cases where smaller buffers or restricted work authorizations might be appropriate, Applicant shall coordinate with ODFW or the USFWS to decrease buffer sizes and/or to allow restricted construction activities. Facility vehicles shall be permitted within buffers on paved public roads. Most light traffic by rubber-tired vehicles shall be permitted to pass through the buffer on existing unpaved access roads, if needed, and as determined by the on-site environmental monitor.

4. Applicant shall employ protection measures to reduce the potential risks to raptors and other birds from electrocutions and/or collisions, including:
 - a. Design and construct all aboveground transmission line support structures following the practices suggested by APLIC (2006), including a minimum separation of 9 feet between all energized transmission conductors; and
 - b. Install perch guards or other deterrents, as needed; and
5. Applicant shall conduct standardized post-construction mortality monitoring for birds and bats during the first year (12 months) of the operations phase. A qualified biologist (or other qualified person) will walk a random sample of the solar PV rows once per month. The biologist will record all observations of bird or bat mortalities along the survey rows and between rows. Applicant will provide a summary report to ODFW and USFWS within two months of completion of the year-long monitoring effort. Incidental observations of bird or bat mortalities, i.e., outside of the abovementioned standardized mortality monitoring efforts, will be documented for the first five years of operations and will be compiled and reported annually. Mortality observations of State Sensitive Species will be reported to ODFW and mortality observations of bald eagles (*Haliaeetus leucocephalus*) or golden eagles will be reported to the USFWS and ODFW, in each case as promptly as practical after the finding.

P.8.2.2 Pygmy Rabbit Measures

1. Applicant removed Area B from consideration for development due, in part, to the large amount of suitable pygmy rabbit habitat (i.e., sagebrush shrubland) within the parcel (refer to Exhibit B for further discussion of the removal of Area B from development plans). Applicant will avoid construction in the areas of pygmy rabbit Burrow Complexes 1, 2, and 3 (refer to Section P.2.3 and Figure P-1 for burrow complex descriptions and locations). These avoidance areas, in combination with adjacent cultural avoidance areas (refer to Exhibit S) and other avoidance areas, will maintain habitat connectivity between two of the burrow complexes.
2. In the event that personnel observe additional pygmy rabbit complexes during pre-construction or construction activities, Applicant shall consult with ODFW regarding

minimization of impacts on newly detected colonies. Construction activities shall halt in the immediate area of new pygmy rabbit observations until an approach is determined.

P.8.3 Compensatory Mitigation

Applicant consulted with ODFW to develop 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. The Wildlife Habitat Mitigation and Monitoring Plan (WHMMP) is included as Appendix P-2 o.

P.8.3.1 Working Lands Improvement Program.

Under the WHMMP, Applicant will implement a Working Lands Improvement Program (WLIP) proximate to the Facility site. In connection with the WLIP, Applicant will thin and remove western juniper from land proximate to the Facility site. The WLIP is intended to improve previously unused or under-performing habitat by affording the understory vegetation water previously used to support juniper growth. Lands identified for inclusion in the WLIP (the "WLIP Areas") will be assessed prior to commencing mitigation activities in order to document general baseline habitat types and conditions. Applicant will also engage a qualified forester or other qualified consultant to conduct a timber cruise in order to develop a specific thinning and removal plan for each Area. Applicant will consult with ODFW about the results of the baseline habitat assessment and timber cruise before admitting any land into the WLIP.

For qualifying WLIP land, Applicant will enter into WLIP Agreements with owners of WLIP Areas under which the landowner will agree to restrictive covenants designed to protect the improvements to understory growth made possible through the juniper thinning and removal (for example, limiting increases in the level of grazing within the WLIP Area above current levels, restricting development). These restrictions will be designed to prevent land uses that might diminish the wildlife habitat functions and values in the WLIP Area.

The number of acres that will be included in the WLIP initially will be determined by reference to the number of acres of temporary and permanent disturbance caused by the Facility based on final engineering and design (including associated facilities, such as substations, roads, transmission lines). For example, if the total disturbed acres (e.g., the acres inside the perimeter fences in Areas A and D together with the temporary and permanent impacts caused by construction and installation of the gen-tie line) is 2,800, the initial WLIP Area will be 2,800 acres.

P.8.3.2 Noxious Weed Program.

In addition to monitoring and controlling noxious weeds in the site boundary and in WLIP Areas, Applicant will fund a Noxious Weed Program in the Fort Rock region. This program will be

designed in coordination with the Lake County Cooperative Weed Management Area (“Lake County CWMA”) (or successor or similar organization) and will be implemented by the Lake County CWMA. Through participation in Weed Control Cost Sharing Agreements, Applicant plans to enhance a total number of acres equal to the number of acres in the WLIP. Weed control areas will be located within the Fort Rock basin and noxious weed control will continue (as needed through the life of the Facility).

P.8.3.3. Enhanced Fire Control Suppression.

Once constructed, the Facility will create a natural fire buffer in an area susceptible to rapid-moving grass fires. The Facility features contributing to this benefit are further described in Appendix P-2. In addition, Applicant will maintain ready-to-use fire suppression equipment for the benefit of the community that will remain available to the neighbors and Facility employees required or able to respond to any fire incident near the Facility.

P.8.3.4 Elk Safety Measures.

To provide further benefit to mitigation for Facility impacts, after the commencement of operation of the Facility certificate holder will reach out to communities and interested parties to identify locations of abandoned barbed wire or other wire that poses a threat to animal or human safety in the area mapped by ODFW staff as elk and mule deer winter ranges. Certificate holder will commit up to \$20,000 toward removal of these dangerous conditions in the 24 months following commencement of commercial operation.

P.9 MONITORING PROGRAM

OAR-345-021-0010(1)(p)(H) *A description of the applicant’s proposed monitoring plans to evaluate the success of the measures described in (G).*

Response: Applicant consulted with ODFW to develop a monitoring program for certain wildlife resources and wildlife habitats, which is presented in the WHMMP (Appendix P-2). Specifically, this plan (1) describes the approach to monitor the success of the off-site habitat mitigation program for the life of the Facility, and (2) details of voluntary post-construction bird and bat mortality monitoring during the first year of operation. Applicant will implement the monitoring program detailed in this plan during the construction and operation phase of the Facility to evaluate the success of measures described in the plan and described in Section P.8 of this exhibit. Appendix P-3 describes the construction and operation approaches for monitoring of on-site revegetation and noxious weed control.

P.10 REFERENCES

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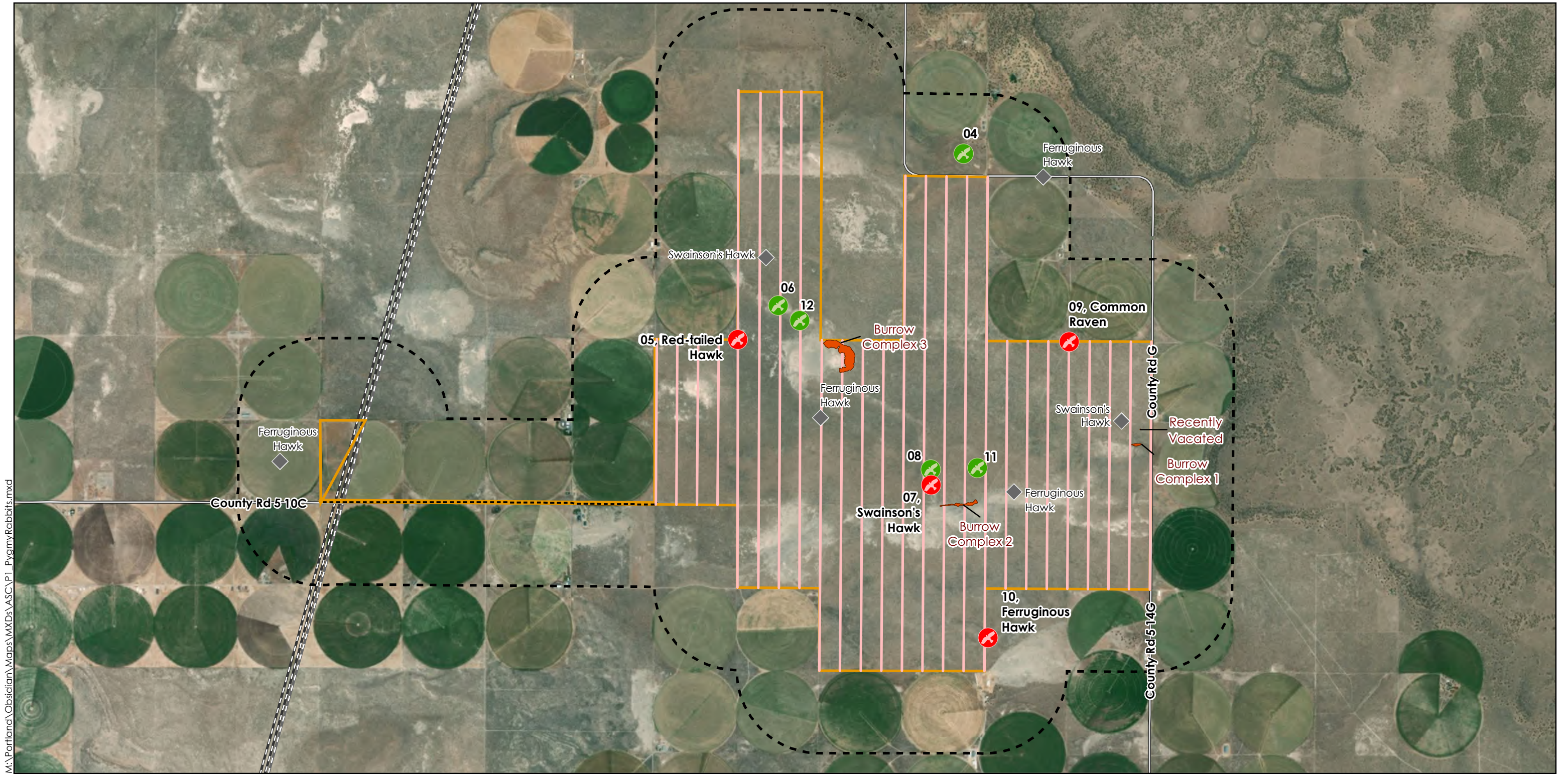
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- Site Boundary
 - 0.5-mile Analysis Area
 - Gen-tie Transmission Line
 - Bonneville Power Administration (500kV)
 - PGE Transmission Line (500kV)
 - Pygmy Rabbit Complex
 - Pygmy Rabbit Survey Transects
- Raptor Nests
- ✖ Active
 - ✖ Inactive
 - ◆ Sensitive Species

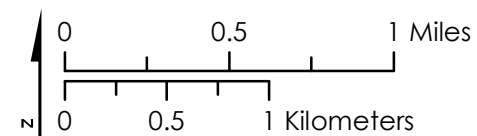
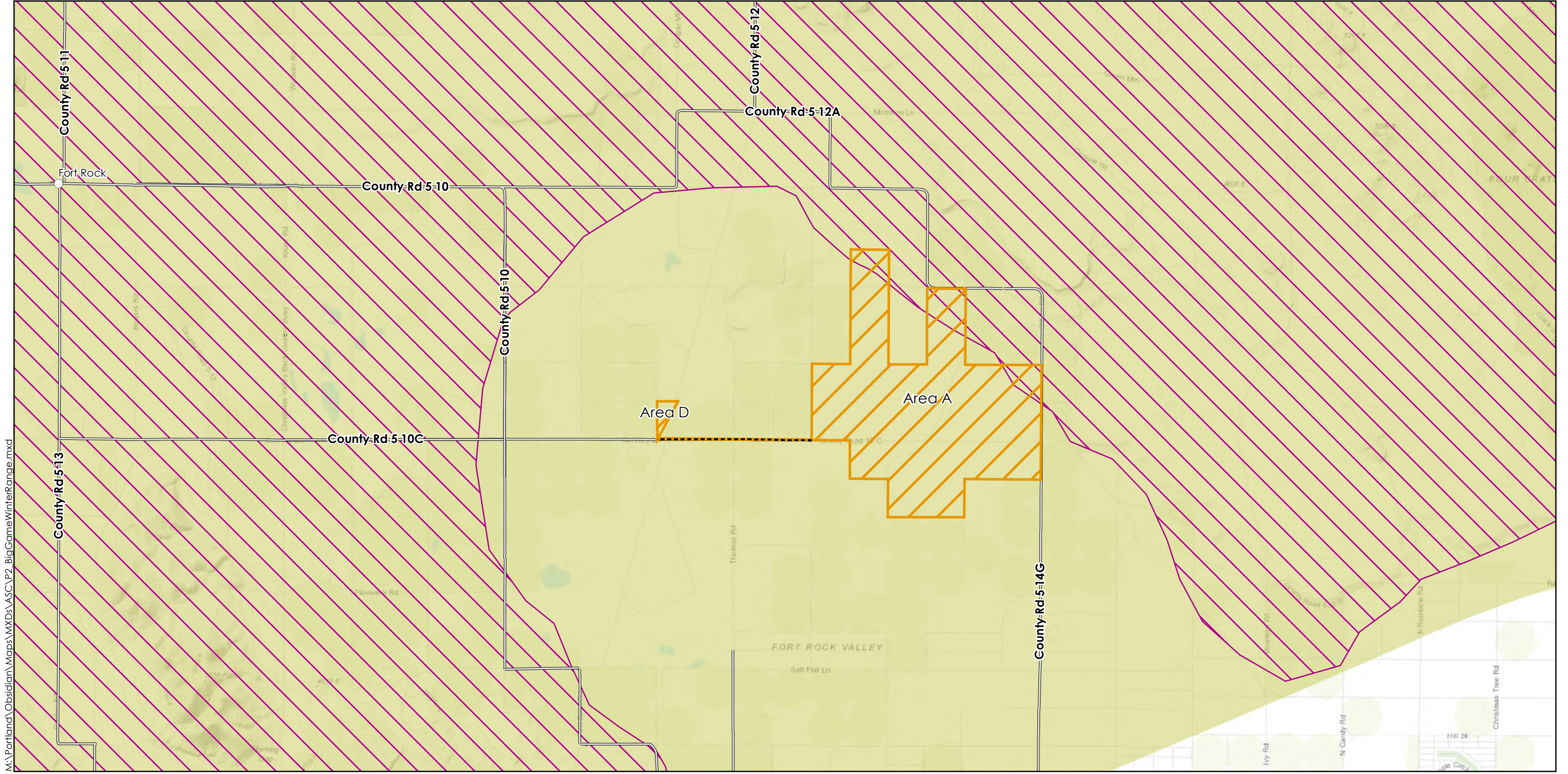


Figure P-1
Pygmy Rabbits, Raptor Nests,
and State Sensitive Species

Obsidian Solar Center

October 2019

Obsidian Solar Center LLC



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- Town
- Highways/Roads
- - - Gen-tie Transmission Line
- ▨ Site Boundary
- ▨ ODFW designated Big Game Range
- ▨ Mule Deer Winter Range
- ▨ Elk Winter Range

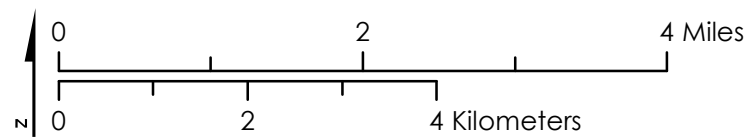


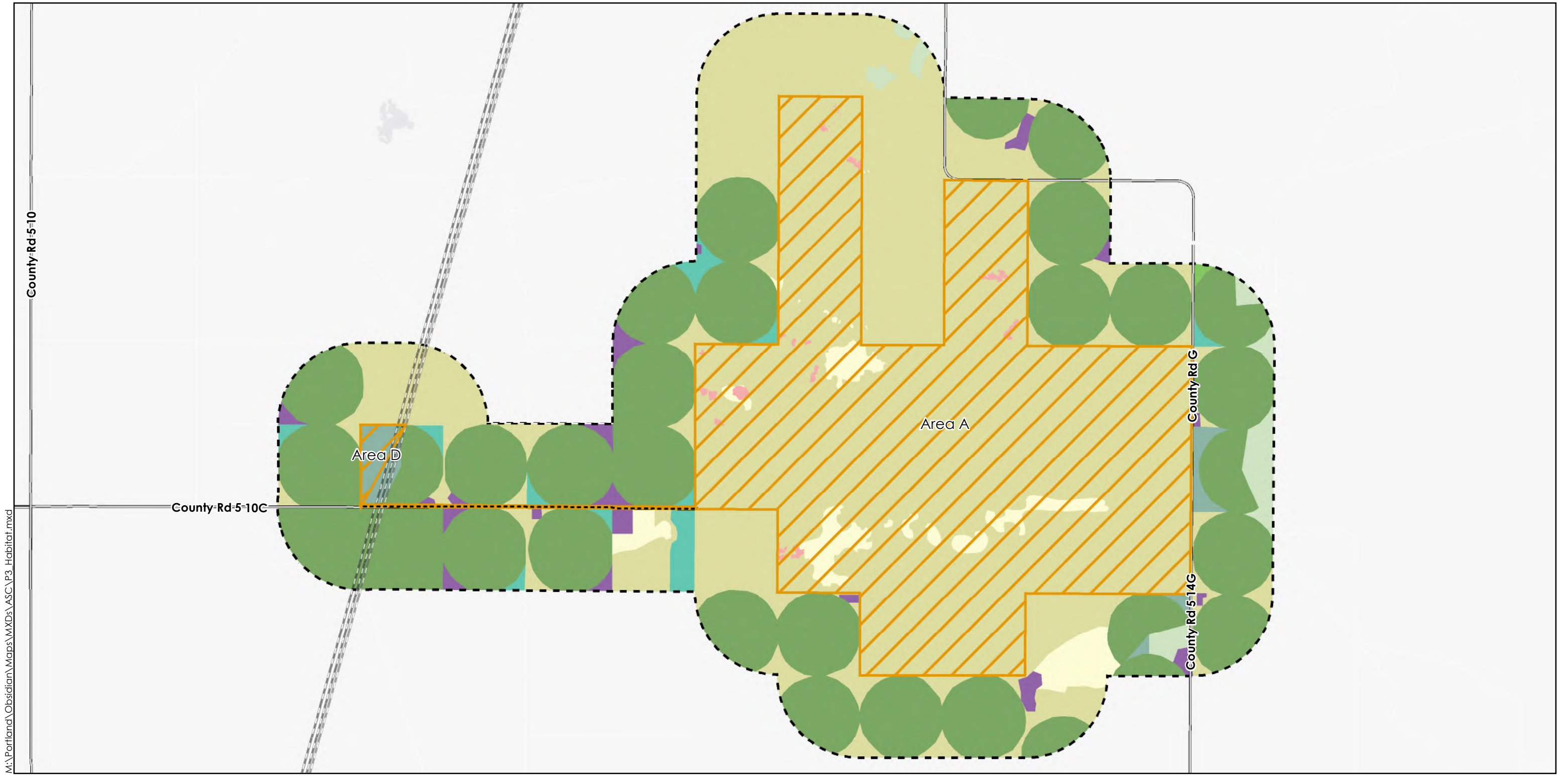
Figure P-2
Designated Big Game
Winter Range

Obsidian Solar Center

October 2019

Obsidian Solar Center LLC

Sources: Esri 2019, ODFW 2016b



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- | | |
|---|-------------------------|
| Site Boundary | Playa |
| 0.5-mile Analysis Area | Sagebrush Shrubland |
| Gen-tie Transmission Line | Non-sagebrush Shrubland |
| Bonneville Power Administration (500kV) | Sand Dune |
| PGE Transmission Line (500kV) | Juniper Woodland |
| | Non-native Forb |
| | Non-native Grassland |
| | Agricultural Land |
| | Developed |

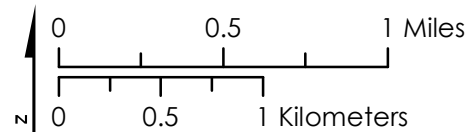
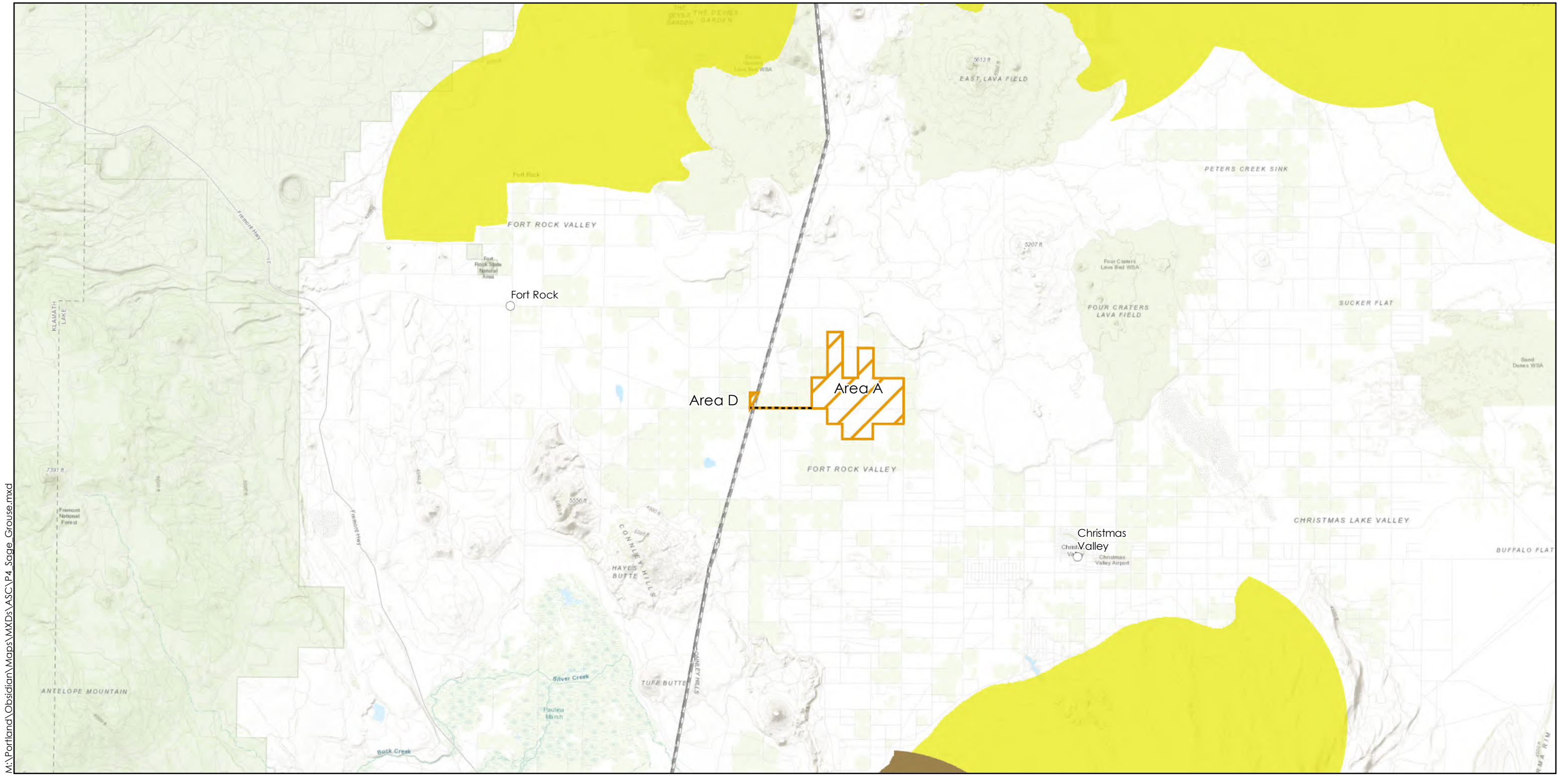


Figure P-3
Habitat Types in the
Analysis Area

Obsidian Solar Center

October 2019

Obsidian Solar Center LLC



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- Town
- Bonneville Power Administration (500kV)
- PGE Transmission Line (500kV)
- Gen-tie Transmission Line
- ▭ Site Boundary
- Greater Sage-Grouse Habitat
- Core Area
- Low Density

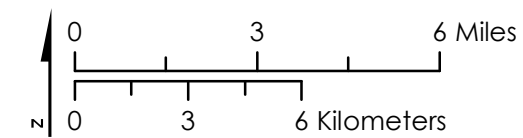


Figure P-4
Greater Sage-Grouse Habitat

Obsidian Solar Center

October 2019

Obsidian Solar Center LLC

Sources: Esri 2019, ODFW 2016b

Appendix P-1
2018 Habitat Assessment and
Biological Resources Field Report

Obsidian Solar Center
2018 Habitat Assessment and
Biological Resources Field Report

AUGUST 2018

Prepared for:
Obsidian Solar Center LLC

5 Centerpointe Drive, Suite 250
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Prepared by:
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ATTACHMENTS

Attachment 1 Photographic Log

Acronyms and Abbreviations

Applicant	Obsidian Solar Center, LLC
ASC	Application for Site Certificate
E & E	Ecology and Environment, Inc.
Facility	Obsidian Solar Center
gen-tie	generation tie
GPS	global positioning system
kV	kilovolt
NLCD	National Land Cover Database
PGE	Portland General Electric Company

1.0 PURPOSE AND SCOPE

Obsidian Solar Center LLC (Applicant) is applying for a Site Certificate from the Oregon Energy Facility Siting Council to construct and operate the Obsidian Solar Center (Facility), an up to 400-megawatt photovoltaic solar generating facility that may also include battery storage technology. The Facility will be located approximately 5 miles southeast of Fort Rock, Oregon, in the Christmas Valley portion of northern Lake County. At the time of the surveys described in this report, Applicant was considering five main parcels on which to site the Facility (Areas A through E), with five potential connecting generation tie (gen-tie) transmission lines (Lines 1-4), all of which combined to total approximately 7,500 acres (Figure 1). Applicant removed Area B, Area E, and gen-tie transmission lines 1, 2, and 4 from consideration in early June 2018, and they removed Area C and gen-tie transmission line 5 from consideration in July 2017.

Per the Project Order for the Facility issued by the Oregon Department of Energy in May 2018, Applicant must examine fish and wildlife resources within an analysis area that includes the area within the site boundary plus an additional 0.5 miles from the site boundary. For the purposes of this report, “site boundary” refers to the combined perimeter of all of the components of the Facility that Applicant was considering at the time of the surveys described in this report, including the five parcels and associated gen-tie transmission lines, because biological resources surveys commenced prior to the removal of the parcels and gen-tie transmission lines. Therefore, the site boundary analyzed in Exhibit P of the Application for Site Certificate (ASC) differs from that described in this report.

Applicant’s environmental consultant, Ecology and Environment, Inc. (E & E), conducted field surveys in March and late June 2018 to inform, in combination with desktop analyses, Exhibit P in the ASC. The field efforts included a habitat assessment and raptor nest survey conducted in March 2018 within the entire analysis area (i.e., site boundary plus 0.5-mile buffer). In June 2018, E & E conducted a pygmy rabbit (*Brachylagus idahoensis*) survey in Area A and Area C. E & E also recorded incidental observations of wildlife, including State Sensitive Species, and noxious weeds in this analysis area while conducting the habitat assessment, raptor nest survey, and pygmy rabbit survey. Finally, E & E conducted a wetland and waterbody survey in March 2018, which is described in detail in Appendix J-1 of Exhibit J in the ASC; this habitat assessment and biological resources field report briefly summarizes the wetland and waterbody survey results.

2.0 SURVEY METHODS

This section details the methods E & E employed to assess habitats, document raptor nests and pygmy rabbit complexes, and record incidental wildlife and noxious weed observations in March

and June 2018. Refer to Appendix J-1 of Exhibit J in the ASC for methods used to delineate wetlands and waterbodies.

2.1 Habitat Assessment

Prior to conducting a field-based assessment, E & E used the National Land Cover Database (NLCD) to map land cover (hereafter referred to as habitat) types in the analysis area (Homer et al. 2015). E & E adjusted NLCD habitat polygons in areas where the data were not accurate compared to high-resolution satellite imagery—for example, if an NLCD Shrub/Scrub polygon overlaid a crop circle (Google Earth 2014; Homer et al. 2015). The NLCD data revealed nine habitat types; however, E & E combined four “developed” types into one type (Homer et al. 2015). This resulted in a list of six NLCD-mapped habitat types: Barren Land, Cultivated Crops, Developed, Herbaceous, Shrub/Scrub, and Woody Wetlands.

E & E used the mapped NLCD data as a baseline to be refined during the field-based habitat assessment (Homer et al. 2015). After this first step, E & E developed a more detailed list of 14 potential habitat types for use during the field assessment, in part, to capture the habitat requirements of State Sensitive Species documented or potentially occurring in the analysis area (Table 1). There are no state or federal threatened or endangered wildlife species potentially present in the analysis area (ODFW 2016a; Muir 2018a, 2018b; USFWS 2018a). E & E developed a dichotomous key by which to identify 13 of the 14 more detailed habitat types in the field, with the exception being “Developed” areas. The dichotomous key incorporated the Natural Vegetation Classification Standard, Version 2 (Federal Geographic Data Committee 2008). E & E defined the classification using the floristic and physiognomic criteria particular to the analysis area’s bioregion.

The dichotomous key is as follows (habitat types in bold):

Determining the Vegetation Stratum

- 1a) Tree canopy cover $\geq 10\%$ → Part A: Forest or Woodland, lead 4a
- 1b) Tree canopy cover $< 10\%$, lead 2a.
 - 2a) Shrub canopy cover $\geq 10\%$ → Part B: Shrubland, lead 5a.
 - 2b) Shrub canopy cover $< 10\%$ → lead 3a
 - 3a) Herbaceous cover $\geq 5\%$ → Part C: Herbaceous Vegetation, lead 6a
 - 3b) Herbaceous cover $< 5\%$ → Part D: Barrens, lead 11a

Identifying the Habitat Type

Part A: Forest or Woodland

- 4a) Tree canopy cover $\geq 30\%$ → i) **Forest**

4b) Tree canopy cover <30% → ii) **Woodland**

Part B: Shrubland

5a) Shrub cover includes robust sagebrush (*Artemisia* spp.) component → iii)

Sagebrush shrubland

5b) Shrub cover does not include robust sagebrush component → iv)

Non-sagebrush Shrubland

Part C: Herbaceous Vegetation

6a) Herbaceous vegetation managed as a crop or holding facility for livestock → v)

Agricultural Lands

6b) Herbaceous vegetation not managed as a crop or holding facility for livestock →
Non-irrigated Herbaceous, lead 7a

7a) Herbaceous cover dominated by graminoids (grasses, sedges, and rushes) →
Graminoids, lead 8a

7b) Herbaceous cover not dominated by graminoids → Forbs, lead 10a

8a) Grasses and/or graminoids predominantly hydrophytic and within a
wetland → vi) **Marsh/Wet Meadow** (refer to Appendix J-1 of Exhibit J
for identification and delineation of wetland and waterbody habitats)

8b) Grasses and/or graminoids not within a wetland → Upland Graminoids,
lead 9a

9a) Graminoids predominantly native species → vii) **Native Grassland**

9b) Graminoids predominantly non-native species → viii) **Non-native
Grassland**

10a) Forbs dominated by native species → ix) **Native Forb**

10b) Forbs not dominated by native species → x) **Non-native Forb**

Part D: Barrens

11a) Salt crust covering surface across much ($\geq 30\%$) of area → xi) **Alkali Flat**

11b) Salt crust limited (<30% of area) or lacking, lead 12a

12a) Surface substrate is primarily sand, pumice or ash → xii) **Sand Dune**

12b) Surface substrate is not primarily coarse sand, pumice or ash → xiii) **Disturbed
Barrens**

Glossary:

Dominant: Individual species or plant form having the highest absolute or relative cover (i.e., the plurality of all cover) of any species or plant form within the observation area.

Stratum: Plants within a vegetation stand that have a similar life form and height range. The strata used in this key are tree, shrub, and herbaceous, with the life form groups defined individually below.

Trees: Woody plants that exceed 5 meters in height at maturity, usually have multiple stems only in response to past physical damage to a main stem, and exceed 3 inches in diameter at breast height.

Shrubs: Woody plants that usually do not exceed 5 meters in height at maturity and typically produce multiple stems in the absence of physical damage to a main stem.

Herbaceous: Non-woody vascular plants.

Graminoids: Herbaceous plants that have elongated stems with linear, blade-like leaves (grasses, sedges and rushes).

Forbs: Herbaceous plants that are not graminoids.

Two E & E ecologists performed the field-based habitat assessment in the analysis area from March 18 to March 22, 2018. The ecologists traveled by foot and 4x4 vehicle throughout the analysis area to achieve full visual coverage. They delineated the boundaries of each habitat patch using a tablet computer equipped with geographic information system software (i.e., Esri Collector) and identified the habitat type within each patch using the above noted dichotomous key. They refined the names of the habitat types in the dichotomous key, as necessary, to reflect field-based observations. Specifically, “Woodland” became “Juniper Woodland,” as western juniper (*Juniper occidentalis*) dominated woodlands in the analysis area.

The E & E ecologists documented dominant plant species within each habitat type in the analysis area and described general habitat conditions, such as average shrub heights and level of disturbance. In addition, they recorded at least one reference global positioning system (GPS) point per quarter section (160-acre areas) within the site boundary and included photographs of the habitat visible from that location (see Attachment 1, Photographic Log). The ecologists did not have landowner permission to access some parts of the analysis area that were located outside the site boundary but still within the 0.5-mile buffer. The ecologists achieved full visual coverage of these inaccessible areas using available public access roads and binoculars; however, they did not walk or drive through these areas. They used a combination of these observations, satellite imagery (Google Earth 2014), the mapped NLCD data (Homer et al. 2015), and field-

collected data from comparable habitat patches in the analysis area to assign habitat types to the inaccessible areas. Section 3.1 describes the results of the field-based habitat assessment.

Table 1. State Sensitive Species¹ Documented or Potentially Occurring in the Analysis Area

Common Name	Latin Name	Habitat	Potential to Occur ²	Annual Occurrence
Amphibians				
Western Toad	<i>Anaxyrus boreas</i>	Variety of habitats, including ponds, lakes, slow-moving streams, desert springs, seeps, marshes, meadows, woodlands, mountain wetlands, and agricultural lands.	Possible	Year-round
Birds				
Black-necked Stilt	<i>Himantopus mexicanus</i>	Nests at vegetated edges of alkaline and freshwater ponds and lakes. Forages in shallow water and muddy edges.	Possible	March–October
Burrowing Owl (Western)	<i>Athene cunicularia hypugaea</i>	Open grasslands, shrub-steppe, pastures, golf courses, and airports.	Observed	April–October
Ferruginous Hawk	<i>Buteo regalis</i>	Sagebrush plains and grasslands with low tree density, less common in cultivated areas.	Observed	Year-round
Greater Sage-Grouse	<i>Centrocercus urophasianus</i>	Sagebrush habitats.	Possible	Year-round
Long-billed Curlew	<i>Numenius americanus</i>	Nests in shortgrass and mixed-prairie habitats. Uses agricultural fields during migration, and occasionally for nesting.	Observed	March–September
Swainson’s Hawk	<i>Buteo swainsoni</i>	Open habitats with few trees, most commonly bunchgrass prairie and irrigated farmland.	Observed	April–September
Willow Flycatcher	<i>Empidonax traillii</i>	Shrubby thickets, typically willows (<i>Salix</i> sp.) in riparian zones. May occur in other scrubby habitats or agricultural fields during migration.	Possible	May–September
Mammals				
California Myotis	<i>Myotis californicus</i>	Variety of coniferous and deciduous forest or woodland habitats. Roosts in rock crevices, mine tunnels, buildings, and hollow trees.	Possible	Year-round
Hoary Bat	<i>Lasiurus cinereus</i>	Deciduous and coniferous forests and woodlands.	Possible	June–October
Pallid Bat	<i>Antrozous pallidus</i>	Dry, open habitats, e.g., shrublands and grasslands. Roosts in cliffs, caves, mines, bridges, and hollows of live and dead trees.	Possible	Year-round
Pygmy Rabbit	<i>Brachylagus idahoensis</i>	Sagebrush habitats.	Observed	Year-round

Table 1. State Sensitive Species¹ Documented or Potentially Occurring in the Analysis Area

Common Name	Latin Name	Habitat	Potential to Occur ²	Annual Occurrence
Silver-haired Bat	<i>Lasiorycteris noctivagans</i>	Mature or old growth forested habitats. Hibernates in trees, buildings, and rock crevices.	Possible	Year-round
Townsend’s Big-eared Bat	<i>Corynorhinus townsendii</i>	Roosts in caves, mines, and buildings. Associated with desert scrub in eastern Oregon.	Possible	Year-round
White-tailed Jackrabbit	<i>Lepus townsendii</i>	Bunchgrass grasslands and open fields.	Possible	Year-round

Sources: Cryan 2003; Marshall et al. 2006; Hagen 2011; OSU Libraries and Press and Institute for Natural Resources 2014; Rodewald 2015; ODFW 2016a, 2016b, 2016c; NatureServe 2017; eBird 2018; USFWS 2018b.

Notes:

¹ All species listed in Table 1 are Sensitive, except Townsend’s big-eared bat, which is Sensitive – Critical.

² "Observed" species are those documented within the analysis area during the March and June 2018 biological resources surveys.

2.2 Raptor Nest Survey

Two E & E ecologists conducted a raptor nest survey on foot and by vehicle in conjunction with the habitat assessment from March 18 to March 22, 2018. They inspected all potential raptor nest substrates within the analysis area, including trees, transmission poles and towers, and other human-made structures. In inaccessible areas beyond the site boundary, but within the 0.5-mile analysis area, the ecologists observed potential nest substrates from the nearest accessible roads using 10x-power binoculars. As is typical for raptor nest surveys in general, the ecologists did not actively search for ground-based raptor nests for species such as northern harrier (*Circus hudsonius*) and burrowing owl (*Athene cunicularia*) (Kaufman 2001; Marshall et al. 2006). At each observed raptor nest, they recorded a GPS reference point; documented activity status (i.e., active or inactive); documented nesting species, if applicable; and described the nest site and conditions. During June 2018 pygmy rabbit surveys, E & E made follow-up observations of raptor nests in and adjacent to Area A.

2.3 Pygmy Rabbit Survey

Four E & E ecologists conducted species-specific pygmy rabbit surveys from June 18 to June 20, 2018. Per ODFW recommendation (Muir 2018a, 2018c), they adopted methods used by the Bureau of Land Management (2014) in southeastern Oregon. The ecologists meandered through 660-foot-wide (0.125-mile-wide) transects in all sagebrush shrubland habitats within Area A and

Area C.¹ As the ecologists walked each transect, they targeted the tallest, densest stands of big sagebrush (*Artemisia tridentata*), which is the sagebrush species commonly associated with pygmy rabbits in southeastern Oregon, and inspected the ground underneath and around sagebrush plants for pygmy rabbit individuals, scat (i.e., pellets), and burrows. When the ecologists observed pygmy rabbit burrows, they flagged the burrows and searched the surrounding area intensively to flag additional burrows. The ecologists considered the intensive search complete when no further activity was documented within approximately 50 meters in any direction of flagged burrows. They then delineated the boundaries of burrow complexes using tablet computers equipped with GPS and drew lines around the outermost burrows in the complex. When drawing a complex boundary line around the outermost burrows, the ecologists included the entire shrub or cluster of shrubs associated with the burrows within the boundary.

At each burrow complex, the ecologists reported the number of burrows and the relative age of pellets (fresh or old), and described vegetation and site conditions. They determined if pygmy rabbits burrow complexes were active or recently vacated by the presence or absence of fresh pellets. They also looked for white-tailed jackrabbits and burrowing owls and their sign during the pygmy rabbit surveys.

2.4 Incidental Wildlife Observations

E & E ecologists documented all wildlife, including their sign (e.g., scat, tracks), observed incidental to the primary tasks of the field-based habitat assessment, raptor nest survey, pygmy rabbit survey, and wetland and waterbody delineation. The ecologists recorded GPS reference points for observations of State Sensitive Species or their sign using Esri Collector on a tablet computer.

2.5 Noxious Weeds

E & E ecologists searched for state- and county-designated noxious weeds (ODA 2017) as a secondary objective to the primary survey tasks of the field-based habitat assessment, raptor nest survey, pygmy rabbit survey, and wetland and waterbody delineation. If designated noxious weeds were present, the E & E ecologists recorded them using Esri Collector on a GPS-enabled tablet computer.

¹ Applicant removed Area B, which also included sagebrush shrubland habitat (refer to Section 3.1), from consideration prior to pygmy rabbit surveys.

3.0 RESULTS

3.1 Habitat Assessment

E & E mapped nine habitat types within the analysis area: juniper woodland, sagebrush shrubland, non-sagebrush shrubland, playa, agricultural lands, non-native grassland, non-native forb, sand dune, and developed (Figure 2). Refer to Appendix J-1 of Exhibit J for more detailed descriptions and maps of playas. Sagebrush shrubland covered the majority of the area within the site boundary, but non-sagebrush shrubland, non-native forbs, non-native grasslands, playas, sand dunes, agricultural lands, and developed areas also were present. The text below provides separate descriptions of the habitat types within the site boundary (by parcel), the potential gen-tie transmission line corridors (by number), and the 0.5-mile buffer beyond the site boundary in further detail. Table 2 identifies the habitat types and associated acreages and cover percentages within the site boundary (excluding corridors for gen-tie transmission lines). Table 3 identifies the habitat types and their associated acreages within the gen-tie transmission lines. Table 4 identifies habitat types and associated acreages in the portions of the analysis area that are beyond the site boundary (i.e., within the 0.5-mile buffer).

Table 2. Habitat Types within the Main Facility Parcels (Areas A–E)

Parcel	Habitat Type Acreage (% of Land Cover in Parcel) ¹						Total Acres
	Sagebrush Shrubland	Non-sagebrush Shrubland	Sand Dune	Playa	Non-Native Forb	Agricultural Lands	
Area A	3,674.42 (95.1%)	0.00	171.20 (4.4%)	17.24 (0.5%)	0.00	0.00	3,862.86
Area B	2,523.51 (81.8%)	423.21 (13.7%)	0.76 (<0.1%)	136.02 (4.4%)	0.00	0.00	3,083.50
Area C	437.08 (100.0%)	0.00	0.00	0.00	0.00	0.00	437.08
Area D	0.00	0.00	0.00	0.00	42.77 (97.7%)	0.99 (2.3%)	43.76
Area E	107.87 (68.0%)	44.80 (28.2%)	5.96 (3.8%)	0.00	0.00	0.00	158.63
Total Acres:	6,742.88	468.01	177.92	153.26	42.77	0.99	7,585.83

Notes:

¹ Percentages represent the portion of land cover for each habitat within the parcel, e.g., sagebrush shrubland is 95.1 percent of Area A.

Area A

Sagebrush shrubland was the most prominent habitat type in Area A, making up 95.1 percent of the parcel (Figure 2; Table 2). In Area A, shrubs dominated this habitat type, which was a mosaic of stand covers, plant heights, and levels of disturbance.² Big sagebrush dominated the shrub stratum of this habitat type in Area A, ranging from 15 to 30 percent cover with mature plants standing 3 to 7 feet tall.³ In some areas, big sagebrush showed evidence of cattle grazing (i.e., defoliation), although damage was not extensive across the parcel. Green rabbitbrush (*Chrysothamnus viscidiflorus*) and rubber rabbitbrush (*Ericameria nauseosa*) also were a prominent part of the shrub stratum, ranging from 10 to 25 percent cover. The herbaceous stratum most commonly included saltgrass (*Distichlis spicata*), clasping pepperweed (*Lepidium perfoliatum*), and, especially, non-native cheatgrass (*Bromus tectorum*), which composed up to 25 percent cover at some locations. Bare ground made up 40 to 60 percent of the cover in sagebrush shrubland in Area A. A few isolated western junipers occurred in this habitat in the central portion of Area A, and there were also a few in the northwestern portion of Area A. In addition, just inside the northernmost border of Area A, about 20 to 30 western junipers encroached into the sagebrush shrubland. The junipers in this northernmost area range from about 5 to 30 feet tall but were not abundant enough to classify the area as a juniper woodland habitat.

Sand dunes (4.4 percent land cover) and playas (0.5 percent land cover) also occurred in Area A (Figure 2; Table 2). Vegetative cover was less than 10 percent in sand dune habitats and typically consisted of less than 5 percent big sagebrush and green rabbitbrush. The sand dunes were typically devoid of herbaceous vegetation, but saltgrass was present at some locations. Playas in Area A were generally small compared to those in Area B (see below, and Figure 2), and were concentrated in the northwestern portion of the parcel. Refer to Appendix J-1 of Exhibit J for more detail about playas in Area A.

Refer to Attachment 1 for a photographic log of habitats at various locations throughout Area A.

Area B

Sagebrush shrubland was the most prominent habitat type in Area B, totaling 81.8 percent of the parcel (Figure 2; Table 2). As in Area A, sagebrush shrubland in Area B was a mosaic stand of covers, plant heights, and levels of disturbance of shrubs, herbaceous vegetation, and bare ground. Big sagebrush ranged from 15 to 30 percent cover, and mature plants typically stood 1 to 3 feet tall but reached heights of 5 feet, particularly in the south-central portion of the parcel.

² Ranges of percent ground cover or plant heights hereafter refer to the variation in these attributes at any given location for a habitat type within a Facility parcel.

³ All plant heights and cover percentages are based on field estimates.

Substantial defoliation of big sagebrush occurred in pockets along the eastern boundary of Area B, possibly due to grazing, as cattle were present. However, grazing also occurred in other portions of Area B that did not exhibit notable signs of defoliation.

Green rabbitbrush was present throughout the sagebrush shrubland habitat in Area B, ranging from 5 to 30 percent cover. Shadscale saltbush (*Atriplex confertifolia*) composed up to 15 percent cover in sagebrush shrubland habitat, primarily in proximity to playas and associated with areas of alkali soils. Shadscale saltbush was not present in the north-central portions of Area B. The herbaceous stratum dominants included basin wildrye (*Leymus cinereus*), cheatgrass, clasping pepperweed, saltgrass, and, most commonly, crested wheatgrass (*Agropyron cristatum*). Bare ground made up 35 to 60 percent of the cover in sagebrush shrubland in Area B.

Non-sagebrush shrubland habitat, which E & E defined as not having a dominant sagebrush component, covered 13.7 percent of Area B (Figure 2; Table 2). This habitat type was associated with some areas containing alkali soils and/or areas where apparent mowing or other intensive vegetation maintenance occurred in recent years. Disturbed areas where non-sagebrush shrubland occurred included the northern portion of the 500-kilovolt (kV) transmission line right-of-way, and the quarter section near the southeastern corner of Area B. Shadscale saltbush (10 to 40 percent cover) and green rabbitbrush (10 to 20 percent cover) dominated the shrub stratum in non-sagebrush shrubland habitat. When present, big sagebrush cover was less than 5 percent and individuals were typically less than 18 inches tall. Crested wheatgrass and cheatgrass were the most common species in the herbaceous stratum, and bare ground accounted for 40 to 60 percent of cover.

Playas in Area B were generally larger than those in Area A and were concentrated in the southeastern portion of the parcel. Refer to Appendix J-1 of Exhibit J for more details about playas in Area B, which covered 4.5 percent of the parcel.

Refer to Attachment 1 for a photographic log of habitats at various locations throughout Area B.

Area C

Sagebrush shrubland covered the entirety of Area C (Figure 2; Table 2). Big sagebrush composed about 25 percent of the cover, and mature plants typically stood 3 to 4 feet tall. Rubber rabbitbrush cover composed between 20 and 25 percent of the cover in Area C. Area C had limited herbaceous cover, typically less than 5 percent; however, small patches of basin wildrye with up to 30 percent cover occurred near the western boundary of the parcel. Other herbaceous plants included the non-native species cheatgrass and tall tumbled mustard (*Sysimbrium altissimum*). Bare ground made up 50 to 60 percent of the cover in Area C.

Refer to Attachment 1 for a photographic log of habitats at various locations throughout Area C.

Area D

Non-native forb covered nearly all of Area D (Figure 2; Table 2), which exhibited evidence of recent grazing and appeared to have been graded in the past. Tall tumbled mustard composed approximately 70 percent of the cover. Rubber rabbitbrush, green rabbitbrush, Russian thistle (*Salsola kali*), and cheatgrass also were present, in smaller amounts. Bare ground made up 15 percent of the cover. A small portion of the northeast corner of Area D was agricultural land (i.e., edge of adjacent irrigated crop circle).

Refer to Attachment 1 for a photographic log of habitats at various locations throughout Area D.

Area E

The majority of Area E (68 percent) was covered by sagebrush shrubland, with big sagebrush composing about 15 percent of the cover, and mature plants typically standing 3 to 4 feet tall (Figure 2; Table 2). Defoliation of some big sagebrush was evident, possibly due to grazing, as the parcel housed several horses. Green rabbitbrush composed about 15 percent of Area E. Cheatgrass dominated the herbaceous stratum and the bare ground was about 35 percent cover. The northeast quadrant of Area E was non-sagebrush shrubland that appeared to have been mowed and/or graded in the past. Green rabbitbrush composed 15 percent of the cover in this habitat, and herbaceous species included cheatgrass, clasping pepperweed, and tall tumbled mustard. An area with sand dune habitat composed a relatively small portion (3.8 percent) in the northwest part of Area E.

Refer to Attachment 1 for a photographic log of habitats at various locations throughout Area E.

Gen-tie Transmission Line Corridors

The corridors (each 60 feet wide) associated with the five gen-tie transmission lines are generally sited along the edges of crop circles, roads, and Facility Areas A-E (e.g., gen-tie transmission line 2 runs along the boundaries of Area B and Area E). As such, the habitat types within the gen-tie transmission line corridors commonly include agricultural lands and developed lands in addition to habitat types occupying the interstitial areas between irrigated crop circles. Refer to Figure 2 and Table 3 for the habitat types traversed by each gen-tie transmission line.

Table 3. Habitat Types within Gen-tie Transmission Lines

Gen-tie Number	Habitat Type Acreage ^{1,2}							Total Acres
	Agricultural Lands	Developed	Sagebrush Shrubland	Non-sagebrush Shrubland	Non-Native Grassland	Non-Native Forb	Sand Dune	
1	6.13	3.43	1.30	0.00	0.00	0.07	0.00	10.93
2³	2.89	0.00	3.97	1.25	0.00	0.00	0.00	8.11
3³	6.24	3.57	2.56	1.80	0.00	0.07	0.48	14.72
4	4.51	3.97	2.10	3.87	3.95	0.00	0.00	18.40
5	5.63	3.77	2.75	0.00	2.05	0.45	0.00	14.65

Notes:

¹ Corridors for all gen-tie transmission lines are 60 feet wide.

² Acreages exclude portions of the gen-tie transmission lines that lie within the main Facility parcels (Areas A-E); e.g., the portion of Gen-tie transmission line 2 that lies within Area B is not included.

³ Gen-tie transmission lines 1 and 3 overlap near their western terminuses. The overlapping acreage for both options is included in this table.

Half-mile Buffer beyond the Site Boundary

Lands in the portion of the analysis area up to 0.5 miles beyond the site boundary consisted primarily of agricultural lands (approximately 61 percent of land cover), including irrigated alfalfa fields (crop circles), pastures, and disturbed interstitial spaces between crop circles. However, a substantial amount of sagebrush shrubland was also present (approximately 28.5 percent of land cover), as well as smaller amounts of other habitat types. Developed areas in the 0.5-mile buffer consisted primarily of farm residences, barns, outbuildings, and paved and unpaved roads. Refer to Figure 2 and Table 4 for the habitat types outside the site boundary.

Table 4. Habitat Types in the Analysis Area but Outside the Site Boundary

Habitat Type	Acres Outside the Site Boundary (Percentage of Total Land Cover Outside of the Site Boundary)¹
Agricultural Land	7,957.29 (60.9%)
Sagebrush Shrubland	3,721.95 (28.5%)
Non-sagebrush Shrubland	378.49 (2.9%)
Developed ²	347.30 (2.7%)
Non-Native Grassland	294.55 (2.3%)
Sand Dune	148.26 (1.1%)
Juniper Woodland	136.59 (1.0%)
Non-Native Forb	81.18 (0.6%)
Playa	3.09 (<0.1%)
Total Acres:	13,068.69

Notes:

¹ Percentages represent the portion of land cover for each habitat within the portion of the analysis area in the 0.5-mile buffer beyond the site boundary.

² Does not include paved or unpaved roads.

3.2 Raptor Nest Survey

E & E documented 13 raptor nests in the analysis area, including two active red-tailed hawk (*Buteo jamaicensis*), one Swainson's hawk, one ferruginous hawk, one common raven (*Corvus corax*), one burrowing owl burrow, and seven inactive stick nests. Three nests, including an active red-tailed hawk nest, were located on 500 kV transmission line towers within Area B. Area A contained three active and four inactive nests. Five of the nests within Area A occurred in western junipers, including an active Swainson's hawk nest. The remaining two nests included one red-tailed hawk nest on an artificial nesting platform adjacent to an irrigated crop circle along the western boundary, and one common raven nest in a power pole along the north boundary. Common ravens are not raptors, but E & E recorded the nest because this species uses similar sized nests and nest substrates to some raptor species, and nests used by ravens may be used by raptors in other years (Sullivan et al. 2011). E & E observed two additional nests near Area A, but outside the site boundary: one inactive raptor nest north of Area A and one active ferruginous hawk nest in a western juniper approximately 75 feet east of Area A. Finally, E & E documented a pair of burrowing owls occupying a burrow less than 100 feet south of Area C, which E & E presumed to be an active nest site. Refer to Figure 3 for locations of raptor nests and Table 5 for additional nest-specific information.

Table 5. Raptor Nests Documented in the Analysis Area

Nest Number	Species	Status	Location	Description	Notes
01	Unknown	Inactive	Area B	Stick nest in fair condition	75 to 100 feet high in easternmost 500 kV transmission line tower.
02	Unknown	Inactive	Area B	Stick nest in poor condition	75 to 100 feet high in easternmost 500 kV transmission line tower.
03	Red-tailed Hawk	Active	Area B	Stick nest in good condition	Adult on nest 75 to 100 feet high in westernmost 500 kV transmission line tower.
04	Unknown	Inactive	North of Area A	Stick nest – unknown condition	Partially hidden near the top of a 20-foot western juniper less than 100 feet from a residence.
05	Red-tailed Hawk	Active	Area A	Stick nest in good condition	Atop a 30-foot artificial nest platform along a fence line. Two adults circling above nest area with alarm calls.
06	Unknown	Inactive	Area A	Stick nest in fair condition	15 feet high in 20-foot-tall western juniper. Possible old owl pellets at base of tree.
07	Swainson’s Hawk	Active	Area A	Stick nest in good condition	12 feet high in 20-foot-tall western juniper. Additional small inactive nest in tree, not likely a raptor. Adult sitting on nest.
08	Unknown	Inactive	Area A	Stick nest in fair condition	Near the top of a 20-foot-tall western juniper.
09	Common Raven	Active	Area A	Stick nest in good condition	In power pole at northern border of Area A. At least 1 feathered chick in nest.
10	Ferruginous Hawk	Active	East of Area A	Stick nest in good condition	12 feet high in western juniper just outside southeastern border of Area A. Two adults circling above with alarm calls.
11	Unknown	Inactive	Area A	Stick nest in fair condition	8 feet high in 15-foot-tall western juniper.

Table 5. Raptor Nests Documented in the Analysis Area

Nest Number	Species	Status	Location	Description	Notes
12	Unknown	Inactive	Area A	Dilapidated stick nest	10 feet high in 15-foot-tall western juniper.
13	Burrowing Owl	Active	Area C	Burrow with white wash on apron	Located on human-made mound adjacent to western end of quarry immediately south of Area C. Both adults present.

3.3 Pygmy Rabbit Survey

E & E documented three active pygmy rabbit burrow complexes and one recently vacated burrow in Area A but did not observe any pygmy rabbit activity in Area C. Figure 3 depicts the transects E & E surveyed and the mapped boundaries of each of the active pygmy rabbit complexes, plus the recently vacated burrow. Descriptions of the three active burrow complexes and the recently vacated burrow are as follows:

- **Burrow Complex 1** – This complex was located near the eastern boundary of Area A (Figure 3). E & E detected five burrows within this complex, each of which had fresh pygmy rabbit pellets at or near the burrow entrances. Fewer than 25 pellets occurred at each of the burrows. The burrows were at the bases of mature big sagebrush shrubs ranging in height from about 3 to 6 feet tall. The big sagebrush shrubs that supported burrow entrances were grouped in dense clusters. Burrow Complex 1 is about 0.36 acres.
- **Burrow Complex 2** – This complex was located in the central portion of Area A (Figure 3). E & E detected 16 burrows within this complex, each of which had fresh pygmy rabbit pellets at or near the burrow entrances. Pellet density ranged from a few near some burrow entrances to hundreds near entrances and around surrounding shrubs. The burrows were at the bases mature big sagebrush shrubs ranging in height from 4 to 6 feet tall. The big sagebrush shrubs that supported burrow entrances were grouped together in dense clusters on raised mounds adjacent to flat sand dune habitat. Burrow Complex 2 is about 1.51 acres.
- **Burrow Complex 3** – This complex was located near the northern boundary of Area A (Figure 3). E & E detected more than 30 burrows within this complex, each of which had fresh pygmy rabbit pellets at or near the burrow entrances. Pellet density ranged from medium coverage to hundreds near burrow entrances and around surrounding shrubs. The entire complex lay on a sandy hill raised about 10 to 15 feet above the adjacent flat sand dune area. The burrows were at the bases mature big sagebrush shrubs ranging in height from 4 to 6 feet tall. The big sagebrush shrubs that supported burrow entrances were

grouped together in dense clusters about 6 to 10 feet in diameter on raised mounds. Burrow Complex 3 is about 8.96 acres.

- **Recently Vacated Burrow** – This burrow was located near the eastern boundary of Area A (Figure 3). E & E detected an isolated pygmy rabbit-sized burrow at the base of a 4-foot-tall big sagebrush shrub with a single old pellet near the entrance. E & E did not observe any other suitable burrow entrance or pellets in proximity to this burrow entrance.

As stated in Section 2.3, E & E ecologists also looked for white-tailed jackrabbits and burrowing owls during pygmy rabbit surveys. The ecologists observed black-tailed jackrabbits in high numbers within the site boundary during the March and June biological surveys, but did not detect any white-tailed jackrabbits. They presumed a low likelihood of detecting white-tailed jackrabbits within the site boundary, because this species is typically associated with bunchgrass grasslands and open fields in Oregon, which are habitats that are not present within the site boundary (OSU Libraries and Press and Institute for Natural Resources 2014; ODFW 2016b). The ecologists observed a pair of burrowing owls in Area C during the pygmy rabbit survey (refer to Section 3.2 for further details).

3.4 Incidental Wildlife Observations

E & E ecologists recorded 10 mammal species, one reptile species, and 35 bird species during the course of the 2018 habitat assessment, raptor nest survey, pygmy rabbit survey, and wetland and waterbody delineation (Table 6). They observed and recorded locations for five State Sensitive Species in the analysis area, including pygmy rabbit (three active burrow complexes; refer to Section 3.3); burrowing owl (one observation of two individuals); ferruginous hawk (six observations totaling eight individuals); long-billed curlew (one observation of one individual); and Swainson's hawk (two observations totaling three individuals). Two of the ferruginous hawks (one observation) were associated with nest 10, one of the Swainson's hawks was associated with nest 7, and the two burrowing owls were associated with nest 13 (refer to Table 5). The remaining ferruginous hawks and Swainson's hawks were either perched or soaring. The long-billed curlew was flying toward the northwest at low altitude and gave flight calls over a crop circle less than 50 feet south of Area B. Refer to Section 3.3 for details regarding pygmy rabbit observations. Refer to Figure 3 for specific locations of State Sensitive Species observations.

Table 6. Wildlife Species Documented in the Analysis Area

Common Name	Latin Name	Observation Location	Individual(s)	Sign
Mammals				
Black-tailed Jackrabbit	<i>Lepus californicus</i>	Area A, Area B, Area C	Yes	Scat
Coyote	<i>Canis latrans</i>	Area A, Area B, Area C, 0.5-mile Buffer ¹	Yes	Tracks, Scat
Elk	<i>Cervus canadensis</i>	Area A, Area C	No	Scat
Least Chipmunk	<i>Tamias minimus</i>	Area A, Area B	Yes	None
Mountain Cottontail	<i>Sylvilagus nuttallii</i>	Area A, Area B, Area C	Yes	Scat
Mule Deer	<i>Odocoileus hemionus</i>	Area A, Area B, Area C	Yes	Tracks, Scat
Ord's Kangaroo Rat	<i>Dipodomys ordii</i>	Area A	Yes	None
Pronghorn	<i>Antilocapra americana</i>	Area A, 0.5-mile Buffer ¹	Yes	Scat
Pygmy Rabbit ²	<i>Brachylagus idahoensis</i>	Area A	No	Scat, Burrows
Ground Squirrel Species ³	<i>Urocitellus</i> sp.	0.5-mile Buffer ¹	Yes	Burrows
Reptiles				
Sagebrush Lizard	<i>Sceloporus graciosus</i>	Area A	Yes	None
Birds				
American Kestrel	<i>Falco sparverius</i>	Area A	Yes	None
American Pipit	<i>Anthus rubescens</i>	Area A	Yes	None
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Area B, 0.5-mile Buffer ¹	Yes	None
Bank Swallow ⁴	<i>Riparia riparia</i>	Area C, 0.5-mile Buffer ¹	Yes	None
Black-billed Magpie	<i>Pica hudsonia</i>	Area A, 0.5-mile Buffer ¹	Yes	None
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	Area A, Area C	Yes	None
Brewer's Sparrow ⁴	<i>Spizella breweri</i>	Area A, Area C	Yes	None
Brown-headed Cowbird	<i>Molothrus ater</i>	Area C	Yes	None
Burrowing Owl ^{2,4}	<i>Athene cunicularia</i>	0.5-mile Buffer ¹	Yes	Burrow
California Quail	<i>Callipepla californica</i>	Area C, 0.5-mile Buffer ¹	Yes	None

Table 6. Wildlife Species Documented in the Analysis Area

Common Name	Latin Name	Observation Location	Individual(s)	Sign
Common Raven ⁴	<i>Corvus corax</i>	Area A, Area B, Area C, Area D, 0.5-mile Buffer ¹	Yes	None
European Starling	<i>Sturnus vulgaris</i>	Area A, 0.5-mile Buffer ¹	Yes	None
Ferruginous Hawk ^{2,4}	<i>Buteo regalis</i>	Area A, 0.5-mile Buffer ¹	Yes	None
Golden Eagle	<i>Aquila chrysaetos</i>	0.5-mile Buffer ¹	Yes	None
Gray Flycatcher	<i>Empidonax wrightii</i>	Area C	Yes	
Horned Lark	<i>Eremophila alpestris</i>	Area A, Area B, Area C, Area D, Area E, 0.5-mile Buffer ¹	Yes	None
House Sparrow	<i>Passer domesticus</i>	0.5-mile Buffer ¹	Yes	None
Killdeer	<i>Charadrius vociferus</i>	Area B	Yes	None
Loggerhead Shrike ⁴	<i>Lanius ludovicianus</i>	Area A	Yes	None
Long-billed Curlew ²	<i>Numenius americanus</i>	0.5-mile Buffer ¹	Yes	None
Mountain Bluebird	<i>Sialia currucoides</i>	Area A, Area B	Yes	None
Mourning Dove	<i>Zenaida macroura</i>	Area A	Yes	None
Northern Flicker	<i>Colaptes auratus</i>	Area A, Area B	Yes	None
Northern Harrier	<i>Circus hudsonius</i>	Area A	Yes	None
Prairie Falcon	<i>Falco mexicanus</i>	Area A, Area B, Area C	Yes	None
Red-tailed Hawk ⁴	<i>Buteo jamaicensis</i>	Area A, Area B, 0.5-mile Buffer ¹	Yes	None
Sagebrush Sparrow	<i>Artemisospiza nevadensis</i>	Area A	Yes	None
Sage Thrasher	<i>Oreoscoptes montanus</i>	Area A, Area C	Yes	None
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Area A, Area B	Yes	None
Say's Phoebe	<i>Sayornis saya</i>	Area A	Yes	None
Swainson's Hawk ^{2,4}	<i>Buteo swainsoni</i>	Area A, Area C	Yes	None
Tundra Swan ⁵	<i>Cygnus columbianus</i>	Area A	Yes	None
Turkey Vulture	<i>Cathartes aura</i>	Area A, Area C	Yes	None
Western Meadowlark	<i>Sturnella neglecta</i>	Area A, Area B, Area C, 0.5-mile Buffer ¹	Yes	None

Table 6. Wildlife Species Documented in the Analysis Area

Common Name	Latin Name	Observation Location	Individual(s)	Sign
Gull Species	<i>Larus sp.</i>	0.5-mile Buffer ¹	Yes	None

Notes:

¹ “0.5-mile Buffer” refers to portions of the analysis area up to 0.5 miles beyond the site boundary.

² State Sensitive Species.

³ E & E ecologists observed ground squirrels in crop circles from a distance and were not able to identify individuals to species. The analysis area is within the ranges of two species of ground squirrels, including Belding’s ground squirrel (*Uroditellus beldingi*) and Merriam’s ground squirrel (*Uroditellus canus*), both of which may occur in agricultural fields (OSU Libraries and Press and Institute for Natural Resources 2014; NatureServe 2017).

⁴ Evidence of breeding in analysis area.

⁵ E & E observed two flocks of Tundra Swans flying in a northerly direction over Area A in the early morning of March 21, 2018.

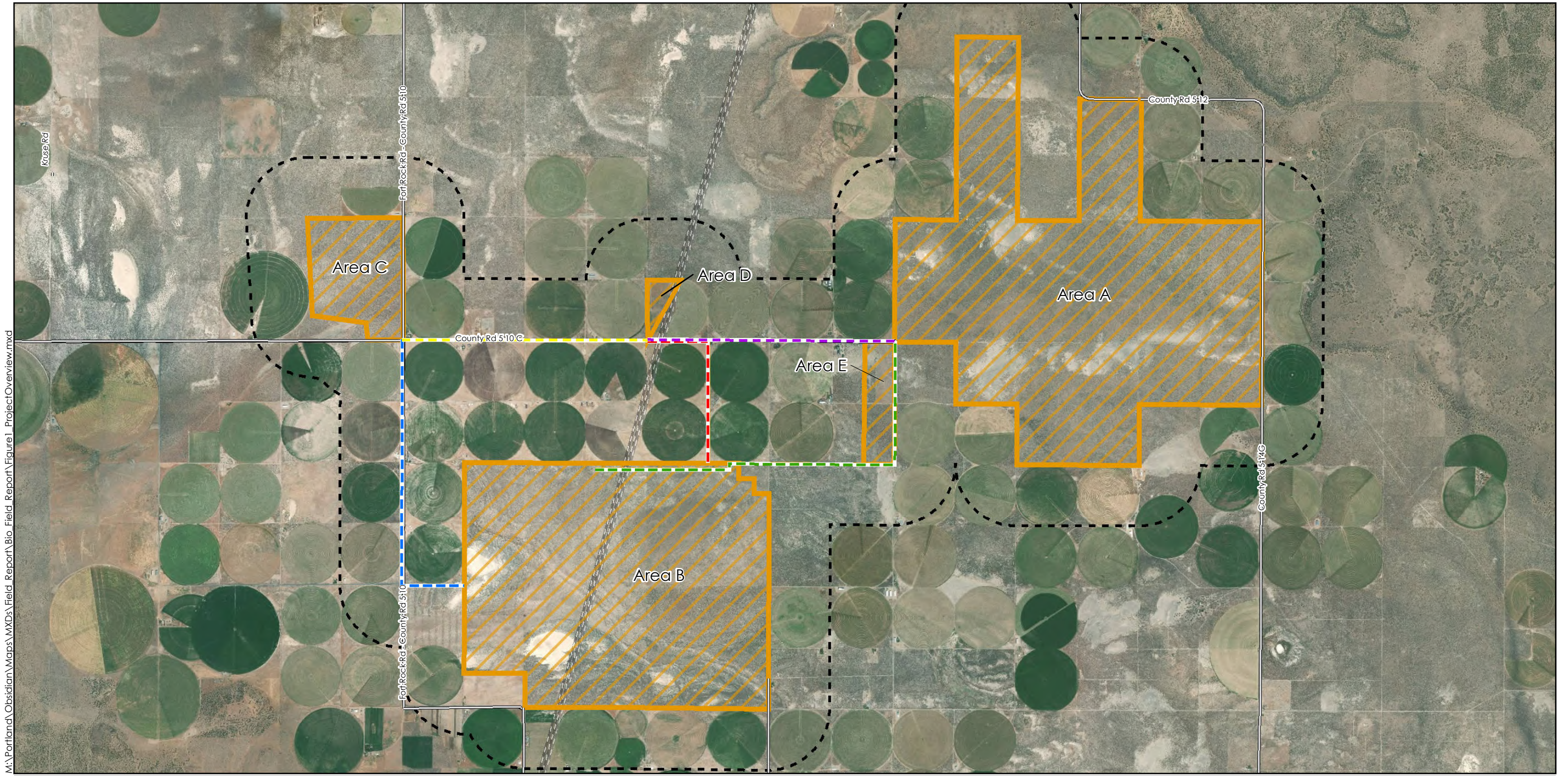
3.5 Noxious Weeds

E & E did not observe any designated noxious weeds within the analysis area.

4.0 REFERENCES

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- | | |
|---|---------------------------|
| Site Boundary | Transmission Lines |
| Facility | Gen-Tie 1 |
| Analysis Area Boundary | Gen-Tie 2 |
| Bonneville Power Administration (500kV) | Gen-Tie 3 |
| PGE Transmission Line (500kV) | Gen-Tie 4 |
| Highways/Roads | Gen-Tie 5 |

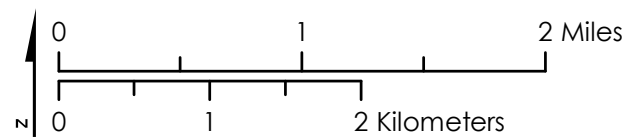


Figure 1
Facility Overview

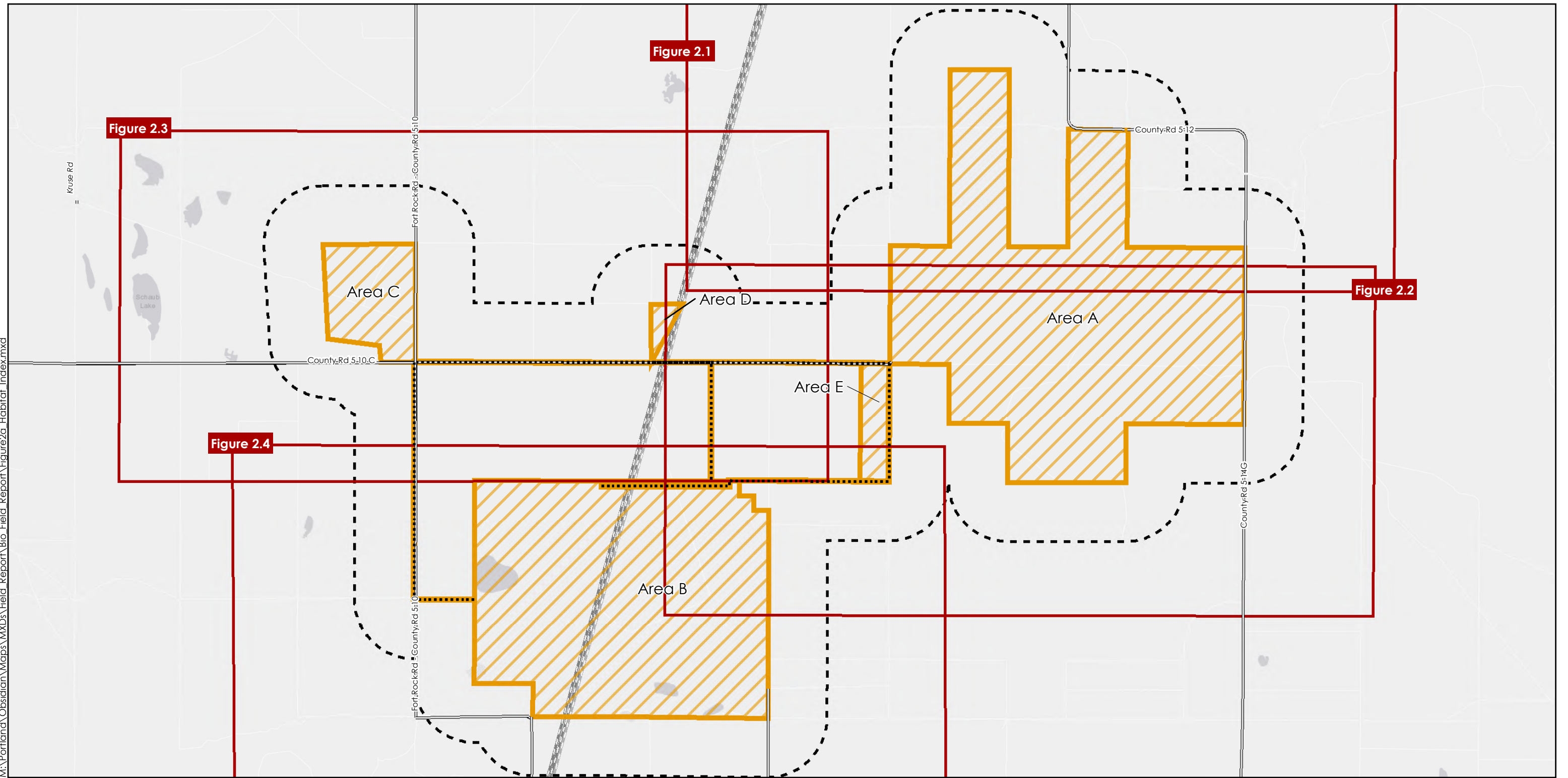
Obsidian Solar Center

August 2018

Obsidian Solar Center LLC

Sources: Esri 2018

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- Site Boundary
- Facility
- 0.5-mile Analysis Area
- Habitat Index
- Gen-tie Transmission Lines
- Bonneville Power Administration (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads

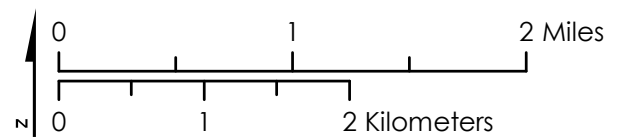


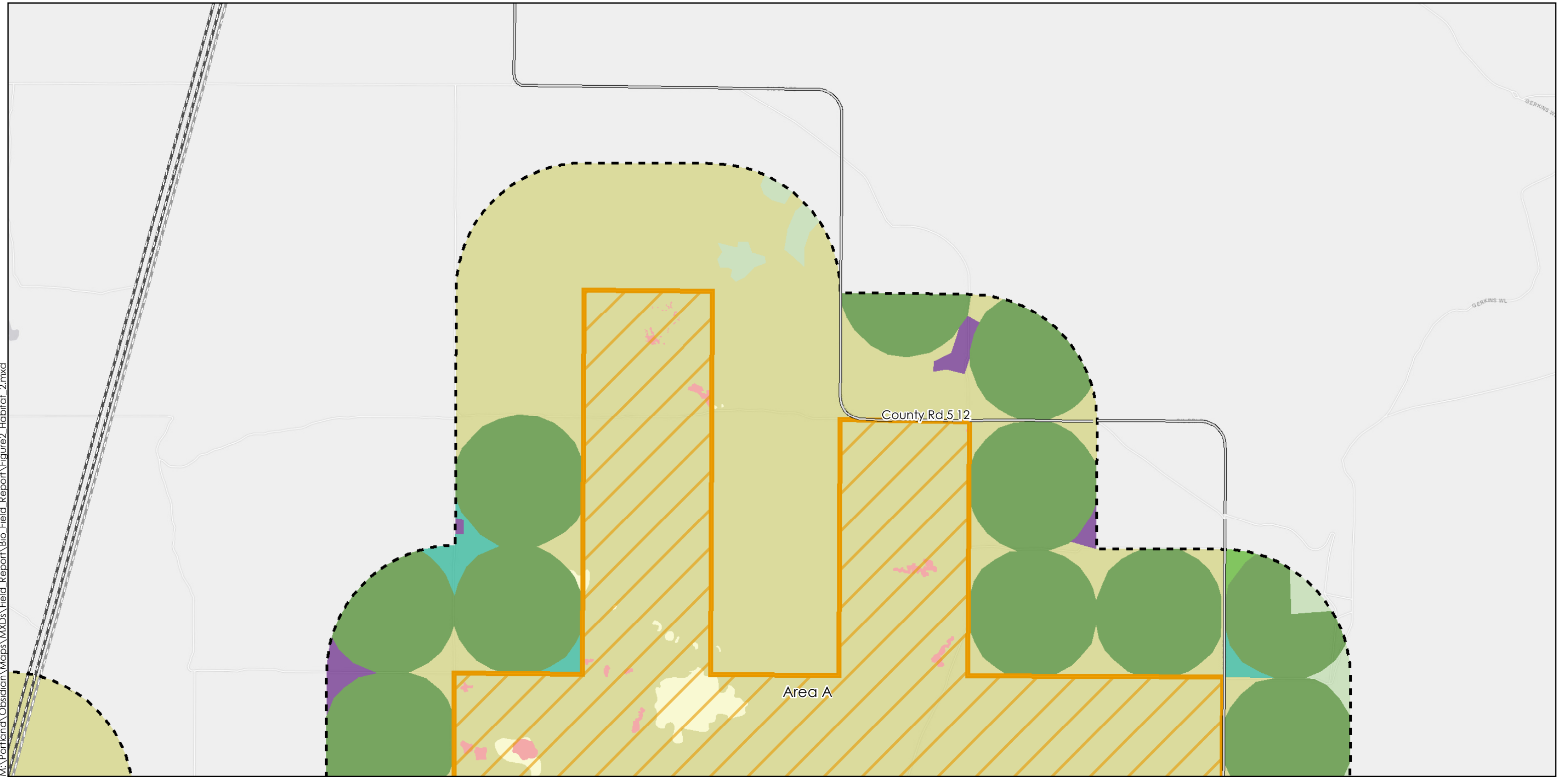
Figure 2
Habitat Types in the
Analysis Area

Obsidian Solar Center

August 2018

Obsidian Solar Center LLC

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- Site Boundary
- 0.5-mile Analysis Area
- Bonneville Power Administration (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads

- Habitat Types
- Playa
 - Sagebrush Shrubland
 - Non-sagebrush Shrubland
 - Sand Dune
 - Juniper Woodland
 - Non-native Grassland
 - Agricultural Lands
 - Developed

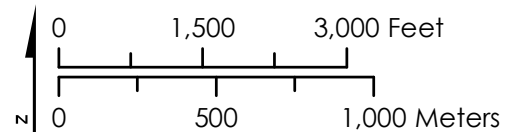
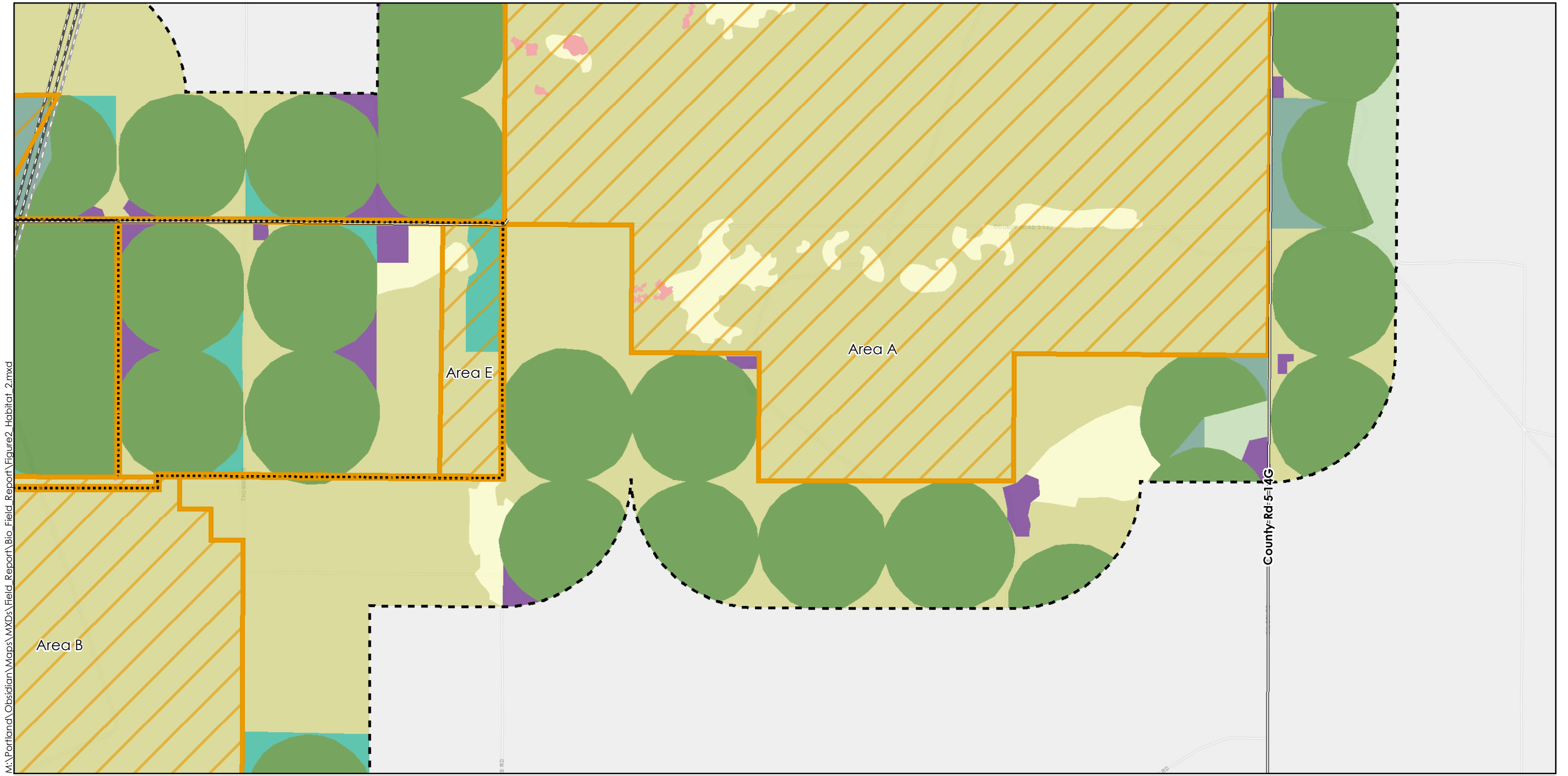


Figure 2.1
Habitat Types in the
Analysis Area

Obsidian Solar Center

August 2018

Obsidian Solar Center LLC



M:\Portland\Obsidian\Maps\MXD\Bio_Field_Report\Figure2_Habitat_2.mxd



- Site Boundary
- 0.5-mile Analysis Area
- Gen-tie Transmission Lines
- Bonneville Power Administration (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads

- Habitat Types
- Playa
 - Sagebrush Shrubland
 - Non-sagebrush Shrubland
 - Sand Dune
 - Juniper Woodland
 - Non-native Forb
 - Agricultural Lands
 - Developed

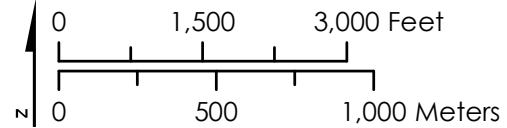
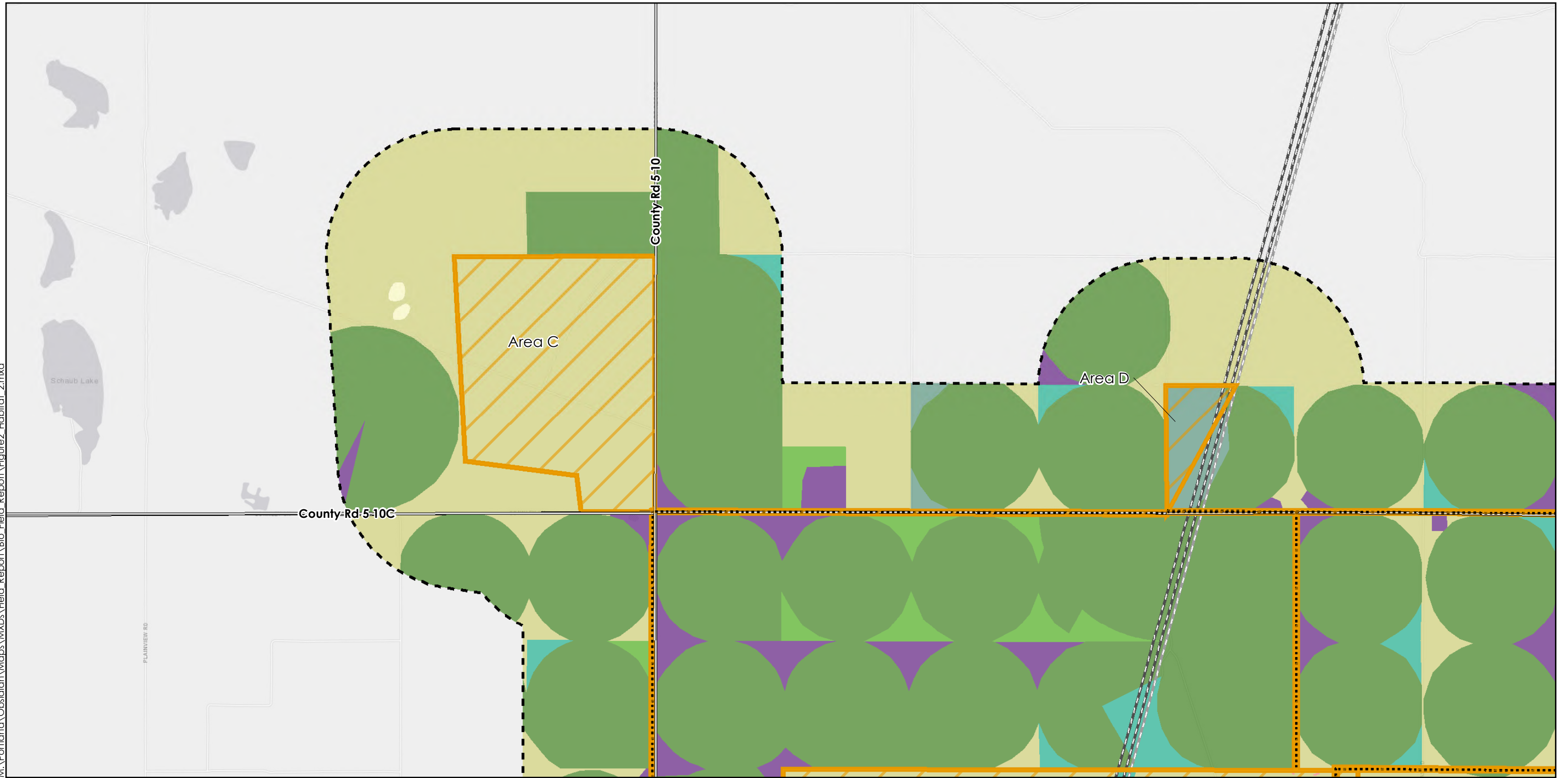


Figure 2.2
Habitat Types in the
Analysis Area

Obsidian Solar Center
August 2018
Obsidian Solar Center LLC

Sources: Esri 2018

M:\Portland\Obsidian\Maps\MXD\Field_Report\Bio_Field_Report\Figure2_Habitat_2.mxd



- Site Boundary
- 0.5-mile Analysis Area
- Gen-tie Transmission Lines
- Bonneville Power Administration (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads

- Habitat Types
- Playa
 - Sagebrush Shrubland
 - Non-sagebrush Shrubland
 - Sand Dune
 - Non-native Forb
 - Non-native Grassland
 - Agricultural Lands
 - Developed

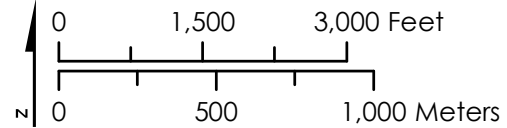
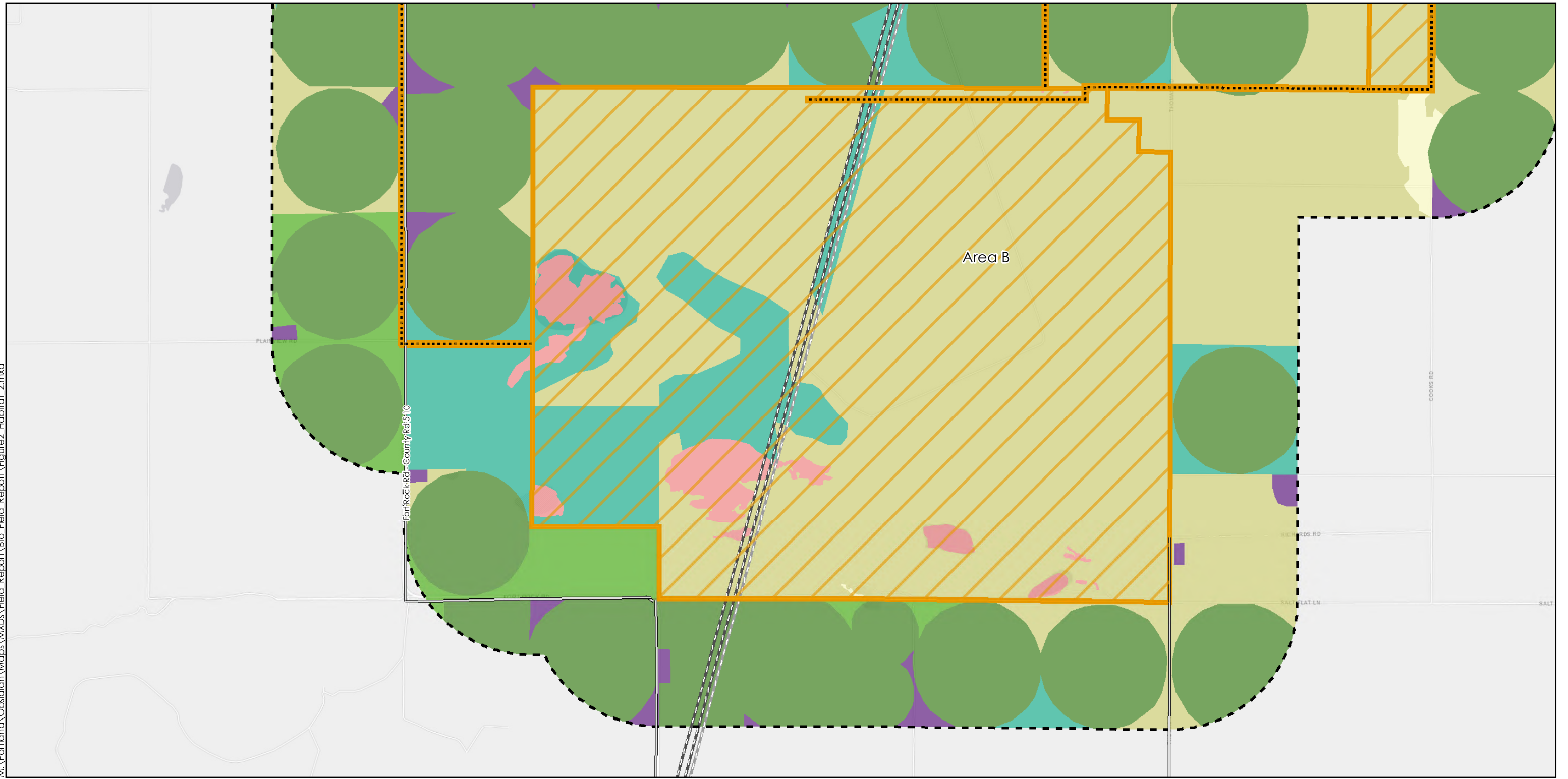


Figure 2.3
Habitat Types in the
Analysis Area

Obsidian Solar Center
August 2018
Obsidian Solar Center LLC

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- Site Boundary
 - 0.5-mile Analysis Area
 - Gen-tie Transmission Lines
 - Bonneville Power Administration (500kV)
 - PGE Transmission Line (500kV)
 - Highways/Roads
- Habitat Types
- Playa
 - Sagebrush Shrubland
 - Non-sagebrush Shrubland
 - Sand Dune
 - Non-native Grassland
 - Agricultural Lands
 - Developed

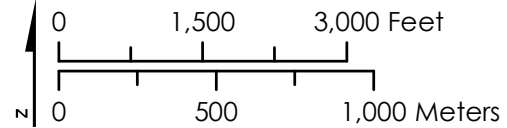
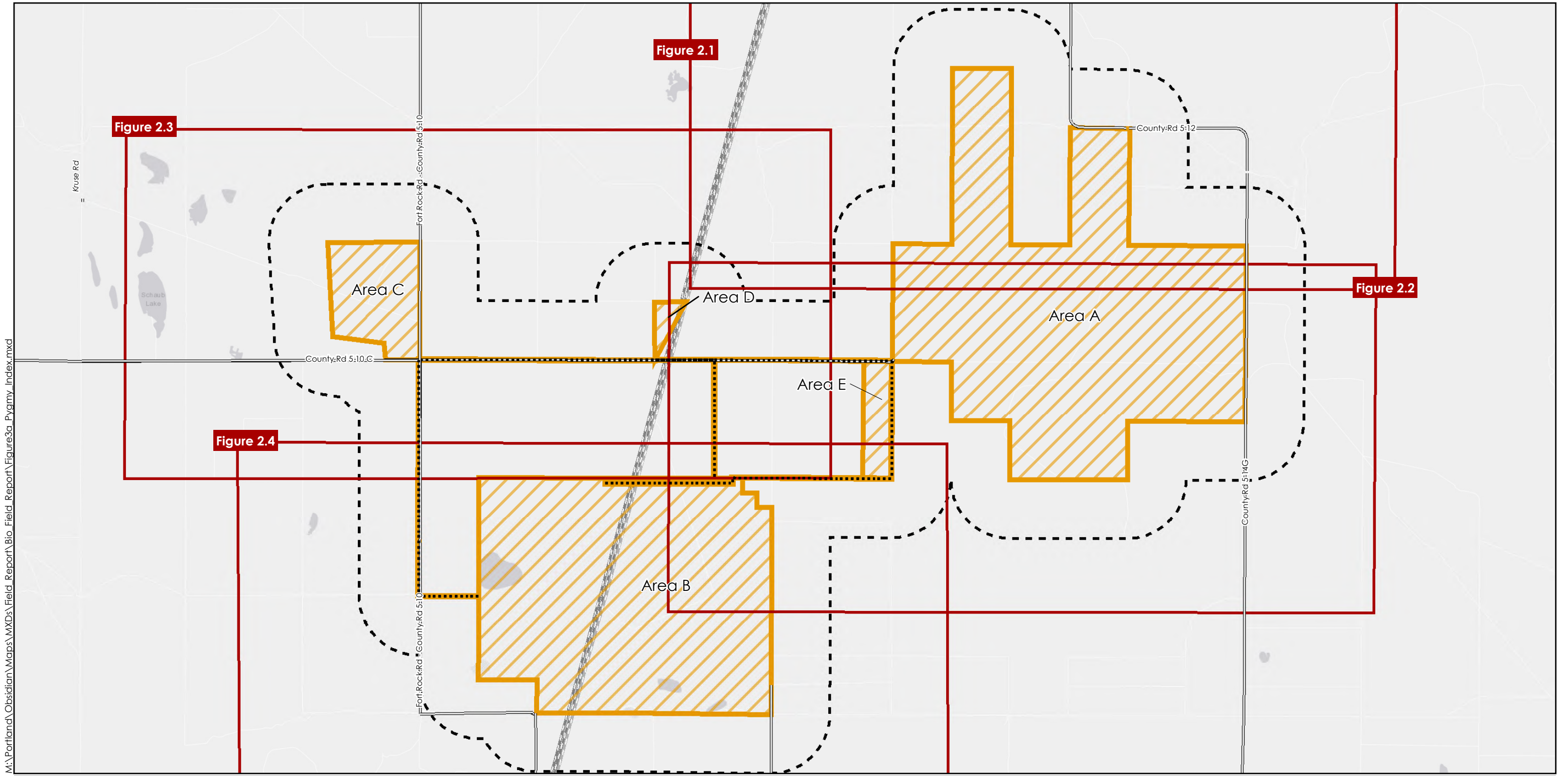


Figure 2.4
Habitat Types in the
Analysis Area

Obsidian Solar Center
August 2018
Obsidian Solar Center LLC



- Site Boundary
- Facility
- 0.5-mile Analysis Area
- Habitat Index
- Gen-tie Transmission Lines
- Bonneville Power Administration (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads

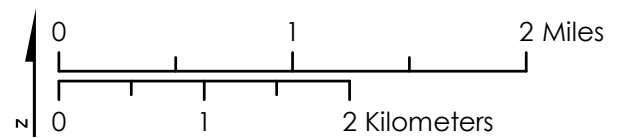


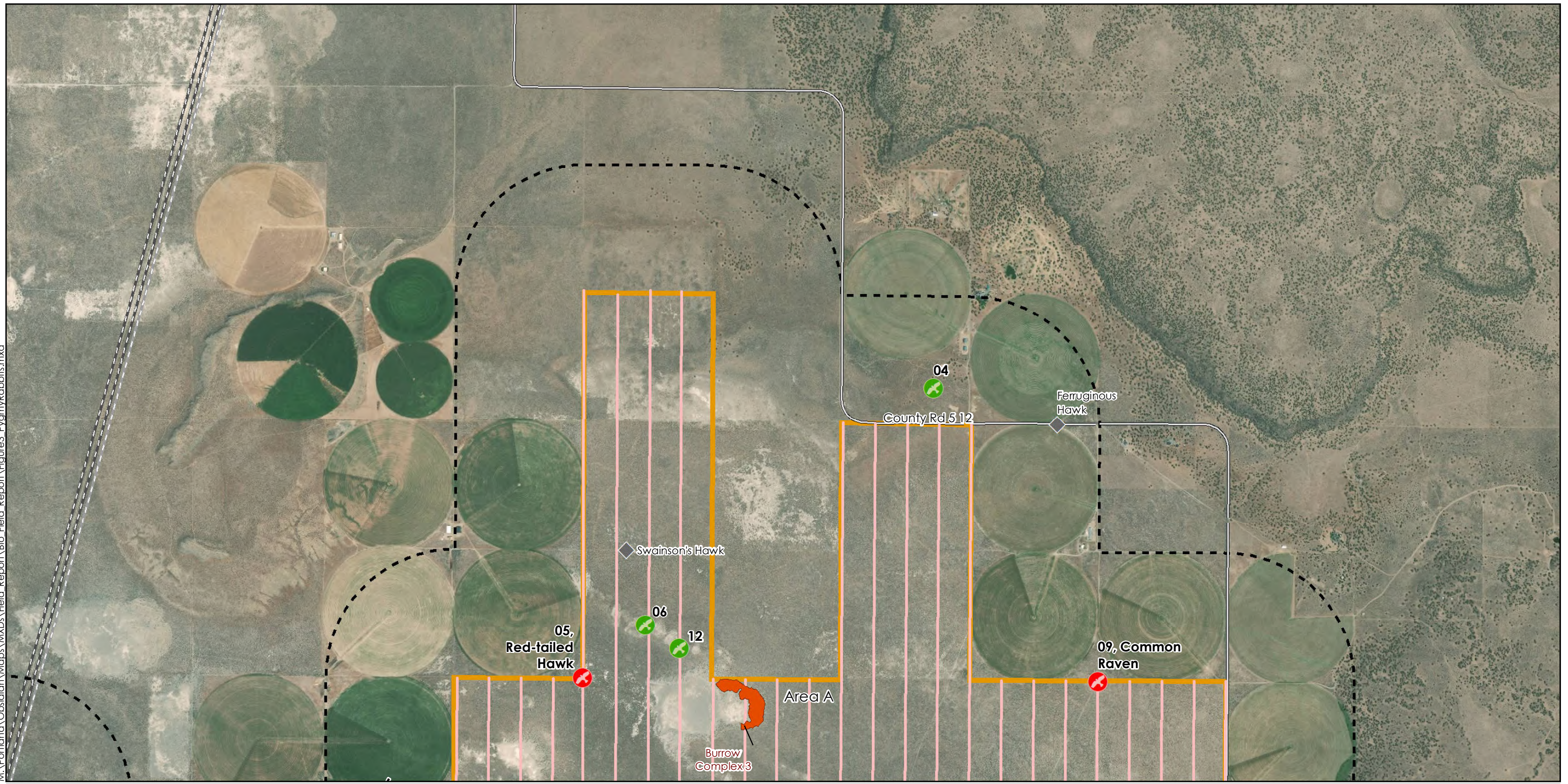
Figure 3
Pygmy Rabbits, Raptor Nests,
and State Sensitive Species

Obsidian Solar Center

August 2018

Obsidian Solar Center LLC

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- Site Boundary
- 0.5-mile Analysis Area
- Bonneville Power Administration (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads
- Pygmy Rabbit Complex
- Pygmy Rabbit Survey Transects
- ◆ Sensitive Species
- Raptor Nests
- ✕ Active
- ✕ Inactive

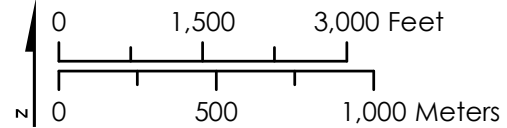
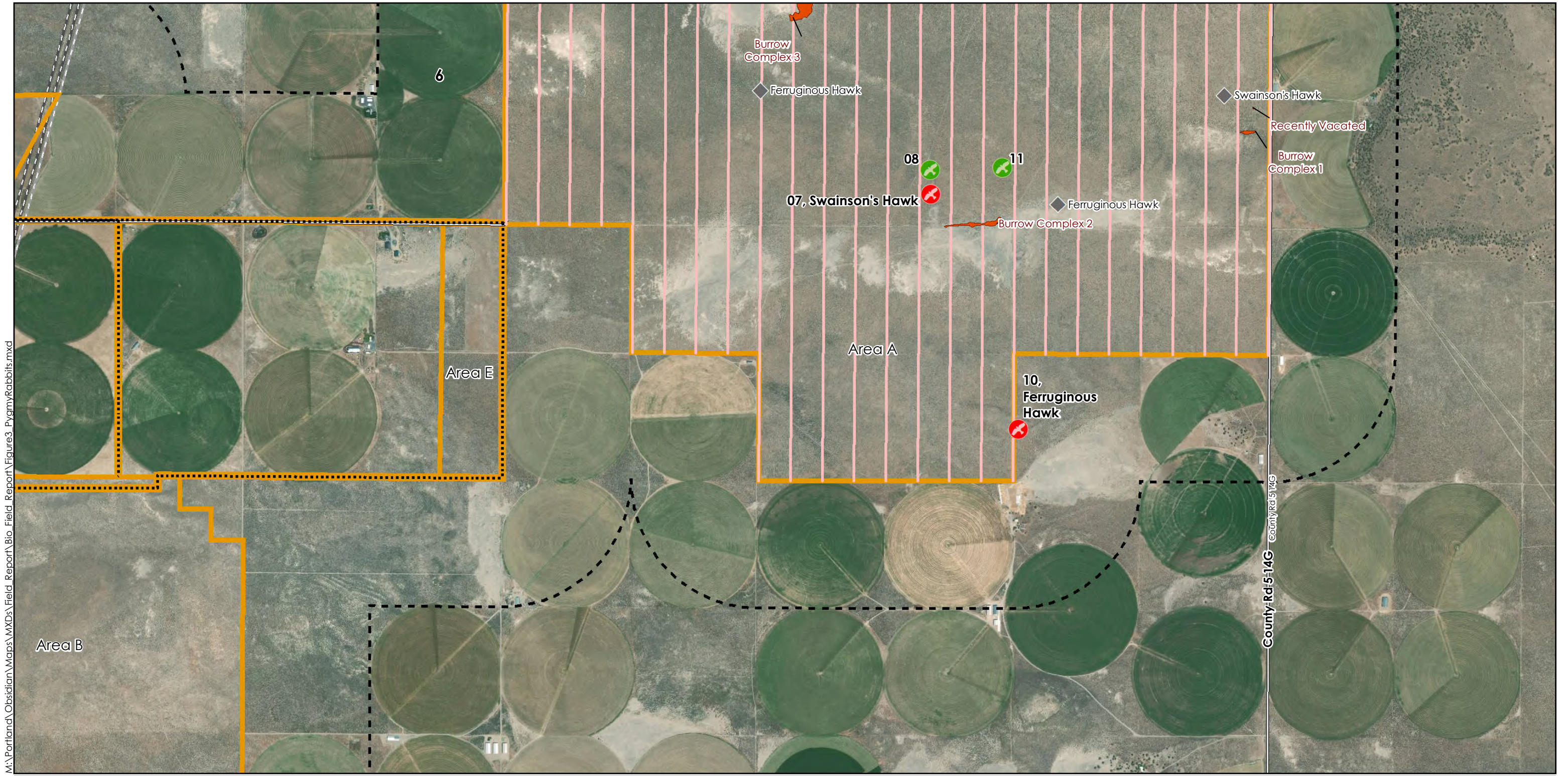


Figure 3.1
Pygmy Rabbits, Raptor Nests,
and State Sensitive Species

Obsidian Solar Center
August 2018
Obsidian Solar Center LLC

Sources: Esri 2018



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- Site Boundary
- 0.5-mile Analysis Area
- Gen-tie Transmission Lines
- Bonneville Power Administration (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads
- Pygmy Rabbit Complex
- Pygmy Rabbit Survey Transects
- Sensitive Species
- Raptor Nests**
- X Active
- X Inactive

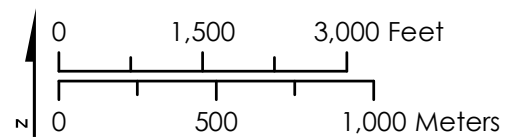
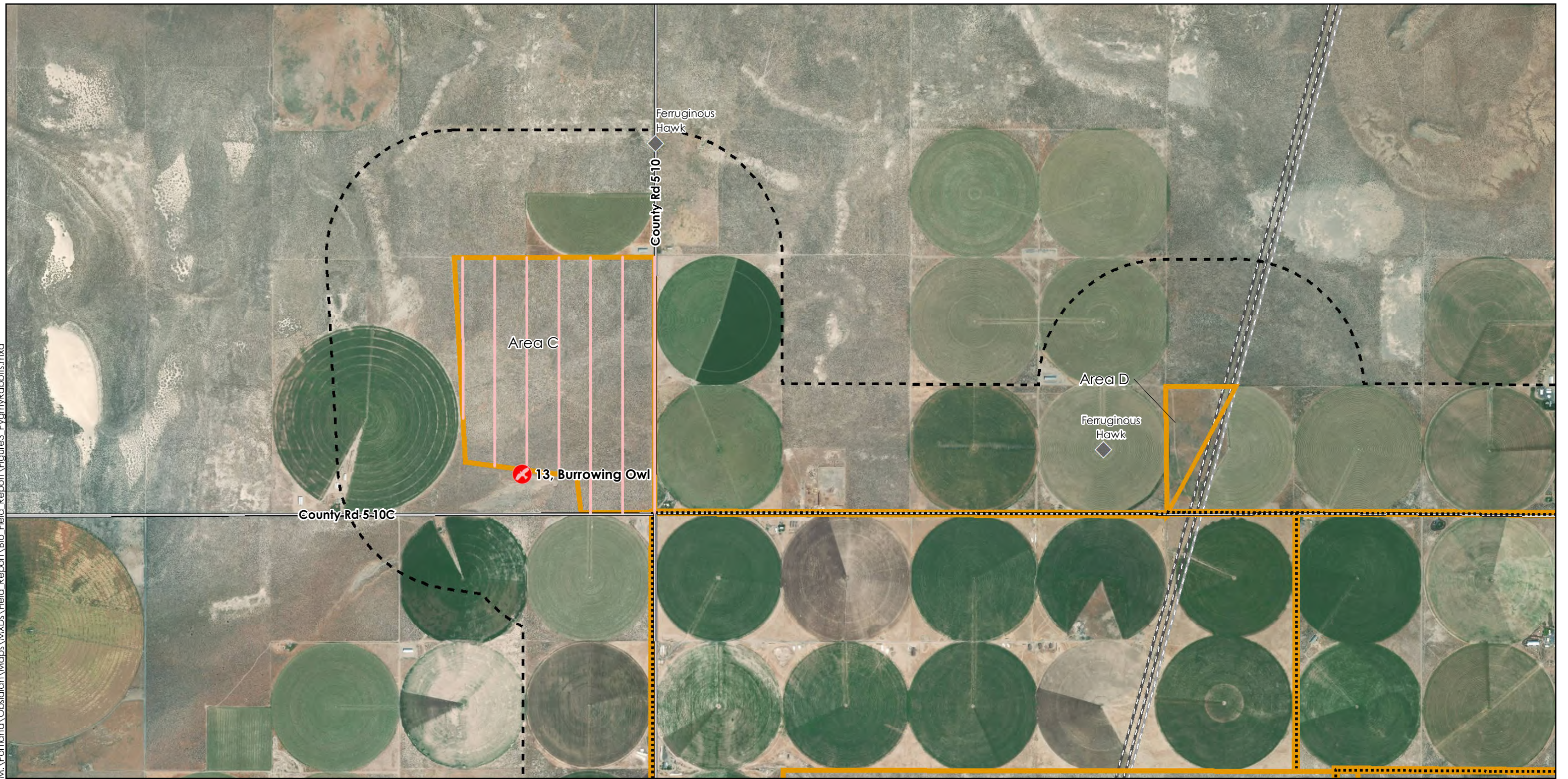


Figure 3.2
Pygmy Rabbits, Raptor Nests,
and State Sensitive Species

Obsidian Solar Center
August 2018
Obsidian Solar Center LLC

Sources: Esri 2018

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- Site Boundary
- 0.5-mile Analysis Area
- Gen-tie Transmission Lines
- Bonneville Power Administration (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads
- Pygmy Rabbit Survey Transects
- ◆ Sensitive Species
- Raptor Nests
- ⊗ Active

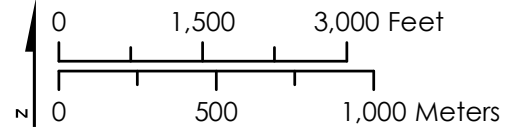
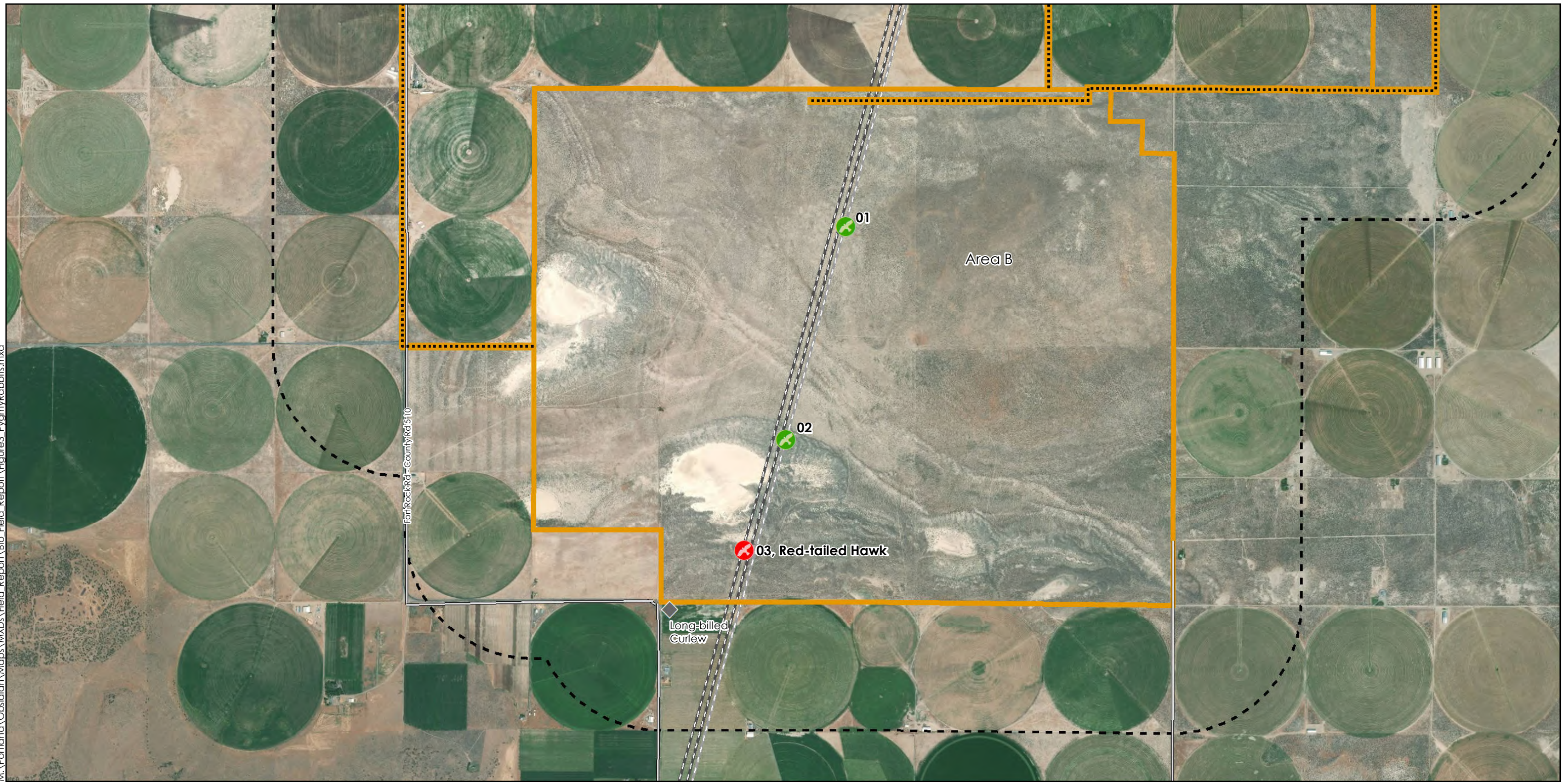


Figure 3.3
Pygmy Rabbits, Raptor Nests,
and State Sensitive Species

Obsidian Solar Center
August 2018
Obsidian Solar Center LLC

Sources: Esri 2018

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- Site Boundary
- 0.5-mile Analysis Area
- Gen-tie Transmission Lines
- Bonneville Power Administration (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads
- ◆ Sensitive Species
- Raptor Nests
- ⊗ Active
- ⊗ Inactive

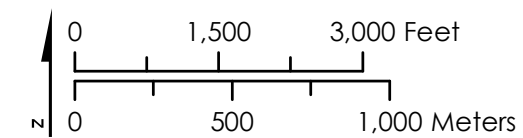


Figure 3.4
Pygmy Rabbits, Raptor Nests,
and State Sensitive Species

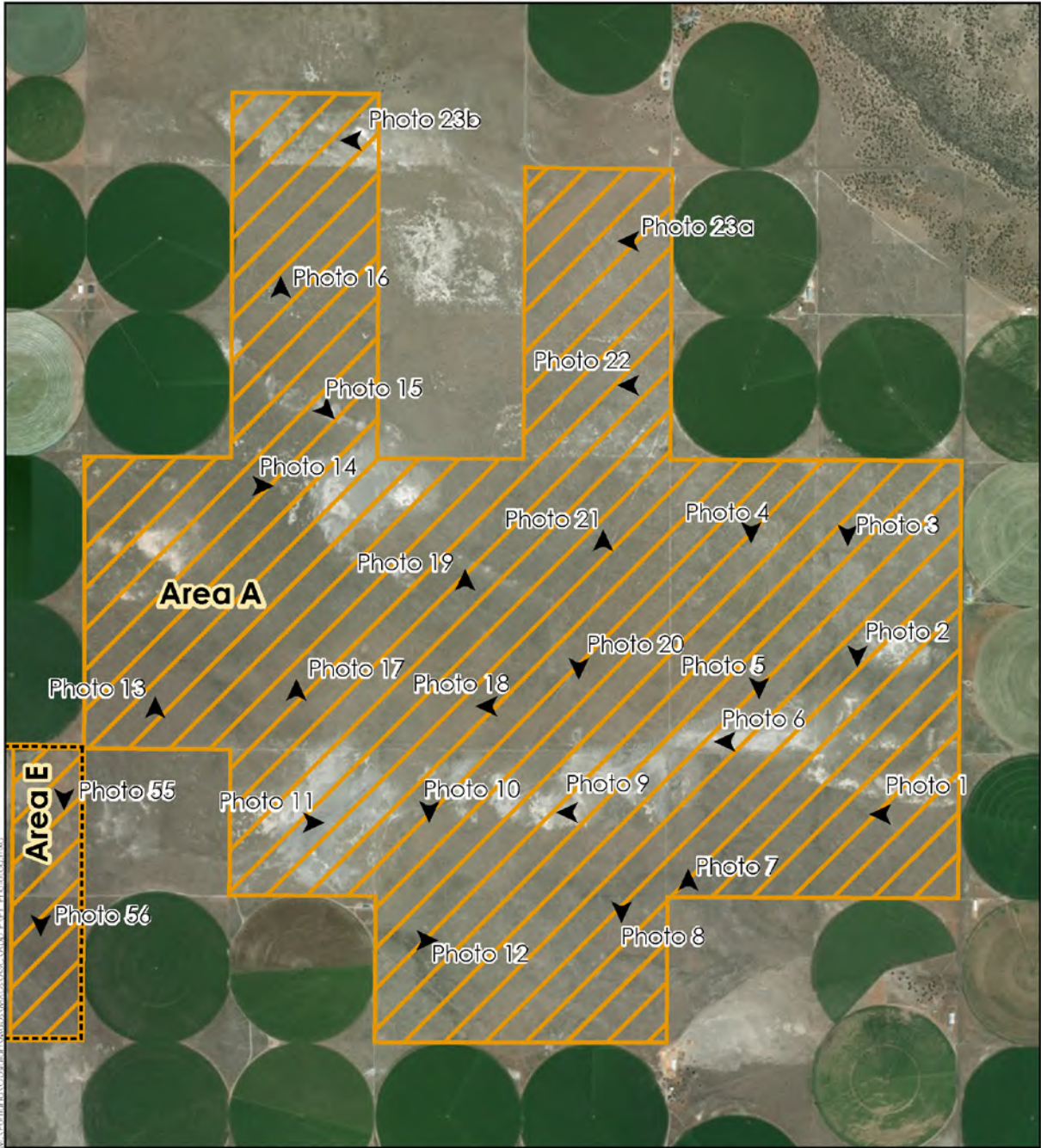
Obsidian Solar Center

August 2018

Obsidian Solar Center LLC

Attachment 1

Photographic Log



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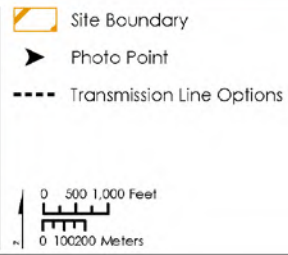
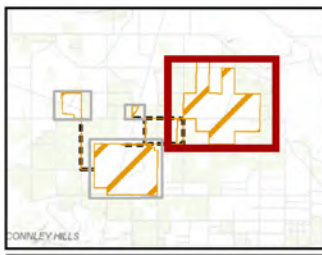


Photo Point Overview Area A and E
Fort Rock Solar Project

April 2018



Sources: ESRI 2018

Photo #: 1

Direction: W

Comment: Area A, sagebrush shrubland



Photo #: 2

Direction: S

Comment: Area A, sagebrush shrubland



Photo #: 3

Direction: S

Comment: Area A, sagebrush shrubland



Photo #: 4

Direction: S

Comment: Area A, sagebrush shrubland



Photo #: 5

Direction: S

Comment: Area A, sagebrush shrubland



Photo #: 6

Direction: W

Comment: Area A, sand dune



Photo #: 7

Direction: N

Comment: Area A, sagebrush shrubland



Photo #: 8

Direction: S

Comment: Area A, sagebrush shrubland



Photo #: 9	Direction: W	Comment: Area A, sand dune
------------	--------------	----------------------------



Photo #: 10	Direction: S	Comment: Area A, sagebrush shrubland
-------------	--------------	--------------------------------------



Photo #: 11	Direction: E	Comment: Area A, sand dune
-------------	--------------	----------------------------



Photo #: 12	Direction: E	Comment: Area A, sagebrush shrubland
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Photo #: 13

Direction: N

Comment: Area A, sagebrush shrubland



Photo #: 14

Direction: E

Comment: Area A, sagebrush shrubland



Photo #: 15

Direction: SE

Comment: Area A, sagebrush shrubland



Photo #: 16

Direction: N

Comment: Area A, sagebrush shrubland



Photo #: 17

Direction: N

Comment: Area A, sagebrush shrubland



Photo #: 18

Direction: W

Comment: Area A, sagebrush shrubland



Photo #: 19

Direction: N

Comment: Area A, sagebrush shrubland



Photo #: 20

Direction: S

Comment: Area A, sagebrush shrubland



Photo #: 21

Direction: N

Comment: Area A, sagebrush shrubland



Photo #: 22

Direction: W

Comment: Area A, sagebrush shrubland



Photo #: 23a

Direction: W

Comment: Area A, sagebrush shrubland



Photo #: 23b

Direction: W

Comment: Area A, sagebrush shrubland



Photo #: 55

Direction: S

Comment: Area E, non-sagebrush shrubland

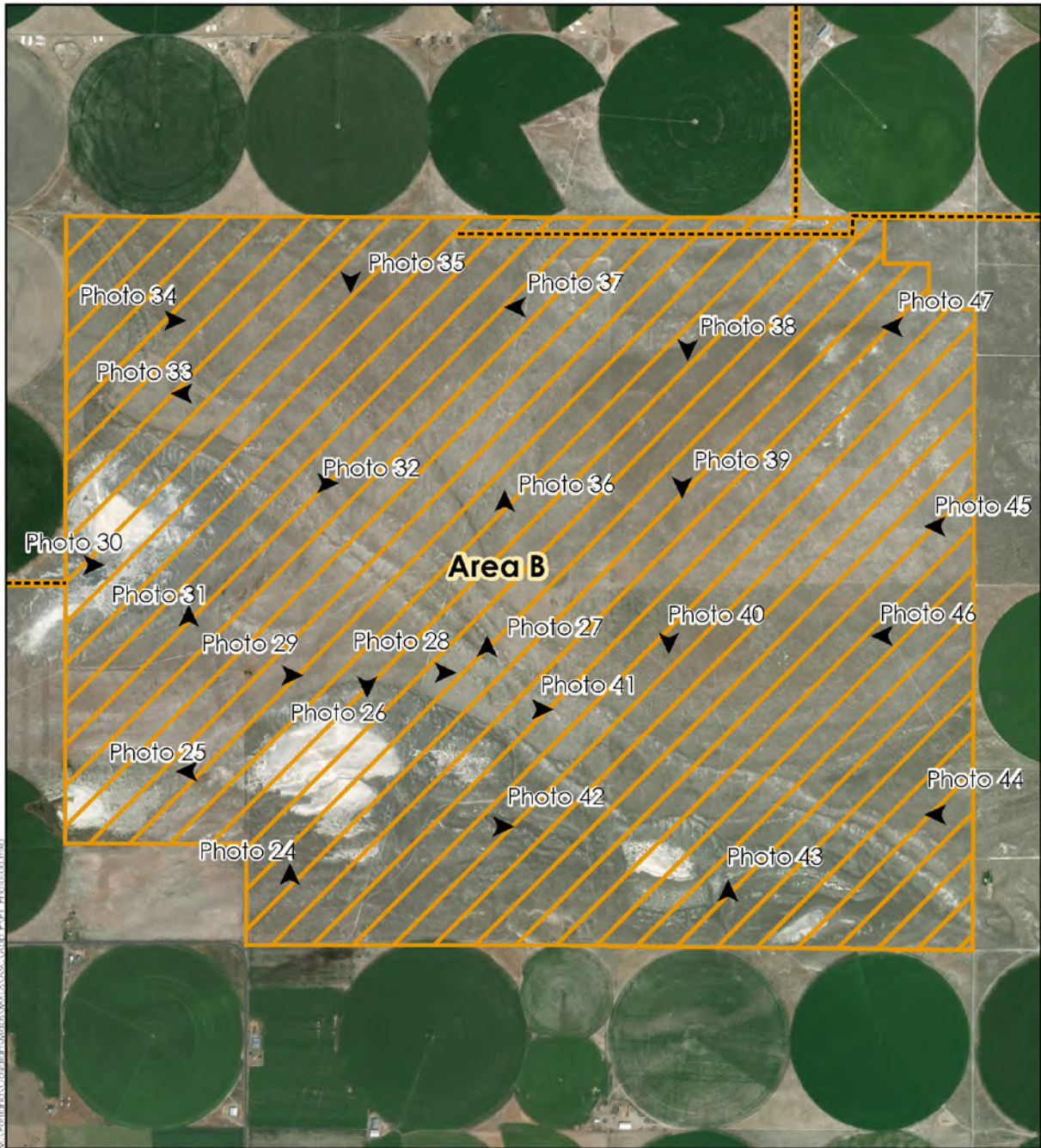


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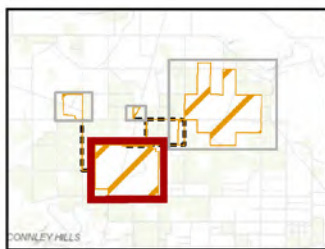
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Comment: Area E, sagebrush shrubland





Mr. Jonathan's Obsidian's Mapbox/arcgis.com/arcgis/PhotoPoints



- Site Boundary
- Photo Point
- Transmission Line Options

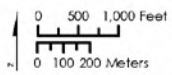


Photo Point Overview Area B
Fort Rock Solar Project

April 2018



Sources: ESRI 2018

Photo #: 24

Direction: N

Comment: Area B, sagebrush shrubland



Photo #: 25

Direction: W

Comment: Area B, non-sagebrush shrubland



Photo #: 26

Direction: S

Comment: Area B, non-sagebrush shrubland



Photo #: 27

Direction: N

Comment: Area B, sagebrush shrubland



Photo #: 28

Direction: E

Comment: Area B, non-sagebrush shrubland



Photo #: 29

Direction: E

Comment: Area B, non-sagebrush shrubland



Photo #: 30

Direction: E

Comment: Area B, non-sagebrush shrubland



Photo #: 31

Direction: N

Comment: Area B, sagebrush shrubland



Photo #: 32

Direction: E

Comment: Area B, sagebrush shrubland



Photo #: 33

Direction: W

Comment: Area B, sagebrush shrubland



Photo #: 34

Direction: E

Comment: Area B, sagebrush shrubland



Photo #: 35

Direction: S

Comment: Area B, sagebrush shrubland



Photo #: 36

Direction: N

Comment: Area B, sagebrush shrubland



Photo #: 37

Direction: W

Comment: Area B, sagebrush shrubland



Photo #: 38

Direction: S

Comment: Area B, sagebrush shrubland



Photo #: 39

Direction: S

Comment: Area B, sagebrush shrubland



Photo #: 40

Direction: S

Comment: Area B, sagebrush shrubland



Photo #: 41

Direction: E

Comment: Area B, sagebrush shrubland



Photo #: 42

Direction: E

Comment: Area B, sagebrush shrubland



Photo #: 43

Direction: N

Comment: Area B, sagebrush shrubland



Photo #: 44

Direction: W

Comment: Area B, sagebrush shrubland



Photo #: 45

Direction: W

Comment: Area B, sagebrush shrubland



Photo #: 46

Direction: W

Comment: Area B, sagebrush shrubland

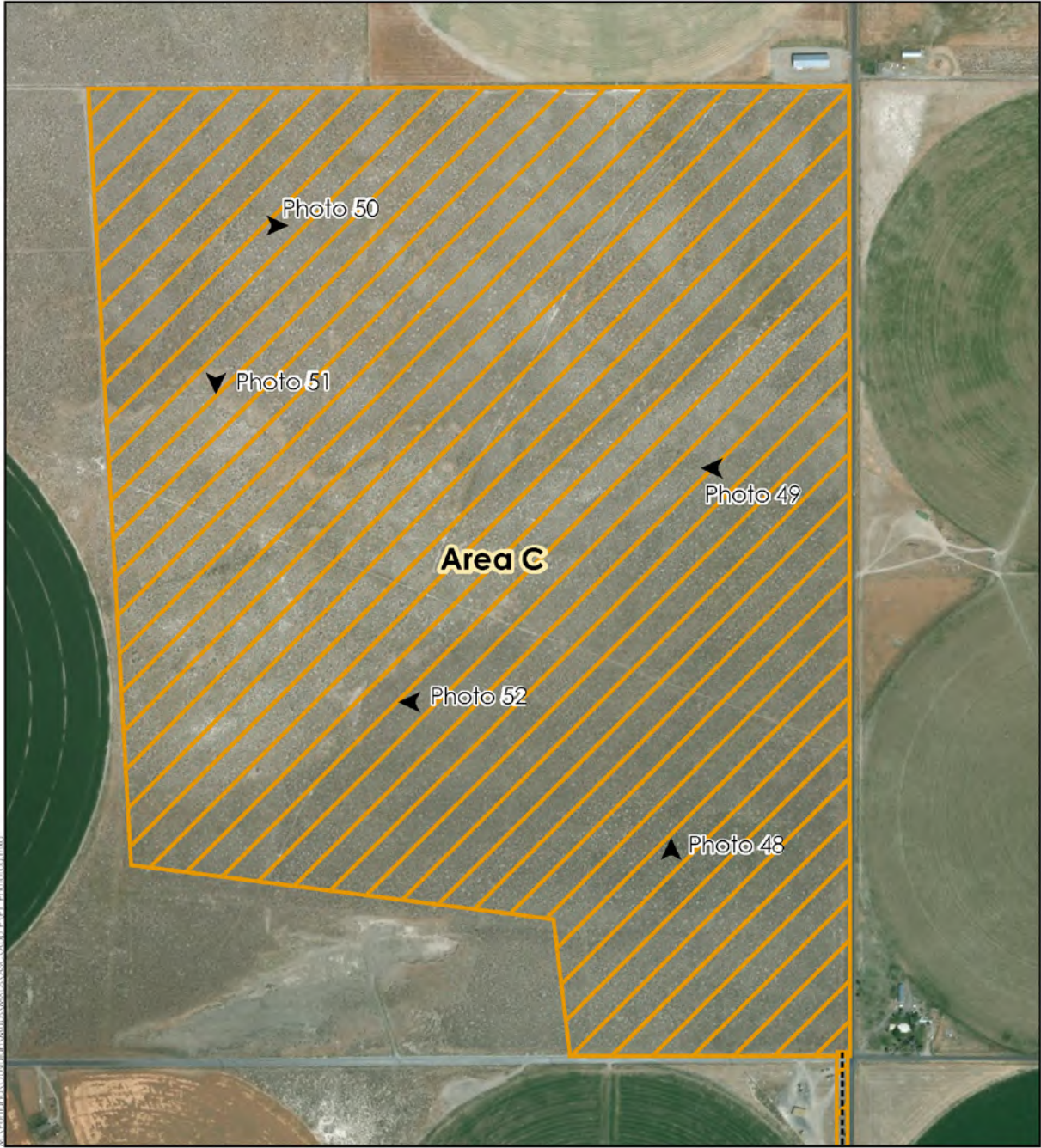


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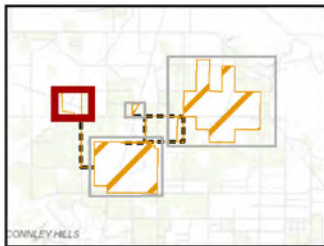
Direction: W

Comment: Area B, sagebrush shrubland





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- Site Boundary
- Photo Point
- Transmission Line Options

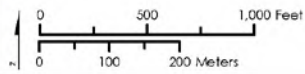


Photo Point Overview Area C
Fort Rock Solar Project

April 2018



Sources: ESRI 2018

Photo #: 48

Direction: N

Comment: Area C, sagebrush shrubland



Photo #: 49

Direction: W

Comment: Area C, sagebrush shrubland



Photo #: 50

Direction: E

Comment: Area C, sagebrush shrubland



Photo #: 51

Direction: S

Comment: Area C, sagebrush shrubland



Photo #: 52

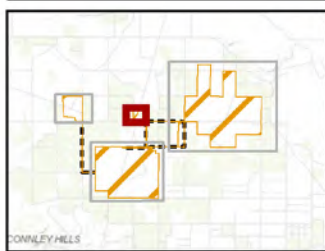
Direction: W




Comment: Area C, sagebrush shrubland





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-  Site Boundary
-  Photo Point
-  Transmission Line Options

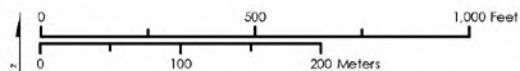


Photo Point Overview Area D
Fort Rock Solar Project

April 2018



Sources: ESRI 2018

Photo #: 53

Direction S:

Comment: Area D, non-native forb



Photo #: 54

Direction: N

Comment: Area D, non-native forb



Wildlife Habitat Mitigation and Monitoring Plan

Appendix P-2

Obsidian Solar Center

Wildlife Habitat Mitigation

and Monitoring Plan

October 2019

Obsidian Solar Center LLC

5 Centerpointe Drive, Suite 250
Lake Oswego, Oregon 97035

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Attachment 2	2018 Lake County Noxious Weed List
Attachment 3	CWMA Prevention Area Boundaries (2019)
Attachment 4	Oregon Department of Agriculture Noxious Weed Policy and Classification System (2019)
Attachment 5	CWMA Weed Prevention Areas

Acronyms and Abbreviations

ac	alternating current
Applicant	Obsidian Solar Center LLC
ASC	Application for Site Certificate
CWMA	Cooperative Weed Management Area
dc	direct current
EFSC or the Council	Energy Facility Siting Council
Facility	Obsidian Solar Center
gen-tie	generation tie
GPS	Global Positioning System
MW	megawatts
OAR	Oregon Administrative Rule
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
PV	photovoltaic
WHMMP	Wildlife Habitat Mitigation and Monitoring Plan
WLIP	Working Lands Improvement Program
WLIP Agreement	Working Lands Improvement Program Agreement
WLIP Area	Working Lands Improvement Program Area

1.0 INTRODUCTION

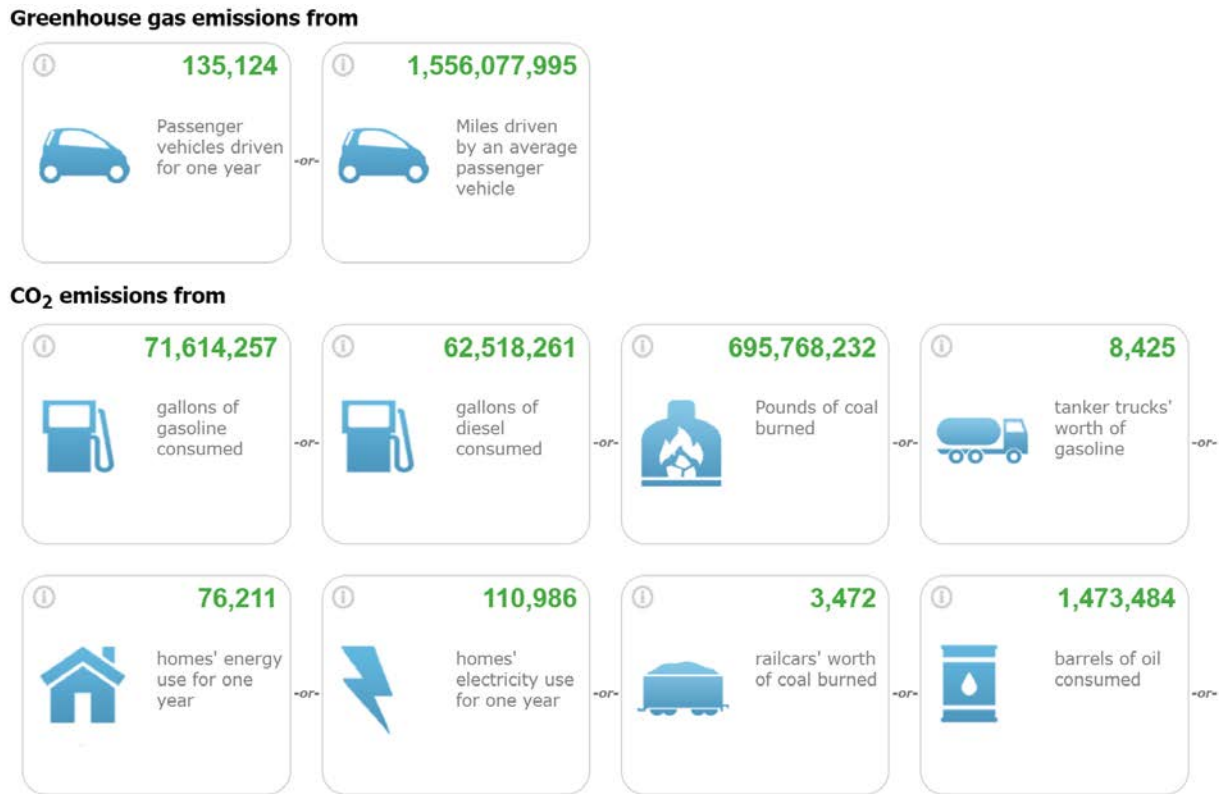
Obsidian Solar Center LLC (Applicant) is applying for a Site Certificate from the Energy Facility Siting Council (EFSC or the Council) to construct and operate the Obsidian Solar Center (Facility), a photovoltaic solar generating facility that will generate up to 400 megawatts (MW) alternating current (ac) and may also include battery storage technology. The Facility will consist of up to 3,921 acres of primarily private land southeast of Fort Rock, Oregon (640 acres of the total is leased by Applicant from the Department of State Lands) and provide a nominal generating capacity of up to 400 MW ac (up to 680 MW direct current [dc]). The Facility will have an average generating capacity of up to 200 MW ac. The proposed Facility site boundary is shown on Figure B-1 in Exhibit B of the Application for Site Certificate (ASC).

Applicant analyzed potential wildlife and habitat impacts within the Facility site and adjacent lands. See Exhibit P, Application for Site Certificate for Obsidian Solar Center. Based on its analysis and consultations with the Oregon Department of Fish and Wildlife (ODFW), Applicant developed this Wildlife Habitat Mitigation and Monitoring Plan (WHMMP) to avoid, reduce, or mitigate impacts on wildlife resulting from the removal or modification of habitat during construction and operation of the Facility. The measures described in this WHMMP will be scaled to the actual number of acres occupied by the Facility.

Applicant acknowledges that the Facility will permanently modify habitat within the site boundary. Habitat loss and degradation are among the greatest threats to many wildlife species around the world. Climate change also is an increasing threat to wildlife and their habitats, including to species of interest for the Facility. Research has indicated that elk (*Cervus canadensis*) (Wang et al. 2002; Sala 2006) and sagebrush habitat (Poore et al. 2009; Bradley 2010; Schrag et al. 2011) are negatively affected by climate change. Exhibit P, Section P.7.2, of the ASC identifies several State Sensitive bird species in the Facility's analysis area that are Climate Threatened or Climate Endangered, according to the National Audubon Society (2015). The Facility is a renewable energy project that will contribute to stemming climate change by reducing carbon dioxide emissions. Although the Facility's reduction in carbon emissions may not completely counteract the loss or modification of habitat within the site boundary, it does provide benefit to wildlife and their habitats.

The purpose of the Facility is to generate renewable, clean energy that will replace, in part, energy currently generated by Northwest coal plants scheduled for closure. The Facility will operate approximately 30 percent of the time on a full-time equivalency basis. It is expected to produce approximately 900,000 megawatt hours per year of clean, renewable energy, which would reduce the carbon dioxide emissions equivalent to burning almost 3,500 railcars filled with coal each year (EPA 2018; Figure 1). Clean energy improvements of this kind are crucial to conserving wildlife and their habitats.

Figure 1. The Equivalent of Greenhouse and Carbon Dioxide Emissions Reduced Annually by the Facility, as Proposed



Source: EPA 2018

2.0 OREGON DEPARTMENT OF FISH AND WILDLIFE HABITAT MITIGATION POLICY

The EFSC Fish and Wildlife Habitat Standard at Oregon Administrative Rule (OAR) 345-022-0060 states:

For the Council to issue a site certificate, it must find that the design, construction, and operation of the facility, taking into account mitigation, are consistent with:

(1) 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

(2) For energy facilities that impact sage-grouse habitat, the sage-grouse specific habitat mitigation requirements of the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-415-0025(7) and OAR 635-140-0000 through -0025 in effect as of February 24, 2017.

The Facility does not lie within greater sage-grouse (*Centrocercus urophasianus*) Core Area or Low Density area habitats; therefore, subsection (2) of the standard described in OAR 345-022-0060 does not apply to the project.

The ODFW Habitat Mitigation Policy defines habitats based on type, quality, availability, and usefulness/importance to wildlife, and establishes mitigation requirements and implementation standards for each. The Facility is entirely within an area designated and mapped by ODFW staff as elk winter range and is partially within the area designated and mapped by ODFW staff as mule deer (*Odocoileus hemionus*) winter range. ODFW staff designates these habitats as Habitat Category 2 (essential and limited).

According to OAR 635-415-000252:

(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 for 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 predevelopment 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 measure. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action."

For unavoidable temporary and permanent impacts resulting from development of the Facility, Applicant will use in-kind, in-proximity habitat mitigation measures to effectively offset impacts in consultation with ODFW and consistent with the ODFW Habitat Mitigation Policy (OAR 635-415-0005).

3.0 DESCRIPTION OF IMPACTS ADDRESSED BY THE PLAN

Applicant considered avoidance of sensitive resources a priority throughout the siting process. Initially, Applicant identified about 7,000 acres for potential development of the Facility, but Applicant eliminated approximately 3,000 acres from consideration to avoid sensitive biological and cultural resources. After considering field-collected data and through consultation with ODFW, Applicant further reduced the area within the proposed site boundary to minimize impacts on sensitive cultural and biological resources, specifically active pygmy rabbit (*Brachylagus idahoensis*) burrow complexes.

Facility impacts on wildlife habitats will be primarily associated with installation of permanent structures and with mowing or crushing of existing vegetation within the site boundary. Most of the Facility area will undergo passive or active restoration; however, the habitat in these areas is not likely to return to pre-construction conditions during the life of the Facility. The Facility site is currently dominated by mature sagebrush shrublands, which require decades to develop and can exhibit high restoration failure rates (Kitchen and McArthur 2007). Some wildlife will still use the Facility site, but the species composition and distribution is not likely to return to pre-construction conditions.

The Facility will also prevent the use of post-construction habitats by some wildlife, most notably big game, with the installation of a tall, exclusionary fence along the perimeter of the Facility solar array site during operation. Utility-scale solar developments like the Facility require perimeter fencing both for security reasons and to protect the surrounding community and wildlife—specifically, big game—from dangerous contact with electrical components. Accordingly, all acres that are inside a perimeter fence in either Area A or Area D will be considered to be permanently impacted. In addition, there will be approximately 1.2 acres of permanent impact resulting from installation of the gen-tie line, assuming that monopoles will be sited at 300-foot intervals. The permanent disturbance at each pole will be 6 feet in diameter, and the temporary disturbance will be a 20- by 80-foot rectangle centered on the monopole location (refer to Exhibit P Table P-1 for the current permanent and temporary disturbance acreage estimate).

The actual footprint and disturbance areas cannot be determined until the design layout of the Facility is finalized. At that time, certificate holder will provide the Oregon Department of Energy (ODOE) and ODFW with a map showing the final design configuration of the Facility and an updated Exhibit P, Table P-1, detailing the final areas of permanent and temporary impacts on wildlife habitat. Applicant will calculate the size of mitigation areas based on the final design configuration of the Facility. Applicant will implement the habitat conservation and enhancement actions described in this WHMMP after ODOE has approved of the size of the required mitigation area.

Refer to Exhibit P, Section P.7, of the Application for Site Certificate for a complete evaluation of Facility impacts on wildlife and their habitats.

4.0 APPLICANT-PROPOSED HABITAT MITIGATION STRATEGIES

This section identifies Applicant’s proposed strategies for complying with the ODFW Habitat Mitigation Policy by satisfying a standard of “no net loss” and “net benefit” for impacts on Category 2 wildlife habitat.

4.1 Mitigation Banking or Fee-In-Lieu

In the event that mitigation banking or fee-in-lieu alternatives become available, Applicant may propose modifications to this WHMMP to allow participation in those alternatives.

4.2 Proximate Mitigation (No Net Loss)

Section 4.2 describes how Applicant will satisfy the ODFW standard of “no net loss” through a Working Lands Improvement Program (WLIP).

4.2.1 Working Lands Improvement Program

In order to meet ODFW’s standard of “no net loss” for habitat, Applicant will implement a western juniper (*Juniperus occidentalis*) thinning and removal program (the WLIP) on acreage equal to the number of acres of the Facility’s temporary and permanent impacts. The mitigation acreage is referred to as the “WLIP Area”). Applicant has identified approximately 3,000 acres of privately-owned land for potential inclusion in the WLIP Area (Figure 2). Applicant has initiated and will continue discussions with the Bureau of Land Management to determine whether public lands might be included in the WLIP. Applicant or certificate holder will consult with ODFW regarding implementation of the WLIP on public lands if that becomes a viable option.

Juniper removal and thinning is consistent with the Oregon Conservation Strategy’s recommended approaches for conservation of sagebrush habitats, which includes controlling encroaching junipers by chipping or cutting for firewood, while maintaining juniper trees with old-age characteristics, which are important nesting habitat for birds and other wildlife (ODFW 2016). Removal of juniper can, over time, result in redistribution of water budget components in the rangeland due to lack of tree canopy interception, in turn influencing soil moisture and vegetation. In big game winter range, juniper removal is intended to improve the quality and quantity of sagebrush shrublands forage.

The WLIP will improve previously unused or under-performing habitat by affording understory vegetation water previously used to support juniper growth. By including these acres in the

WLIP Area, this land would no longer be at risk for adverse development during the expected life of the project.

4.2.2 Pre-Treatment Habitat Survey

Prior to implementation of the WLIP, and in consultation with ODFW, certificate holder will conduct desktop and field-based habitat assessments (the “Pre-Treatment Survey”) of the proposed WLIP Area.

The National Land Cover Database will be used to prepare a preliminary habitat map of the WLIP Area prior to conducting a field-based habitat assessment (Homer et al. 2015). The desktop-based habitat map will be verified and refined in the field prior to commencing mitigation activities, which will result in a final map of habitat types in the WLIP Area. Certificate holder will provide the resulting map to ODFW. Dominant plant species will be documented within each habitat type in the WLIP Area, including general habitat conditions, such as tree and shrub heights and cover, and level of disturbance. The ecologists will travel by foot and 4x4 vehicle throughout the analysis area to achieve full visual coverage.

The ecologists will delineate the boundaries of each habitat patch using a tablet computer equipped with geographic information system software (i.e., Esri Collector) and identify the habitat type within each patch using the dichotomous key described in Appendix P-1 of Exhibit P. The ecologists will refine the names of the habitat types in the dichotomous key, as necessary, to reflect field-based observations (e.g., “Woodland” will become “Juniper Woodland”). In addition, they will record at least one reference global positioning system (GPS) point per quarter section (160-acre areas) within the site boundary and include photographs of the habitat visible from that location. Areas in which juniper encroachment has canopy cover that equals or exceeds 10 percent would be categorized as forests or woodlands, according to the dichotomous key in Appendix P-1, Exhibit P. Therefore, any area categorized as a juniper woodland would meet the eligibility criterion for inclusion in the WLIP Area.

4.2.3 Treatment Plan

Applicant will secure the right to remove juniper from the WLIP Area and will retain a qualified forester or other qualified consultant to conduct a timber cruise (i.e., a sample measurement of standing timber) and help identify which juniper trees to remove and which should remain. If late successional trees are present, they will remain; however, all other junipers will be targeted for removal. Implementation of the WLIP will be multi-stepped. Step one for acres under treatment is removal of young juniper trees (“Initial Treatment”). This will improve the growth and diversity of understory vegetation to reduce fire danger and to enhance late successional juniper, if present.

Certificate holder will hire one or more contractors (locally, to the extent possible) to remove designated juniper. Depending on the local site conditions and the capabilities of the contractor(s), felled juniper may be burned on site or hauled away. Juniper may also be sorted and decked, delimbed, and any commercial product taken off site. The number of acres on which the Initial Treatment is completed each year will depend on availability of personnel and local resources.

4.2.4 Monitoring and Reporting

Following the Initial Treatment of an area, certificate holder will monitor the area annually for the presence of state or county-designated noxious weeds until no noxious weeds are observed for two consecutive years. During its annual designated noxious weed monitoring, if noxious weeds are present, certificate holder will apply appropriate treatments.

In addition to annual monitoring for and treatment of noxious weeds, certificate holder will return to treated areas approximately 24 months after Initial Treatment and thereafter every 7 years to monitor habitat recovery. Monitoring methods and scope will be comparable to the pre-treatment habitat survey, including documenting dominant plant species, plant cover, shrub heights, presence of noxious weeds and juniper saplings, and qualitative descriptions of any habitat disturbances. If necessary, Applicant would manage noxious weeds, foster reintroduction and proliferation of native vegetation (grass and shrubs), and ensure sapling containment, based on the results of the monitoring efforts.

Certificate holder will provide ODFW with a report during each monitoring year detailing the results of the monitoring effort, qualitatively comparing the monitoring results to pre-treatment conditions, and documenting any additional treatments management activities.

4.2.5 Working Land Improvement Program Agreements

Consistent with OAR 635-415-000252 and to maintain the benefits of the WLIP for the life of the Facility, Applicant (or certificate holder) will enter into a WLIP Agreement with each landowner within the WLIP Area. The WLIP Agreement will restrict land uses that diminish the wildlife habitat functions and values, but will permit the landowner to continue to conduct its current land use practices. For example, the landowner will be prohibited from increasing the number of animal units on the WLIP Area or materially changing its grazing practices in order to take advantage of any increased understory growth due to the juniper treatment.

Applicant will continue to coordinate with ODFW on the substance and scope of the WLIP Agreements prior to implementation of the WHMMP.

4.3 Habitat Enhancement Actions (Net Benefit)

This section describes mitigation activities intended to satisfy the “net benefit” standard.

4.3.1 Noxious Weed Control Program

Applicant will satisfy the “net benefit” element of the ODFW Habitat Mitigation Policy by implementing a Noxious Weed Control Program. Applicant (or certificate holder) will enter into a Noxious Weed Control Cost-Sharing Agreement with the Lake County Cooperative Weed Management Area (CWMA) (or a successor agency) pursuant to which the Facility will provide funding for specified noxious weed control and herbicide application initiatives in the region. Through its participation in the Weed Control Cost-Sharing Agreement, Applicant plans to enhance a total number of acres equal to the number of acres in the WLIA. Weed treatment areas will be located within the Ft. Rock Basin and noxious weed control will continue on these acres (as needed) through the life of the Facility. See Attachment 1 for the Lake County Noxious Weed Management Plan.

These initiatives would first focus on treating Oregon Department of Agriculture A-, B- and T-listed weed species, and Lake County early detection and rapid response species (identified by the Lake County Weed Board and the Lake County CWMA) in the Christmas Valley/Fort Rock Area. See Attachments 2 to 5 for detailed information on the CWMA, targeted weed species, and treatment boundaries and areas. The next priority, still within the Fort Rock vicinity, would be treatment of non-native annual grasses, specifically on pre- and post-cut juniper projects. After these options have been exhausted, the effort would continue in the nearby Silver Lake area. Finally, if there is any remaining funding, the initiatives would be implemented in the greater Lake County Area. Applicant will work with the Lake County Weed Board and/or Lake County CWMA to select areas that will be prioritized. Through its participation in the Weed Control Cost-Sharing Agreement, Applicant plans to enhance a number of acres equal to the number of acres in the WLIP over a period of approximately 12 years. This is in addition to mitigation of noxious weeds at the Facility site and at the juniper removal sites.

Under the Weed Control Cost-Sharing Agreement, Lake County CWMA will be responsible for identifying participating landowners, conducting all of the project preparation, site mapping, retaining all of the pesticide application records, setting up contractors, and reporting. Applicant will provide ODOE and ODFW with periodic reports and maps showing the time and nature of activities conducted under the Noxious Weed Control Cost-Sharing Agreement. By prioritizing the Fort Rock/Christmas Valley area, the mitigation dollars would be focused on areas near the Facility.

The Lake County CWMA has been in operation since 2004, and its board consists of representatives of the Bureau of Land Management, U.S. Forest Service, ODFW, U.S. Fish and Wildlife Service (USFWS), Oregon Department of Agriculture, Oregon Department of Forestry, Natural Resources Conservation Service, Lake County Weed Board, Lake County, Nature Conservancy, Lake County Extension, Lake County Watershed Council, Department of State Lands, and private landowners representing all areas of Lake County. The diversity of the board

ensures that it represents all stakeholders within Lake County and that each individual agency is represented. The Lake County CWMA is a forum that helps plan annual weed treatments strategically across jurisdictional boundaries. With an annual operating budget of \$350,000 to \$400,000 per year, the Lake County CWMA has the capacity to manage and implement the enhancement projects proposed in this WHMMP. Certificate holder will work with the CWMA to ensure that the activities of the CWMA funded by this WHMMP are additive to the CWMA's average annual work and budget. In addition, part of the funding to the CWMA provided by certificate holder is to compensate CWMA for taking responsibility for identifying participating landowners, conducting all project preparation, site mapping, retaining all of the pesticide application records, setting up contractors, and handing all reporting. Certificate holder will work with CWMA to develop a reporting protocol reasonably satisfactory to ODFW.

4.3.2 Enhanced Fire Control and Suppression

One of the great threats to wildlife and their habitats in the Ft. Rock basin, particularly in the open range, is fire. Applicant's Facility, once constructed, will create a natural fire buffer in an area susceptible to rapid-moving grass fires. The Facility's perimeter roads and the fire safety features of the Facility decrease the likelihood of any fire starting within the Facility's perimeter fence or permitting an outside fire from passing from one side of the Facility through to the rangeland on the other side. Lightning and grounding rods installed with Facility equipment make it unlikely a fire will start inside the fence. In the unlikely event a fire does start inside the fence, the perimeter roads provide the surrounding acres fire protection superior to the protection afforded in open range. In addition, Applicant will maintain ready-to-use fire suppression equipment for the benefit of the community that will remain available to the neighbors and Facility employees required or able to respond to any fire incident near the Facility.

4.3.3 Elk Safety Measures

To provide further benefit to mitigate for Facility impacts, after the commencement of operation of the Facility (or, if development in phases, after commencement of at least 200 MW ac of average generating capacity), certificate holder will reach out to surrounding communities and interested parties to identify locations of abandoned barbed wire or other wire that poses a threat to animal or human health or safety in the area mapped by ODFW staff as elk and mule deer winter ranges. Outreach may include contacting civic groups and the County Commissioners in Klamath, Deschutes, and Lake Counties; publishing notices; making local inquiries; and consulting with ODFW and the Rocky Mountain Elk Foundation. Applicant will focus first on the area that is within a 20 miles radius of the Facility to attempt to obtain permission to remove these dangerous conditions. Applicant will commit up to \$20,000 toward this effort and expect it to be expended within 24 months after construction.

5.0 WILDLIFE AVOIDANCE AND MINIMIZATION MEASURES

Applicant proposes to avoid or minimize potential Facility impacts on wildlife, particularly State Sensitive Species, using a combination of siting-based avoidance, best management practices, and taxa-specific measures. Best management practices (Section 5.1) are Applicant-proposed measures, incorporating comments and suggestions from ODFW, intended to avoid or minimize Facility impacts on multiple resources, including wildlife. Applicant developed taxon-specific measures (Section 5.2) in consultation with ODFW to avoid or minimize impacts on a particular species or group of species during pre-construction and construction activities.

In addition to the best management practices and taxon-specific measures described below, and in accordance with OAR 636-415-0025(16), Applicant is avoiding or minimizing impacts on wildlife habitat by taking the following Facility siting actions, which reduce the initial development area under consideration from about 7,000 acres to the current design of less than 4,000 acres:

- (a) Elimination of Area B from the site boundary (approximately 3,080 acres);
- (b) Elimination of Area C from the site boundary (approximately 440 acres);
- (c) Avoiding on active pygmy rabbit burrow complex totaling 0.36 acres; and
- (d) Avoiding a 10.47-acre area of sagebrush shrubland, dune, and playa habitats that includes two active pygmy rabbit burrow complexes, which will provide connectivity between the complexes and to adjacent sagebrush shrubland habitats on federal lands.

5.1 Best Management Practices

1. Applicant will conduct environmental awareness training for all Facility personnel and on-site contractors before they begin activities within the site boundary. The training program will discuss State Sensitive Species and other environmental issues related to the Facility, including information about pygmy rabbit identification and reporting procedures.
2. Applicant will clearly demarcate boundaries of environmentally sensitive areas to be avoided during construction to increase visibility to construction crews.
3. Applicant will impose and enforce a speed limit of 15 miles per hour within the site boundary during construction, operation, and retirement phases. In addition to dust control and health and safety benefits, this measure will reduce the risk of vehicle collisions with wildlife.
4. To the extent practicable, Applicant will conduct construction and retirement activities on the Facility during daylight hours. If nighttime work is necessary, personnel will shield night lighting downward.
5. Trenching and back-filling construction crews will work proximately to each other to the extent practicable to minimize the number of open trenches at any given time. Applicant

will avoid leaving trenches open overnight to the extent practicable. Where trenches remain open overnight, construction crews will construct wildlife escape ramps approximately every 90 meters with slopes of less than 45 degrees. Trenches will be inspected, and any wildlife found removed prior to backfilling.

6. Applicant will install jump-out points around the perimeter of the site as appropriate to facilitate egress but not ingress of large mammals from within the site. Applicant will consult with ODFW on jump-out design and placement.
7. Facility personnel will practice good housekeeping. Waste will be disposed of in designated trash bins and removed from Facility work areas regularly.
8. Applicant will implement a *Revegetation and Noxious Weed Control Plan* (included as Appendix P-3 to Exhibit P of the ASC), which includes measures for revegetating areas of soil disturbance, preventing topsoil loss, and controlling and minimizing the spread of non-native, invasive species and noxious weeds. Applicant will consult with ODFW wildlife staff and the Lake County CWMA staff or board members in refining the list of plant species used to prevent noxious weed invasion as Appendix P-3 is finalized.

5.2 Taxa-Specific Measures

5.2.1 Bird-Specific Measures

1. Applicant shall conduct pre-construction shrub and tree vegetation clearing activities in proposed construction areas prior to the nesting season for migratory birds, to the extent practicable. Vegetation clearing refers to removing trees, shrubs, and tall grasses to stubs, but leaving low grasses, roots, and soil intact until the onset of construction. Applicant will attempt to clear vegetation between September 1 and March 31 for shrubs and trees shorter than 15 feet, and September 1 to January 15 for trees over 15 feet tall. Clearing vegetation prior to the nesting season will discourage most birds from nesting. Applicant will remove vegetation only where necessary, retaining grasses and small plants, to the extent practicable. Applicant will discourage birds from nesting in slash piles by removing vegetation slash material off site to an approved location or chipping slash in place prior to March 31. These measures are consistent with the draft guidance document from USFWS titled *Avian Protection Terms and Conditions* provided to Applicant by USFWS.
2. Because construction activities will occur during the (non-raptor) migratory bird nesting season (April 1–August 31), a qualified biologist will conduct pre-construction ground surveys for active nests. To the extent Applicant has a right of access, nest surveys for non-raptor species shall be conducted within 50 feet of all proposed disturbance areas, including the gen-tie transmission line and access roads. If the biologist detects active migratory bird nests during pre-construction surveys, Applicant will implement and maintain 30-foot disturbance buffers around the nests in which construction activities are

prohibited until the nest has been abandoned/depredated or the eggs hatch and young have fledged. Applicant will consult ODFW for prior approval for exceptions to nest buffers.

3. Because construction activities will occur during the raptor nesting season (February 1 to August 31), a qualified biologist will conduct pre-construction raptor nest surveys within 0.5 miles of proposed Facility disturbance areas (to the extent Applicant has a right of access to such survey areas). Raptor nest surveys shall be conducted no more than two weeks prior to the start of construction activities. If the biologist detects active raptor nests, Applicant will implement and maintain disturbance buffers around nests around the nests in which construction activities are prohibited until the nest has been abandoned/depredated or the eggs hatch and young have fledged. All raptor nests shall have a buffer of 0.25 miles except for golden eagle (*[Aquila chrysaetos]* 0.5 miles) and red-tailed hawk (*[Buteo jamaicensis]* 300 to 500 feet). In cases where smaller buffers or restricted work authorizations might be appropriate, Applicant will coordinate with ODFW to decrease buffer sizes and/or to allow restricted construction activities. Facility vehicles will be permitted within buffers on public roads. Light traffic by rubber-tired vehicles will be permitted to pass through the buffer on unpaved access roads.

4. Applicant will adhere to the following post-construction mortality monitoring and reporting protocols designed to provide information to ODFW regarding the estimated bird and bat fatality rates at the Facility during four seasons of operations:

- A. Surveys designed to estimate bird and bat mortality rates at the Facility.

1. Monitoring Period. Post-construction monitoring will take place beginning after the commencement of operation of the Facility (or, if development in phases, after commencement of at least 200 MW ac of average generating capacity and will continue for a period of 12 months thereafter.

2. Monitoring Frequency. Surveys will be conducted monthly on a statistically valid subset of the total site acres, which is estimated to be 500 acres.

3. Distance Sampling. Post-construction monitoring at the Facility will involve standardized distance-sampling based carcass searches. The layout of a photovoltaic (PV) solar energy facility is well-suited to a distance sampling approach, which involves searching transect lines and assumes that searcher efficiency decreases as a function of distance from the observer but is ideally suited to situation in which animals (or carcasses) are sparsely distributed across a landscape (Buckland et al. 1993).

4. Searcher Qualifications. Searchers will be trained to conduct carcass searches and will be familiar with and able to accurately identify bird and bat species likely to be found in the Facility area. Any unknown birds or bats or suspected state or Endangered Species Act-listed

species discovered during carcass searches will be reported to a qualified biologist for positive identification.

5. Data Collection. For each carcass found, the following data will be recorded:
 - Photos of the carcass and including a size-referencing object;
 - Date and time
 - Initial species identification
 - GPS location
 - Nearest Facility component (PV array, control house, storage unit, other)
 - Distance of carcass to nearest PV panel
 - Description of substrate/ground cover conditions
 - Condition of specimen (alive, no sign of physical trauma, dead and intact, dismembered, feather spot) (at least two or more primary feathers, five or more tail feathers, or 10 or more feathers, injured)
 - Carcass condition (fresh/dry, intact/scavenged)

Searchers will not collect or handle carcasses so neither state nor federal collecting/salvaging permits will be acquired for this study.

6. Reporting. The monitor will record all observations of bird or bat mortalities along the survey rows and between rows. Applicant will provide a summary report to ODFW within two months of completion of the year-long monitoring effort. Incidental observations of bird or bat mortalities, i.e., outside of the abovementioned standardized mortality monitoring efforts, will be documented for the first five years of operations and will be compiled and reported annually. Mortality observations of State Sensitive Species will be reported to ODFW within two weeks of the finding.

5.2.2 Pygmy Rabbit Measures

1. Applicant removed Area B from consideration for development due, in part, to the large amount of suitable pygmy rabbit habitat (i.e., sagebrush shrubland) within the parcel (refer to Exhibit B of the ASC for further discussion of the removal of Area B from development plans). Applicant will avoid construction in the areas of three active pygmy rabbit burrow complexes (refer to Section P.2.3 and Figure P-1 in Exhibit P of the ASC for burrow complex descriptions and locations). These avoidance areas, in combination with adjacent cultural avoidance areas (refer to Exhibit S of the ASC) and other avoidance areas, will maintain habitat connectivity between the two larger of the three burrow complexes. In addition, the smallest, easternmost burrow complex will be outside the eastern site boundary fence and the two larger complexes will be outside the northern

site boundary fence and will be connected to sagebrush shrubland habitat outside of the site boundary.

2. Should any additional pygmy rabbit complexes be discovered during pre-construction or construction activities, Applicant will consult with ODFW regarding minimization of impacts to newly detected colonies.

6.0 AMENDMENT

This WHMMP may be amended from time to time by agreement of the certificate holder and the Council. Such amendments may be made without amendment of the Site Certificate. The Council authorizes ODOE to agree to amendments to this WHMMP. ODOE shall notify the Council of all amendments and the Council retains the authority to approve, reject, or modify any amendment of this WHMMP agreed to by ODOE.

6.0 REFERENCES

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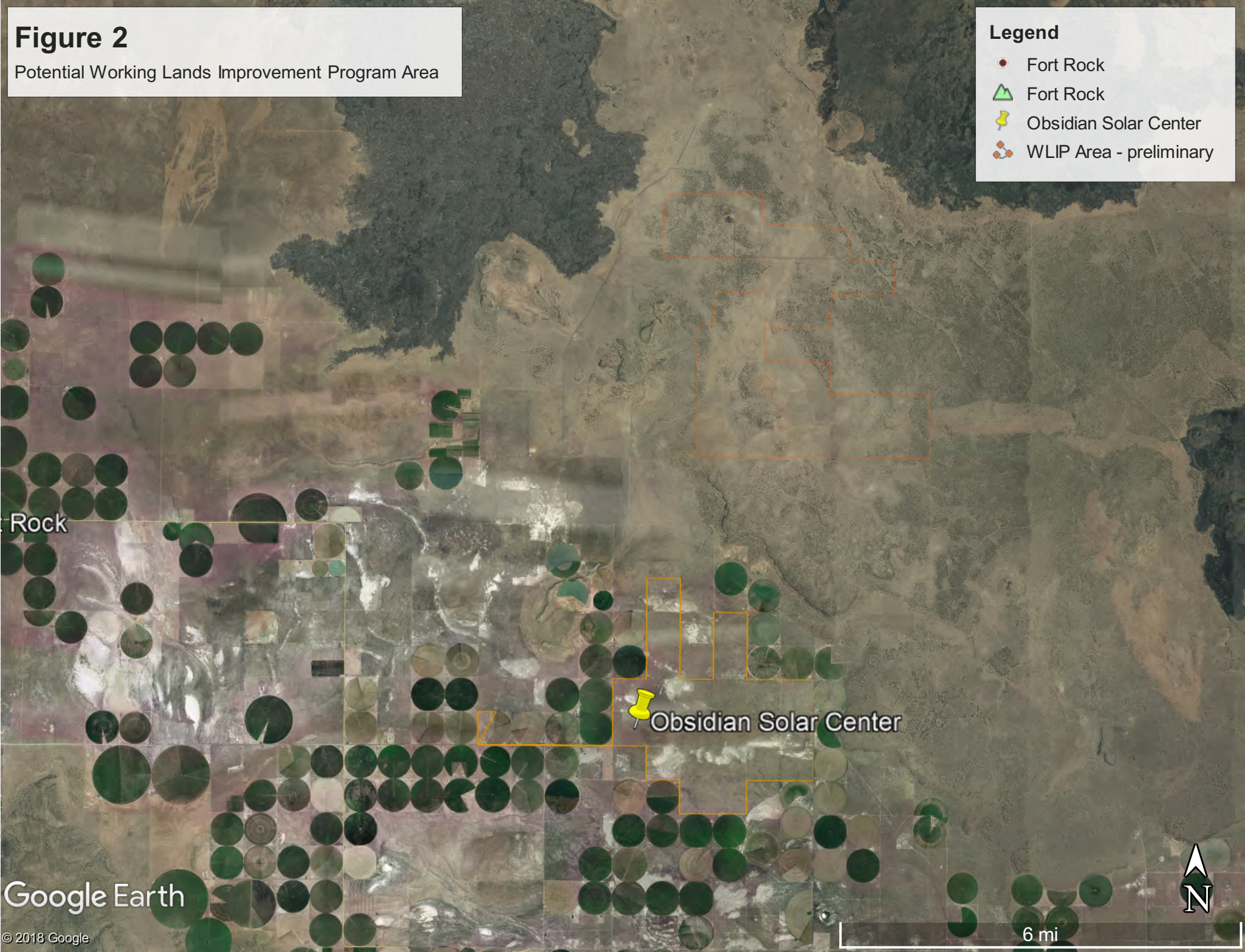
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Figure 2

Potential Working Lands Improvement Program Area

Legend

- Fort Rock
- ▲ Fort Rock
- 📌 Obsidian Solar Center
- ◻ WLIP Area - preliminary



Rock

Obsidian Solar Center

Google Earth

© 2018 Google

6 mi



Attachment 1

Lake County Noxious Weed Management Plan

Lake County Weed Management Plan March 1, 2015

Prepared by: Jason Jaeger, Lake County Noxious Weed Supervisor

Date: _____

Reviewed and approved by:

Weed Advisory Committee:

John O'keeffe, Chairman

Date

Road Department:

Rick DuMilieu, Road Master

Date

Approved by:

Lake County Board of Commissioners:

Bradley J. Winters, 2015 Chair

Date

Ken Kestner, 2015 Vice-Chair

Date

Dan Shoun, Commissioner

Date

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LAKE COUNTY'S NOXIOUS WEED MANAGEMENT PLAN

Overview

INTRODUCTION

Noxious weeds are being found in ever-increasing numbers throughout Lake County. The spread of noxious weeds signals the decline of entire plant communities. Noxious weeds severely impact the beauty and plant diversity of occupied environments and cause widespread economic impact. These invasive weeds are considered one of the most serious natural resource and economic issues facing Lake County. Without major increased management efforts, noxious weeds will continue to spread across the area and degrade productive lands that are Lake County's responsibility.

THE PURPOSE of the Lake County Noxious Weed Management Plan is to provide a written strategy that will guide weed management activities now and into the future.

1. Effectively control and reduce the spread of invasive noxious weeds in Lake County.
2. Reduce economic and environmental losses to Lake County landowners/managers caused by noxious weeds.
3. Implement the Weed Policy and Classification System.
4. Display the role and By-Laws for the Lake County Noxious Weed Advisory Committee.
5. Display individual noxious weed management strategies and plans.
6. Identify traditional and non-traditional funding sources for weed programs.
7. Provide public awareness/education of the serious nature of the weed problem.
8. Encourage cooperation and coordination between jurisdictions, agencies, land managers, and private owners.
9. To obtain compliance with federal, state and local laws, regulations, and polices regarding noxious weed control.

PROGRAM DIRECTION

Weed District

Lake County is designated as a Weed Control District, formed under ORS 570.505. The ordinance requires landowners, including absentee landowners, to take all necessary steps to prevent further spread of these weeds and to practice eradication or control measures in accordance with the law.

The County's weed program is managed by the Lake County Noxious Weed Supervisor. The Weed Supervisor receives direction from the Board of Commissioners. Duties include, but are not limited to planning, organizing, directing and evaluating programs that control weeds throughout Lake

County and ensuring the control of noxious weeds on county owned land.

More specific responsibilities of the Weed Supervisor are: working with the Weed Advisory Board, cooperators, other departments, private landowners and agencies; overseeing cost-share, enforcing weed laws, surveying, and managing the district's overall weed control program.

Lake County Road Department

The Road Department vegetation management duties are:

- (1) Coordinating roadside residual herbicide programs on county right-of-way
- (2) Controlling broadleaf weeds and other undesirable vegetation on right- of-ways;
- (3) Snow drifting abatement and safety (mowing or chemical vegetation reduction to reduce hazard.

These activities are part of a right-of-way maintenance program, dealing with roadside vegetation on the right-of-way. The control of noxious weeds within the right-of-way is a road department responsibility, and is done within budget constraints.

FUNDING

The noxious weed program is funded through programmed road dollars, the general fund, the weed levy, grants, and contributed monies.

The weed levy dollars are used to manage the weed district program and are distributed as follows:

1. Weed District Supervisor's wages/travel/training.
2. Vehicle operation and maintenance.
3. Herbicide purchases for broadleaf weed control.
4. Landowner cost-share program.
5. Weed surveys and special projects.
6. Supplies and utilities.
7. Enforcement of Weed Laws

Road Department dollars for vegetation control are programmed from dedicated road funds and the general fund. They are distributed to meet safety, maintenance, and environmental needs.

THE WEED ADVISORY BOARD

The Weed Advisory Board is appointed by the County to help the Weed District in setting program priorities. They are to assist in increasing public awareness of the spread noxious weeds and in keeping the Board of Commissioners and budget committees informed of problems regarding funding and management of the noxious weed program. The committee is an advisory committee to the Commissioners.

DEPARTMENTAL GOALS

Lake County Road Department Goals

The goal of the Lake County Road Department is to provide roadways that are safe, efficient, and economical to maintain in a manner consistent with practices that protect the environment and citizens of Lake County. Integrated Pest Management techniques such as brush cutting, mowing, blading, ditching, competitive planting, and herbicides are currently used to achieve an acceptable level of vegetation control.

Management of roadside vegetation is necessary for;

1. Safety
 - a. Unmanaged roadside vegetation obstructs visibility of corners, intersections, etc.
 - b. Unmanaged roadside vegetation obstructs visibility of signs, etc..
 - c. Unmanaged roadside vegetation can reduce areas designated as safe locations for emergency stops.
 - d. Unmanaged vegetation increases the potential for wildlife loss.
2. Maintenance
 - a. Growth of vegetation along pavement edge and through pavement causes cracks.
 - b. Indirect damage can occur by preventing drainage of road beds and surfaces which causes pot-holing.
3. Enhancement of agricultural production, environmental protection and esthetics.
 - a. Appropriate vegetation management presents a pleasing appearance.
 - b. Harbors fewer noxious weeds
 - c. Protects soils and prevents non-point pollution

Weed District Goals

The purpose of the Lake County Weed District is to provide coordination for a countywide prevention and control program that limits the spread of noxious weeds. The weed funds are managed by the Weed District Noxious Weed Supervisor.

1. To initiate weed control efforts across the county with assistance by Oregon's Department of Agriculture, as addressed in ORS. 570.
2. To disseminate information to landowners/managers on how to control weeds by utilizing an integrated management system, i.e., proper pasture mix, proper grazing height, irrigation, cross-fencing, fertilization, mechanical, physical, cultural, biological and chemical control, etc.
3. To survey and map all noxious weeds in Lake County and to rate them according to severity as "A", "B", and "C".
4. To survey for potential invading noxious weeds not presently known to occur in Lake County.
5. To act as a resource for making pesticide recommendations.

6. To be available to talk to clubs, interested groups, schools, etc., on the safe use of pesticides and methods of control, which include cultural, mechanical, biological, and chemical.
7. To distribute biological control agents where appropriate for leafy spurge, yellow starthistle, diffuse/spotted knapweeds, poison hemlock, and Canada thistle.
8. To control weeds on county roads, highways, ditches, recreation areas, etc., as determined for legal and safety purposes.
9. To assist Oregon State University, Oregon Department of Agriculture, co-ops, chemical companies, and others in demonstrations to show effectiveness of weed control measures.
10. To promote proper funding for noxious weed control efforts and when budgets allow, offer a 50 percent cost share opportunity to landowners with "A" designated weeds, in addition to those weeds deemed appropriate for cost share opportunity as designated by the Lake County Board of Commissioners.

LAKE COUNTY WEED POLICY AND CLASSIFICATION SYSTEM

"NOXIOUS WEED" means any weed designated by the Lake County Board of Commissioners that is injurious to public health, agriculture, range, recreation, wildlife, or any public or private property; any weed that impacts and displaces desirable vegetation, such as Threatened and Endangered Plant Species, wildlife habitat, livestock, etc.

It is acknowledged that certain noxious weeds have become so thoroughly established and are spreading so rapidly on state, county, and federally owned lands, as well as on private land, that they may have been declared by Oregon Revised Statute 570.505 to be a menace to public welfare. Steps leading to eradication where possible, are necessary. It is further recognized that the responsibility for such eradication and/or intensive control rests not only on the private landowner and operator, but also on the county, state, and federal government.

WEED CONTROL POLICY

THEREFORE, IT SHALL BE THE POLICY OF LAKE COUNTY TO:

1. Increase awareness of potential economic loss due to existing and new invading weeds through continuous education with the public.
2. Rate and classify weeds at the county level
3. Prevent the establishment and spread of noxious weeds.
4. Encourage and implement the control or containment of infestations of designated weed species and, where possible, their eradication. When budgets allow.

5. Offer a landowner cost share program for "A" rated weeds, as well as those weeds designated appropriate for cost share assistance by the Board of Commissioners.
6. Manage a biological control of weeds program for yellow starthistle, leafy spurge, St. Johnswort, Canada thistle, rush skeletonweed, diffuse knapweed, spotted knapweed, and others, in cooperation with ODA's Biological Control of Weeds Program.
7. Cooperate with other states, federal agencies, private citizens, and other groups in enhancing the Lake County Weed Management Program.

WEED CLASSIFICATION SYSTEM

THE PURPOSE OF THE CLASSIFICATION SYSTEM IS TO:

1. Act as the Lake County official guideline for implementing noxious weed control programs.
2. Assist Lake County in the distribution of available funds as specified in ORS 570.580 to 670.600 (Cost assistance grants and matching fun grants).

NOXIOUS WEED CONTROL RATING SYSTEM

Noxious weeds, for the purpose of this system, shall be designated "A", "B", "C".

1. "A" designated weed: a weed of known economic importance which occurs in small enough infestations to make eradication/containment possible; or not known to occur, but its presence in adjacent counties makes future occurrence seem imminent

RECOMMENDED ACTION: Infestations are subject to intensive control when and where found by Lake County with possible assistance from the Oregon Department of Agriculture.

2. "B" designated weed: a weed of known economic importance, which is locally abundant, but of limited distribution in other counties.

RECOMMENDED ACTION: Moderate to intensive control at the county level.

3. "C" designated weed: a weed of economic importance which is abundant county-wide and in adjacent counties.

RECOMMENDED ACTION: Moderate control at the county level.

"Lake County Noxious Weed List"

"A" DESIGNATED WEEDS

- | | |
|--------------------------|---------------------------------|
| 1. Tansy ragwort | Senecio jacobaea |
| 2. Musk thistle | Carduus nutans |
| 3. Leafy spurge | Euphorbia esula |
| 4. Mediterranean sage | Salvia aethiopis |
| 5. Spotted knapweed | Centaurea maculosa |
| 6. Diffuse knapweed | Centaurea diffusa |
| 7. Dalmatian toadflax | Linaria dalmatica |
| 8. Yellow starthistle | Centaurea solstitialis |
| 9. Dyers woad | Isatis tinctoria L. |
| 10. Perennial pepperweed | Lepidium latifolium |
| 11. Scotch thistle | Onopordum acanthium |
| 12. Russian knapweed | Centaurea repens |
| 13. Medusahead | Taeniatherum caput-medusae (L.) |
| 14. Common Cocklebur | Xanthium strumarium |
| 15. Burdock | Arctium minus |
| 16. Canadian thistle | Cirsium arvense |
| 17. Whitetop | Cardaria draba |
| 18. Morningglory | Convolvulus arvensis |
| 19. Puncturevine | Tribulus terrestris |
| 20. St. Johnswort | Hypericum perforatum |
| 21. Dog Fennel | Anthemis cotula |

"B" DESIGNATED WEEDS

- | | |
|-----------------------|---------------------|
| 1. Mediterranean Sage | |
| 2. Waterhemlock | Circuta maculata |
| 3. Poison hemlock | Conium maculatum L. |
| 4. Halogeton | |
| 5. Spanish Dagger | |
| 6. False Hellebore | |

"C" DESIGNATED WEEDS

Roadside Weed List

- | | |
|------------------------|-------------------------|
| 1. Yellow Sweet Clover | Melilotus officianlis |
| 2. Mullen | Verbascum thapsus |
| 3. Salt Grass | Distichlis spicata |
| 4. Sagebrush | Artemisia tridentata |
| 5. Grease Wood | Sarcobatus vermiculatus |

The Lake County Weed Advisory Board represents various Lake County interests. This advisory committee appointed by the Lake County Commissioners, represents as much as possible all geographical, social and political areas in Lake County and is to advise the county on noxious weed matters.

Goals:

1. To inform citizens of the threat that noxious weeds are bringing to the area.
2. To listen to citizen concerns and share those concerns with the county, advise accordingly.
3. To maintain and improve communication, coordination and working relationship among and between interested and concerned parties.
4. To assist the County in developing control, eradication, containment, and education policies and procedures.

BY-LAWS OF THE WEED BOARD:

Article I-Name

The name of this board will be Lake County Weed Board. Its principle office shall be located, but not limited to 513 Center Street, Lakeview, OR 97630.

Article II -Mission Statement

Work cooperatively to promote and implement noxious weed control in Lake County; to contain existing weed populations and eradicate new invaders: to raise the value of the land economically and biologically: to improve the health of the community, promote stewardship, preserve natural resources and provide examples and leadership for other counties and states in effective vegetation management.

The Lake County Court hereby designates the Lake County Weed Board with the following purposes and functions:

Article III-Summary of Duties

- A. Support and advise County Court and County Weed Supervisor (if applicable) on county weed control programs.
- B. Assist in developing yearly weed management action plan, including annual education weed program.
- C. Advise the County Weed Supervisor of weed problems.
- D. Periodically review the county noxious weed list and recommend adjustments as needed to the Lake County Board of Commissioners.

Article IV-Cooperative Membership

- A. The Lake County Weed Board shall work in cooperation with other groups and or activities where noxious weeds are a concern.
- B. The Weed Board shall consists of 10 voting members. (*One from each of the eight zones, others at large.*) The Board should also include ad hoc technical advisers representing interested/affected groups or agencies in the county.
- C. The voting members shall be appointed from each of the 8 designated geographic zones of the county, and each shall reside in the area from which they are appointed.
- D. Board members shall be appointed by the Lake County Board of Commissioners for, one, two, and three year terms. The nominees shall be recommended to the Lake County Board of Commissioners by the Lake County Weed Board.
- E. The Weed Board will meet not less than two times a year with other meetings scheduled as needed. A Chair, Chair-Elect, and Secretary/Treasurer will be elected annually. Meetings will rotate around the county.
- F. Attendance at every board meeting is not mandatory, but in the interest of maintaining as effective, efficient, and productive board, three consecutive absences without cause shall subject the board member to removal from the board by a majority of a board quorum, and the approval of the Lake County Commissioners. A chosen alternative representative from the zone can attend meetings in the absence of the appointed member if due cause exists. If a member is removed from the board their seat will be immediately filled by a representative from the same zone or entity.
- G. Under normal circumstances, business matter will be voted on by a quorum of weed board members. (Six members will represent a quorum and a majority will carry a motions, with allowances for phone and e-mail.)
- H. Expiration of terms shall be staggered to avoid the circumstances of habin all new board members at once.

Article V-Conflict of Interest

Weed Board members must declare their professional or personal affiliation with any of the agencies, individuals or vendors requesting funds.

Any Board member who is employed by an organization in any capacity shall have a conflict of interest if any vote to be taken by the Board has a direct effect on that organization.

Board member who have declared their affiliation and whom the Chairperson has determined to have a conflict of interest shall be noted in the minutes. Members having a conflict of interest shall abstain from voting on issues related to that conflict unless the members vote is necessary to break a tie vote.

Article VI-Public Meeting Law

The Board is a public body for purposes of ORS 192 and thereby subject to the statutory procedures relating to public meetings.

ORS Chapter 192.610 to 192.690, the Oregon Public Meetings Law, is attached hereto and by reference incorporated herein.

It is the policy of the Board to maintain a maximum of public contact and receive a maximum of public input. In accordance with this policy, all meeting notices routinely shall be distributed to the office of the Lake County Board of Commission for further distribution to local media in Lake County.

Distribution of meeting notices, including agendas, shall be in a manner that maximizes the potential for the public to be aware of the proceedings of the board and to participate in its deliberations.

Article VII- Parliamentary Authority

Robert's Rules of Order (newly revised) shall be the parliamentary authority in all cases not covered by this charter and any special rules of order the Board shall adopt.

MEMBERS:

Appointed by Lake County for a three year fixed term, as established by Lake County's legal department.

DUTIES:

The Advisory committee shall function in an advisory capacity only.

OFFICERS:

Chairperson -- The Chairperson shall call and preside at all meetings, nominate all committees, supervise and manage the business affairs and perform such duties incidental to the office of Chairperson.

Vice Chair --The Vice Chair shall assume the duties of the Chair in his or her absence.

Secretary/Treasurer--The Secretary/Treasurer shall be an employee of Lake County; shall keep full and complete minutes of all meetings of the committee; shall send minutes of each meeting directly to the Lake County Board of Commissioners and all Advisory Committee members.

ELECTIONS:

The Advisory Committee may, by affirmative vote of at least 2/3 of it's members, declare any office or position vacant for:

- a. Unjustified absences from three or more consecutive meetings.
- b. Conviction of an offense punishable by incarceration in a penal institution.
- c. Conduct which is patently unethical or detrimental to the interest of Lake County, or the County Board of Commissioners, or the public image of the Lake County Weed District.

Meeting Procedures

1. The chairperson of the Advisory Committee and the Lake County Weed Supervisor should meet one week prior to a stated meeting to:

- a. Discuss and list all agenda items for old and new business.
- b. Develop and send agenda to all members including the Lake County commission.

2. The District Weed Supervisor should attend all advisory committee meetings. The Supervisor is to act in the role as a resource person for the Advisory Committee.
3. Minutes of each advisory meeting to be submitted to the Lake County Board of Commissioners, to members, and on a request basis to interested parties.
4. The meeting itself should be conducted in accordance with Lake County established and approved rules. Items to be discussed during the meeting are the ones listed on the agenda. If possible, items under new business should be briefly discussed and referred to the next meeting.

SPECIFIC NOXIOUS WEED MANAGEMENT STRATEGIES

Dyers Woad

Dyers Woad poses a very real threat to Lake County. At this time, the major infestation is located along the eastern edge of the Goose Lake Valley, along the hwy. 395 corridor between New Pine Creek and Lakeview. This plant has also been spread along the Lake County Railroad which also travels from New Pine Creek to Lakeview. With a very large infestation in Modoc County, eradication will be difficult, but containment will be very possible.

The Strategy:

The Lake County CWMA, SWCD, USFS, BLM, USFWS, and ODFW all recognize Dyer's Woad as a real threat. All of the aforementioned agencies are coordinating efforts to contain and hopefully eradicate this plant from Lake County. Currently all known areas of infestation are mapped, and control efforts are in place. These include herbicide control and education of the public on control options and timing. Equipment cleaning for contractors and loggers will be key in stopping the spread of this species. Education of the public on identification and the degree of the threat that this species possess will also be key.

Perennial Pepperweed/White Top Management

Perennial Pepperweed is quite widespread throughout Lake County. Currently this species poses the largest threat to Lake County, not only as a threat to our natural resources through loss of waterfowl habitat, but it also poses a threat by lowering agriculture production and value. The largest infestation currently is located in the Warner Valley, but this species is also widespread throughout most flood irrigated areas in Lake County including the Goose Lake Valley, Summer Lake, Paisley and Silver Lake.

The Strategy:

While eradication at this point is not an option, great efforts have been made to stop the spread of this species. In many instances, such great strides have been made through control efforts, that control is

now merely a minor yearly maintenance program. Through education and cost share herbicide programs, the treatment strategies for the control of this plant are widely understood. Diligence will be the key to winning the struggle in the fight with Perennial Pepperweed. Continually educating landowners on the threat this species poses, and understanding the cascading effect that can be caused by the non-treatment of one landowner, will be key in shrinking the infestation area of this species. Yearly efforts will be made to secure grant funding to treat Perennial Pepperweed, and every effort will be made to dedicate these funds in the most effective manner, either to landowners that have the greatest problem, landowners that are unable financially to treat their property, and to landowners the most will willing to treat their land in the most cost effective manner.

Mediterranean Sage Management

Mediterranean sage is known to occur in scattered sites across Lake County. Known sites include Winter Rim, Abert Rim, and throughout the Goose Lake Valley. There are also other scattered sites throughout Lake County, varying from dense populations to very scattered plants.

The Strategy:

The Oregon Department of Agriculture, Lake County CWMA, USFS, as well as the Lake District BLM has done some of the mapping of known infestation sites and initiated a control efforts. The infestation appears to have started from road and logging equipment then spread with wind, water and equipment. The Oregon Department of Agriculture and Lake County should cooperatively control this infestation with funding assistance from the Oregon Department of Transportation, BLM, and the private landowners. Because of the widespread nature of the infestation, biological control agents should be utilized. There are currently several potential nursery sites for biological control agents in Lake County and efforts should be made to spread biological control agents to the various Mediterranean Sage infestations.

Knapweed Management

Diffuse, Russian and Spotted Knapweed represents a very severe threat to Lake County from a crop, wildlife and livestock prospective. The knapweeds can be found scattered throughout the county at increasing levels. Warner Valley has a very large Russian Knapweed problem, as well as Spotted Knapweed infestations in the Goose Lake Valley and the Fort Rock Area. The spread of Spotted Knapweed from Deschutes County poses a real threat to the Northern portion of Lake County. Knapweeds should be the focus of an intensive education campaign so that every range and forest user can be able to identify the various species of knapweeds. Not only is education important for the identification of this weed, but educating the public on where to report infestations is also important.

The Strategy:

An active county program to keep knapweeds from reproducing on state and county roads would help stop most of the new infestations in the Fort Rock Area and the Goose Lake Valley. In the Warner Valley an aggressive treatment plan, with cost share components should be available. However, because of the widespread infestations in Warner Valley, and the constant threat in the northern portion of Lake County, biological control agents should be established at the earliest possible point. Most knapweed sites are known through the mapping efforts of the many state and federal agencies in the county. Because of these efforts, area that need treatment are well established, however, because of the nature of these species, diligent vigilance in needed to identify new areas of infestation.

Dalmatian Toadflax Management

Dalmatian Toadflax is another range/pasture invader that is posing a serious threat to Lake County lands. There are scattered infestations around the county, including the Thomas Creek area in the Goose Lake Valley. Dalmatian Toadflax has an extensive root system and its waxy leaf makes this an extremely difficult plant to control.

The Strategy:

In the known areas, control is currently being achieved with biological control agents and with herbicide application. While this species is not currently a major threat to Lake County, constant monitoring of the possible spread of this plant is needed.

Yellow Starthistle Management

Yellow starthistle has been the target of various levels of attack for a number of years. At this time, there are no documented sites of Yellow Starthistle in Lake County, due to an exceptional education and eradication program.

The Strategy:

Eradication of Yellow Starthistle upon the documentation of every known site shall be among the top priorities of the Lake County Weed Board. With known infestations in the past, diligent monitoring of these areas on a yearly basis should be attempted. Upon discovery the Lake County CWMA, BLM, USFS, ODA, and the affected landowners should devise an effective containment agreement that would address equipment, livestock, hay and dried plants movement to avoid seed dispersal to other areas.

Management Plan for Future Infestations

The noxious weed program will build upon the following principles: STEP #1 - Awareness, Education, and Training

Awareness is when people responsible for supporting, implementing, or taking part in a weed management program realize there is a weed problem. When people recognize leafy spurge, spotted knapweed, and other undesirable plants as problems, they have weed awareness.

Education about the impacts noxious weeds have on natural resources, wildlife, and the economy occurs after people are made aware of weeds. Training takes place after people become aware and realize that noxious weeds are detrimental to our natural resources, but need assistance in how to manage the weeds effectively.

STEP #2 - Funding and Program Justification

To increase funding and justify our management plan, we need to:

1. Demonstrate the impacts of that noxious weeds are bringing to Lake County.
2. Establish an operating budget for the entire program.

3. Designate who performs which parts of the program.

STEP #3 - Inventory (Zoning and Weed Mapping)

Mapping may be the single most useful part of our noxious weed control plan. We must "Know what is out there", if we expect to manage the land successfully. A map can be an aerial photograph, drawing, topography map, road map, section or county map, or property map. A good inventory and mapping system:

1. Defines the problem
2. Brings awareness
3. Helps monitor program effectiveness
4. Helps develop prevention and integrated weed management action plans
5. Tells about the land and the weeds on it
6. Provides a historical weed infestation record
7. Provides data to evaluate weed management options

STEP #4 - PREVENTION AND EARLY DETECTION

Prevention, early detection, and eradication of early detected noxious weed species are the most practical means of weed management. Prevention is best accomplished by ensuring that new weed species' seed or vegetative reproductive plant parts are not introduced into an area.

STEP #5 - Planning and Plan Implementation

There are at least seven reasons why weed management planning works:

1. It improves our weed control knowledge
2. It saves time and money
3. It forces us to evaluate all factors of weed control
4. It helps us visualize the total weed program
5. It prioritizes control efforts
6. It creates a historical record-keeping system
7. It enables us to participate in federal, state, county, or other weed control projects.

Keeping accurate records of the details of each treatment in prioritized units insures that your planning is accurately translated into action.

STEP #6 - Monitoring and Evaluation

Monitoring means repeated, systematic observation. Monitoring is "determining the truth" or observing the results about how the program is working. For building awareness, continuing education, implementing training, funding and justifying the program, and being able to plan and to modify the plan, you must know what you are doing. Evaluation is relating information obtained from monitoring relative to a goal. The purpose of evaluation is to answer the questions:

- A. Does the weed management program come as close to accomplishing the goal as is possible with the resources at hand?
- B. Is the goal still desirable and realistic?

STEP #7 - Record System

A record system will help identify factors that influence success such as herbicides, application rate, temperature, moisture conditions, growth stage of weeds, and wind. Records can make the difference between success and failure, as well as be an effective cost saving tool.

Attachment 2

2018 Lake County Noxious Weed List

2018
Lake County
Noxious Weed List



NOXIOUS WEED CONTROL RATING SYSTEM

Noxious weeds, for the purpose of this system, shall be designated "A", "B", "C".

1. "A" designated weed: a weed of known economic importance which occurs in small enough infestations to make eradication/containment possible; or not known to occur, but its presence in adjacent counties makes future occurrence seem imminent

RECOMMENDED ACTION: Infestations are subject to intensive control when and where found by Lake County with possible assistance from the Oregon Department of Agriculture.

2. "B" designated weed: a weed of known economic importance, which is locally abundant, but of limited distribution in other counties.

RECOMMENDED ACTION: Moderate to intensive control at the county level.

3. "C" designated weed: a weed of economic importance which is abundant county-wide and in adjacent counties.

RECOMMENDED ACTION: Moderate control at the county level.

"Lake County Noxious Weed List"

"A" DESIGNATED WEEDS

- | | |
|-----------------------|---------------------------------|
| 1. Tansy ragwort | Senecio jacobaea |
| 2. Dyers Woad | Isatis tinctoria L. |
| 3. Leafy spurge | Euphorbia esula |
| 4. Spotted knapweed | Centaurea maculosa |
| 5. Diffuse knapweed | Centaurea diffusa |
| 6. Dalmatian toadflax | Linaria dalmatica |
| 7. Yellow starthistle | Centaurea solstitialis |
| 8. Russian knapweed | Centaurea repens |
| 9. Medusahead | Taeniatherum caput-medusae (L.) |
| 10. Burdock | Arctium minus |
| 11. Dog Fennel | Anthemis cotula |
| 12. Sulfur Cinquefoil | Potentilla recta |
| 13. Ventenata | Ventenata dubia |

14. Common Toadflax
15. Purple Loosestrife
16. Salt Cedar

Linaria vulgaris
 Lythrum salicaria
 Tamarix spp

"B" DESIGNATED WEEDS

1. Mediterranean Sage
2. Water Hemlock
3. Poison hemlock
4. Spanish Dagger
5. False Hellebore
6. Musk thistle
7. St. Johnswort
8. Lespoded Whitetop
9. Hairy Whitetop
10. Hoary Cress/Whitetop
11. Halogeton
12. Scotch Thistle
13. Perennial Pepperweed

Salvia aethiopis
 Circuta maculata
 Conium maculatum L.
 Yucca gloriosa
 Veratrum californicum(native/poisonous)
 Carduus nutans
 Hypericum perforatum
 Cardaria chalepensis
 Cardaria pubescens
 Cardaria draba
 Halogeton glomeratus
 Onopordum acanthium
 Lepidium latifolium

"C" DESIGNATED WEEDS

1. Canadian thistle
2. Mediterranean sage
3. Common Cocklebur
4. Morningglory
5. Puncturevine
6. Scotch thistle
7. Medusahead Rye

Cirsium arvense
 Salvia aethiopis
 Xanthium strumarium
 Convolvulus arvensis
 Tribulus terrestris
 Onopordum acanthium
 Taeniatherum caput-medusae

Roadside Weed List

1. Yellow Sweet Clover
2. Mullen
3. Salt Grass
4. Sagebrush
5. Grease Wood

Melilotus officianlis
 Verbascum thapsus
 Distichlis spicata
 Artemisia tridentata
 Sarcobatus vermiculatus



Attachment 3

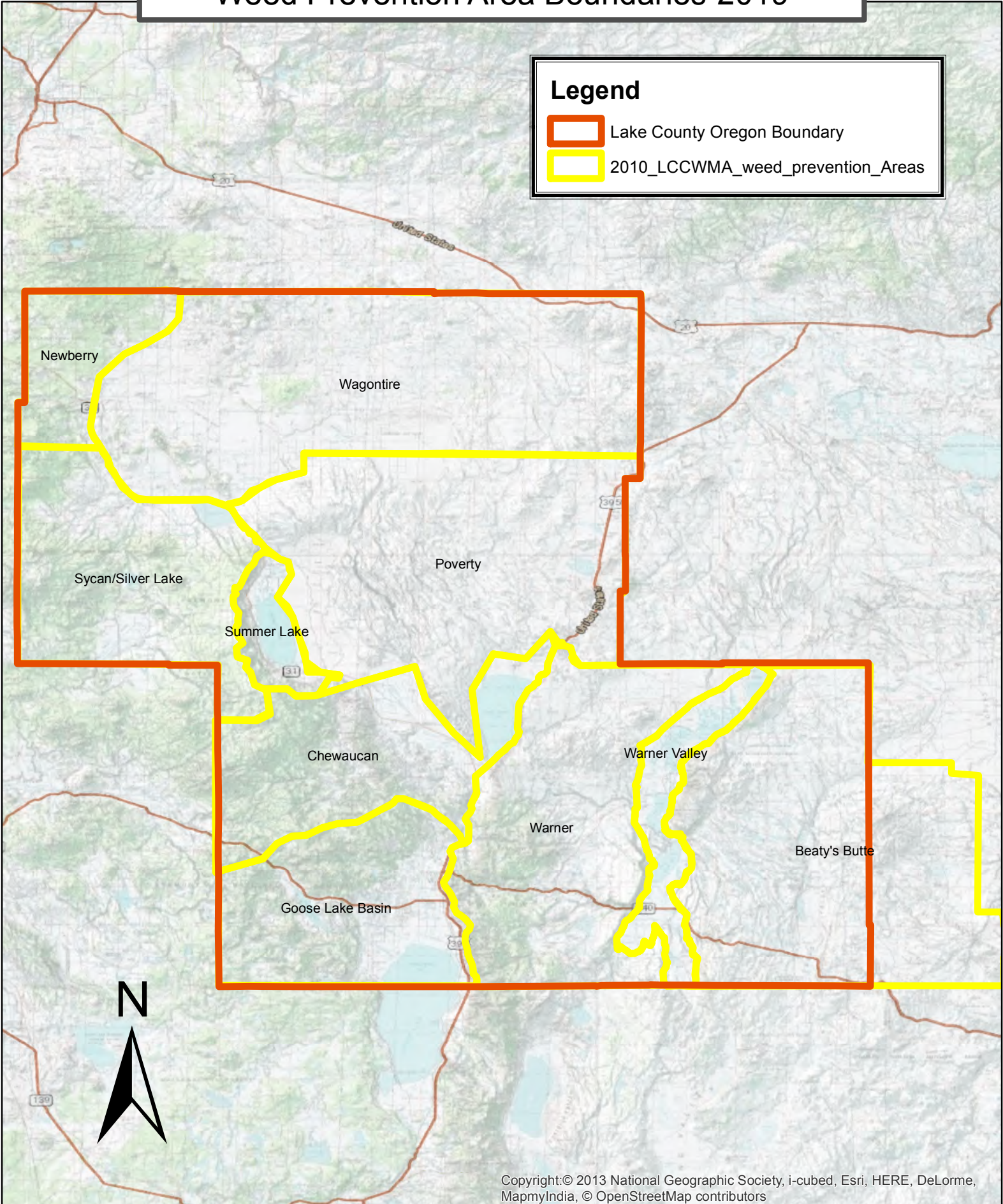
CWMA Prevention Area Boundaries

(2019)

Lake County Cooperative Weed Management Area Weed Prevention Area Boundaries-2019

Legend

-  Lake County Oregon Boundary
-  2010_LCCWMA_weed_prevention_Areas

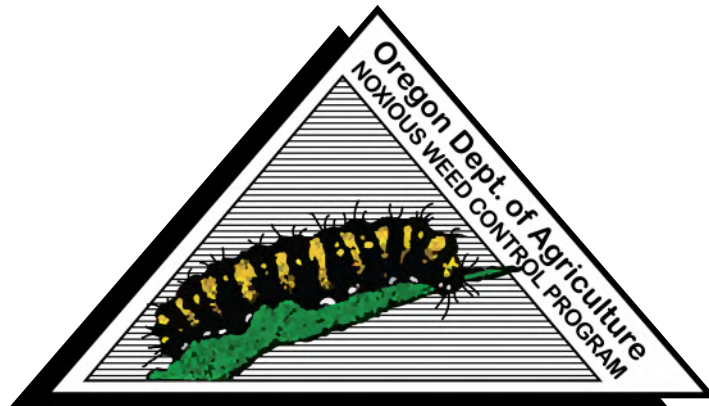


Attachment 4

Oregon Department of Agriculture Noxious Weed Policy and Classification System (2019)

Oregon Department of Agriculture

Noxious Weed Policy and Classification System 2019



Noxious Weed Control Program

Address: 635 Capitol Street NE, Salem, Oregon 97301

Phone: (503) 986-4621 Fax: (503) 986-4786

www.oregon.gov/ODA/programs/Weeds/Pages/AboutWeeds.aspx

Mission Statement

To protect Oregon's natural resources and agricultural economy from the invasion and proliferation of invasive noxious weeds.

Program Overview

The Oregon Department of Agriculture (ODA) Noxious Weed Control Program provides statewide leadership for coordination and management of state listed noxious weeds. The state program focuses on noxious weed control efforts by implementing early detection and rapid response projects for new invasive noxious weeds, implementing biological control, implementing statewide inventory and survey, assisting the public and cooperators through technology transfer and noxious weed education, maintaining noxious weed data and maps for priority listed noxious weeds, and assisting land managers and cooperators with integrated weed management projects. The Noxious Weed Control Program also supports the Oregon State Weed Board (OSWB) with administration of the OSWB Grant Program, developing statewide management objectives, developing weed risk assessments, and maintaining the state noxious weed list.

Tim Butler
Program Manager
tbutler@oda.state.or.us
(503) 986-4621

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Classification Definitions.....	4
Weed Biological Control.....	4
A Listed Weeds.....	5
B Listed Weeds.....	7

Noxious Weed Control Policy and Classification System

Definition

“Noxious weed” means a terrestrial, aquatic or marine plant designated by the Oregon State Weed Board under ORS 569.615 as among those representing the greatest public menace and as a top priority for action by weed control programs.

Noxious weeds have become so thoroughly established and are spreading so rapidly on private, state, county, and federally owned lands, that they have been declared by ORS 569.350 to be a menace to public welfare. Steps leading to eradication, where possible, and intensive control are necessary. It is further recognized that the responsibility for eradication and intensive control rests not only on the private landowner and operator, but also on the county, state, and federal governments.

Weed Control Policy

Therefore, it shall be the policy of ODA to:

1. Assess non-native plants through risk assessment processes and make recommendations to the Oregon State Weed Board for potential listing.
2. Rate and classify weeds at the state level.
3. Prevent the establishment and spread of listed noxious weeds.
4. Encourage and implement the control or containment of infestations of listed noxious weed species and, if possible, eradicate them.
5. Develop and manage a biological weed control program.
6. Increase awareness of potential economic losses and other undesirable effects of existing and newly invading noxious weeds, and to act as a resource center for the dissemination of information.
7. Encourage and assist in the organization and operation of noxious weed control programs with government agencies and other weed management entities.
8. Develop partnerships with county weed control districts, universities, and other cooperators in the development of control methods.
9. Conduct statewide noxious weed surveys and weed control efficacy studies.

Weed Classification System

The purpose of this Classification System is to:

1. Act as the ODA's official guideline for prioritizing and implementing noxious weed control projects.
2. Assist the ODA in the distribution of available funds through the Oregon State Weed Board to assist county weed programs, cooperative weed management groups, private landowners, and other weed management entities.
3. Serve as a model for private and public sectors in developing noxious weed classification systems that aid in setting effective noxious weed control strategies.

Criteria for Determining Economic and Environmental Significance

Detrimental Effects

1. A plant species that causes or has the potential to cause severe negative impacts to Oregon's agricultural economy and natural resources.
2. A plant species that has the potential to or does endanger native flora and fauna by its encroachment into forest, range, aquatic and conservation areas.
3. A plant species that has the potential or does hamper the full utilization and enjoyment of recreational areas.
4. A plant species that is poisonous, injurious, or otherwise harmful to humans and/or animals.

Plant Reproduction

1. A plant that reproduces by seed capable of being dispersed over wide areas or that is long-lived, or produced in large numbers.
2. A plant species that reproduces and spreads by tubers, creeping roots, stolons, rhizomes, or other natural vegetative means.

Distribution

1. A weed of known economic importance which occurs in Oregon in small enough infestations to make eradication/containment possible; or not known to occur, but its presence in neighboring states makes future occurrence seem imminent.
2. A weed of economic or ecological importance and of limited distribution in Oregon.
3. A weed that has not infested the full extent of its potential habitat in Oregon.

Difficulty of Control

A plant species that is not easily controlled with current management practices such as chemical, cultural, biological, and physical methods.

Noxious Weed Control Classification Definitions

Noxious weeds, for the purpose of this system, shall be listed as either A or B, and may also be designated as T, which are priority targets for control, as directed by the Oregon State Weed Board.

- **A Listed Weed:**

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 (Table I).

Recommended action: Infestations are subject to eradication or intensive control when and where found.

- **B Listed Weed:**

A weed of economic importance which is regionally abundant, but which may have limited distribution in some counties (Table II).

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-Designated Weed (T):**

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 and directs ODA to develop and implement a statewide management plan. T-designated noxious weeds are species selected from either the A or B list.

Weed Biological Control

Oregon implements biological control, or “biocontrol” as part of its integrated pest management approach to managing noxious weeds. This is the practice of using host-specific natural enemies such as insects or pathogens to control noxious weeds. The Oregon Department of Agriculture Noxious Weed Program has adopted the International Code of Best Practices for biological control of weeds. Only safe, effective, and federally- approved natural enemies will be used for biocontrol.

Table I: A Listed Weeds

Common Name	Scientific Name
African rue (T)	<i>Peganum harmala</i>
Camelthorn	<i>Alhagi pseudalhagi</i>
Cape-ivy (T)	<i>Delairea odorata</i>
Coltsfoot	<i>Tussilago farfara</i>
Common frogbit	<i>Hydrocharis morsus-ranae</i>
Cordgrass Common Dense-flowered (T) Saltmeadow (T) Smooth (T)	<i>Spartina anglica</i> <i>Spartina densiflora</i> <i>Spartina patens</i> <i>Spartina alterniflora</i>
Delta arrowhead (T)	<i>Sagittaria platyphyla</i>
European water chestnut	<i>Trapa natans</i>
Flowering rush (T)	<i>Butomus umbellatus</i>
Garden yellow loosestrife (T)	<i>Lysimachia vulgaris</i>
Giant hogweed (T)	<i>Heracleum mantegazzianum</i>
Goatgrass Barbed (T) Ovate	<i>Aegilops triuncialis</i> <i>Aegilops ovata</i>
Goatsrue (T)	<i>Galega officinalis</i>
Hawkweed King-devil Mouse-ear (T) Orange (T) Yellow (T)	<i>Hieracium piloselloides</i> <i>Hieracium pilosella</i> <i>Hieracium aurantiacum</i> <i>Hieracium floribundum</i>
Hoary alyssum (T)	<i>Berteroa incana</i>
Hydrilla	<i>Hydrilla verticillata</i>
Japanese dodder	<i>Cuscuta japonica</i>
Kudzu (T)	<i>Pueraria lobata</i>
Matgrass (T)	<i>Nardus stricta</i>
Oblong spurge (T)	<i>Euphorbia oblongata</i>
Paterson's curse (T)	<i>Echium plantagineum</i>
Purple nutsedge	<i>Cyperus rotundus</i>
Ravennagrass (T)	<i>Saccharum ravennae</i>
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>
Squarrose knapweed (T)	<i>Centaurea virgata</i>

(T) T-Designated Weed (See page 4)

(Continued)

Table I: A Listed Weeds

Common Name	Scientific Name
Starthistle Iberian (T) Purple (T)	<i>Centaurea iberica</i> <i>Centaurea calcitrapa</i>
Syrian bean-caper	<i>Zygophyllum fabago</i>
Thistle Plumeless (T) Smooth distaff Taurian (T) Wetted (curly plumeless) (T) Woolly distaff (T)	<i>Carduus acanthoides</i> <i>Carthamus baeticus</i> <i>Onopordum tauricum</i> <i>Carduus crispus</i> <i>Carthamus lanatus</i>
Water soldiers	<i>Stratiotes aloides</i>
West Indian spongeplant	<i>Limnobium laevigatum</i>
White bryonia	<i>Bryonia alba</i>
Yellow floating heart (T)	<i>Nymphoides peltata</i>
Yellowtuft (T)	<i>Alyssum murale, A. corsicum</i>

(T) T-Designated Weed (See page 4)

Table II: B Listed Weeds

Common Name	Scientific Name
Armenian (Himalayan) blackberry	<i>Rubus armeniacus</i> (<i>R. procerus</i> , <i>R. discolor</i>)
Biddy-biddy	<i>Acaena novae-zelandiae</i>
Broom French* Portuguese (T) Scotch* Spanish	<i>Genista monspessulana</i> <i>Cytisus striatus</i> <i>Cytisus scoparius</i> <i>Spartium junceum</i>
Buffalobur	<i>Solanum rostratum</i>
Butterfly bush	<i>Buddleja davidii</i> (<i>B. variabilis</i>)
Common bugloss (T)	<i>Anchusa officinalis</i>
Common crupina	<i>Crupina vulgaris</i>
Common reed	<i>Phragmites australis</i> ssp. <i>australis</i>
Creeping yellow cress	<i>Rorippa sylvestris</i>
Cutleaf teasel	<i>Dipsacus laciniatus</i>
Dodder Smoothseed alfalfa Five-angled Bigseed	<i>Cuscuta approximata</i> <i>Cuscuta pentagona</i> <i>Cuscuta indecora</i>
Dyer's woad	<i>Isatis tinctoria</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
False brome	<i>Brachypodium sylvaticum</i>
Field bindweed*	<i>Convolvulus arvensis</i>
Garlic mustard (T)	<i>Alliaria petiolata</i>
Geranium Herb Robert Shiny leaf	<i>Geranium robertianum</i> <i>Geranium lucidum</i>
Gorse* (T)	<i>Ulex europaeus</i>
Halogeton	<i>Halogeton glomeratus</i>
Houndstongue	<i>Cynoglossum officinale</i>
Indigo bush	<i>Amorpha fruticosa</i>
Ivy Atlantic English	<i>Hedera hibernica</i> <i>Hedera helix</i>
Johnsongrass	<i>Sorghum halepense</i>

* Biocontrol (See page 4)

(T) T-Designated Weed (See page 4)

(Continued)

Table II: B Listed Weeds

Common Name	Scientific Name
Jointed goatgrass	<i>Aegilops cylindrica</i>
Jubata grass	<i>Cortaderia jubata</i>
Knapweed Diffuse* Meadow* Russian* Spotted* (T)	<i>Centaurea diffusa</i> <i>Centaurea pratensis</i> <i>Acroptilon repens</i> <i>Centaurea stoebe</i> (<i>C. maculosa</i>)
Knotweed Bohemian Giant Himalayan Japanese	<i>Fallopia x bohemica</i> <i>Fallopia sachalinensis</i> (<i>Polygonum</i>) <i>Polygonum polystachyum</i> <i>Fallopia japonica</i> (<i>Polygonum</i>)
Kochia	<i>Kochia scoparia</i>
Lesser celandine	<i>Ranunculus ficaria</i>
Meadow hawkweed (T)	<i>Pilosella caespitosum</i> (<i>Hieracium</i>)
Mediterranean sage*	<i>Salvia aethiopsis</i>
Medusahead rye	<i>Taeniatherum caput-medusae</i>
Old man's beard	<i>Clematis vitalba</i>
Parrot feather	<i>Myriophyllum aquaticum</i>
Perennial peavine	<i>Lathyrus latifolius</i>
Perennial pepperweed (T)	<i>Lepidium latifolium</i>
Pheasant's eye	<i>Adonis aestivalis</i>
Poison hemlock*	<i>Conium maculatum</i>
Policeman's helmet	<i>Impatiens glandulifera</i>
Puncturevine*	<i>Tribulus terrestris</i>
Purple loosestrife*	<i>Lythrum salicaria</i>
Ragweed	<i>Ambrosia artemisiifolia</i>
Ribongrass (T)	<i>Phalaris arundinacea</i> var. <i>Picta</i>
Rush skeletonweed* (T)	<i>Chondrilla juncea</i>
Saltcedar* (T)	<i>Tamarix ramosissima</i>
Small broomrape	<i>Orbanche minor</i>
South American waterweed	<i>Egeria densa</i> (<i>Elodea</i>)
Spanish heath	<i>Erica lusitanica</i>
Spikeweed	<i>Hemizonia pungens</i>

*Biocontrol (See page 4)

(T) T-Designated Weed (See page 4)

(Continued)

Table II: B Listed Weeds

Common Name	Scientific Name
Spiny cocklebur	<i>Xanthium spinosum</i>
Spurge laurel	<i>Daphne laureola</i>
Spurge Leafy* (T) Myrtle	<i>Euphorbia esula</i> <i>Euphorbia myrsinites</i>
St. Johnswort*	<i>Hypericum perforatum</i>
Sulfur cinquefoil	<i>Potentilla recta</i>
Swainsonpea	<i>Sphaerophysa salsula</i>
Tansy ragwort* (T)	<i>Senecio jacobaea (Jacobaea vulgaris)</i>
Thistle Bull* Canada* Italian Milk* Musk* Scotch Slender-flowered*	<i>Cirsium vulgare</i> <i>Cirsium arvense</i> <i>Carduus pycnocephalus</i> <i>Silybum marianum</i> <i>Carduus nutans</i> <i>Onopordum acanthium</i> <i>Carduus tenuiflorus</i>
Toadflax Dalmatian* (T) Yellow*	<i>Linaria dalmatica</i> <i>Linaria vulgaris</i>
Tree of heaven	<i>Ailanthus altissima</i>
Velvetleaf	<i>Abutilon theophrasti</i>
Ventenata grass	<i>Ventenata dubia</i>
Primrose Willow Large-flower (T) Water primrose (T) Floating (T)	<i>Ludwigia grandiflora</i> <i>Ludwigia hexapetala</i> <i>Ludwigia peploides</i>
Whitetop	
Hairy	<i>Lepidium pubescens</i>
Lens-podded	<i>Lepidium chalepensis</i>
Whitetop (hoary cress)	<i>Lepidium draba</i>
Yellow archangel	<i>Lamiastrum galeobdolon</i>
Yellow flag iris	<i>Iris pseudacorus</i>
Yellow nutsedge	<i>Cyperus esculentus</i>
Yellow starthistle*	<i>Centaurea solstitialis</i>
*Biocontrol (See page 4)	(T) T-Designated Weed (See page 4)

Attachment 5

CWMA Weed Prevention Areas

**Lake County Cooperative Weed Management Area
Weed Prevention Areas**

Weed Species Common Name	Scientific Name	State List T	State List A or B	Biological Control Priority	Beaty Butte	Chewaucan	Goose Lake	Newberry	Poverty	Silver Lake /Sycan	Summer Lake	Wagontire	Warner Unit	Warner Valley Basin
Buffalobur	<i>Solanum rostratum</i>		B		x	x	x	x	x	x	X	X	x	x
Canada thistle	<i>Cirsium arvense</i>		B	*	1	3	3	0	0	2	3	0	3	3
Common Reed	<i>Phragmites australis, ssp. australis</i>		A		x	x	0	x	x	2	1	x	x	1
Cutleaf teasel	<i>Dipsacus laciniatus</i>		B		x	x	1	x	x	x	0	x	x	X
Dalmatian toadflax	<i>Linaria dalmatica</i>		B	*	x	1	2	x	0	0	0	x	x	2
Diffuse knapweed	<i>Centaurea diffusa</i>		B	*	x	2	1	x	0	x	2	x	x	1
Dyer's Woad	<i>Isatis tinctoria</i>		B		x	0	3	x	x	x	x	x	1	2
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>		B		x	x	0	x	x	x	0	x	x	2
Field Bindweed	<i>Convolvulus arvensis</i>		B	*	x	0	1	x	x	x	0	x	x	3
Hoary Cress (whitetop)	<i>Lepidium draba, Lepidium et. Al</i>		B		x	2	2	x	0	0	2	x	0	3
Halogeton	<i>Halogeton glomeratus</i>		B		1	X	X	x	1	x	X	1	0	3
Hounds tongue	<i>Cynoglossum officinale</i>		B		x	X	X	0	X	x	X	x	x	X
Jointed goatgrass	<i>Aegilops cylindrica</i>		B		x	x	x	x	x	x	x	x	x	x
Kochia	<i>Kochia scoparia</i>		B		3	2	3	3	2	3	2	3	3	3
Leafy Spurge	<i>Euphorbia esula</i>		B	*	0	1	0	0	0	0	0	0	0	0
Meadow knapweed	<i>Centaurea pratensis</i>		B	*	x	x	x	x	x	x	x	x	1	0
Mediterranean sage	<i>Salvia aethiopsis</i>		B	*	1	2	3	0	0	1	3	0	1	2
Medusahead rye	<i>Taeniatherum caput-medusae</i>		B		1	3	2	0	0	1	2	0	1	1
Musk thistle	<i>Carduus nutans</i>		B	*	x	2	2	1	0	2	3	1	1	0
Myrtle Spurge	<i>Euphorbia myrsinites</i>		B		x	X	2	x	x	0	X	x	0	X
Perennial Pepperweed	<i>Lipidium latifolium</i>		B		0	3	1	X	0	0	1	x	0	3
Puncturevine	<i>Tribulus terrestris</i>		B	*	0	3	2	x	0	x	3	x	x	2
Purple loosestrife	<i>Lythrum salicaria</i>		B	*	1	0	1	0	x	x	0	x	0	0
Rush Skeletonweed	<i>Chondrilla juncea</i>	T	B		x	x	0	x	x	x	x	0	0	x
Russian knapweed	<i>Acroptilon repens</i>		B	*	1	2	1	0	0	0	3	0	0	3
Saltceder	<i>Tamarix ramosissima</i>		B	*	x	x	1	0	0	x	x	0	0	1
Scotch broom	<i>Cytisus scoparius</i>		B	*	x	x	0	x	x	x	x	x	x	x
Scotch thistle	<i>Onopordum acathium</i>		B		1	2	3	x	0	0	1	0	0	2

Weed Speceis Common Name	Scientific Name	State List T	State List A or B	Biological Control Priority	Beaty Butte	Chewaucan	Goose Lake	Newberry	Poverty	Silver Lake /Sycan	Summer Lake	Wagontire	Warner Unit	Warner Valley Basin
Spotted Knapweed	<i>Centaurea stoebe (c.maculosa)</i>	T	B	*	x	0	2	1	0	2	0	2	0	0
Spinny Cockelbur	<i>Xanthium spinsum</i>		B		x	x	3	x	x	x	x	x	x	0
Summer Pheasant eye	<i>Adonis vernailis</i>		N/A		x	0	2	x	x	x	0	0	0	0
Sqarrose knapweed	<i>Centaurea virgata</i>		A		x	x	x	x	x	x	x	x	x	x
Sulfur cinquefoil	<i>Potentilla recta</i>		B		x	2	2	x	x	0	x	x	0	0
Yellow Starthistle	<i>Centaurea solstitialis</i>		B	*	0	1	1	0	0	0	1	0	0	0
Yellow Toadflax	<i>Linaria vulgaris</i>	*	B	T*	x	0	3	10	x	x	1	x	1	0

Species being targeted by Lake County CWMA

Threat key

- 0 Watch For
- 1 Establishing
- 2 Controlable
- 3 Widespread
- x Not detected

Appendix P-3

Revegetation and Noxious Weed Control Plan

Obsidian Solar Center
Revegetation and Noxious Weed
Control Plan

Prepared by:
Obsidian Solar Center LLC

5 Centerpointe Drive, Suite 250
Lake Oswego, Oregon 97035

October 2019

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Acronyms and Abbreviations

Applicant	Obsidian Solar Center LLC
CWMA	Cooperative Weed Management Area
EPA	U.S. Environmental Protection Agency
Facility	Obsidian Solar Center
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy

1.0 INTRODUCTION

Obsidian Solar Center LLC (Applicant) proposes to construct the Obsidian Solar Center (Facility) in Lake County, Oregon, which would have alternating current generating capacity of up to 400 megawatts and may include battery storage technology. The Facility will be located approximately 8 miles southeast of Fort Rock, Oregon, in the Christmas Valley portion of northern Lake County.

The site boundary contains about 3,921 acres, but approximately 331 acres will not be developed in order to avoid impacts on sensitive resources, or because these areas fall within unused portions of the generation-tie transmission line corridor. Construction of the Facility will disturb approximately 3,590 acres of vegetation within the site boundary, comprising sagebrush shrubland (95.3 percent), sand dune (3.0 percent), non-native forb (1.2 percent), and playa (0.5 percent).

This Revegetation and Noxious Weed Control Plan outlines the objectives, methods, and success criteria that Applicant will use to direct revegetation efforts in areas of soil disturbance not associated with permanent Facility components, and to control noxious weeds on the Facility site. Applicant is coordinating with the Oregon Department of Fish and Wildlife (ODFW) to develop an approach to mitigating permanent habitat impacts on the majority of the area within the site boundary (refer to Exhibit P for details). Applicant's two primary goals are (1) encouraging revegetation within the site boundary to reduce the potential for windblown and water erosion by reestablishing vegetation ground cover and root structure, and (2) avoiding or controlling the introduction and spread of noxious weeds. With the exception of controlling noxious weeds, Applicant is not required to meet specific restoration standards, such as meeting specific success criteria, except as they pertain to Facility permit conditions (e.g., 1200-C Construction Stormwater permit), or conditions of approval to the Site Certificate. However, to help promote use by native wildlife species after construction, Applicant will focus on revegetating with mostly native plant species, to the extent practicable.

Applicant consulted Lake County and the Cooperative Weed Management Area (CWMA) program in developing this plan. Lake County works closely with private landowners and the CWMA to control noxious weeds in Lake County. Section 3.0 provides details of correspondence with the CWMA.

2.0 REVEGETATION METHODS

Applicant will not mow vegetation in most areas within the site boundary prior to starting other construction activities. In some areas, vegetation will be smashed by trucks driving over it, and in other areas where trenching or grading will occur, vegetation will be removed either entirely or to within several inches of the ground. Vegetation root structures and topsoil seed bases will

be preserved in most Facility areas, and additional soil management measures, such as topsoil stripping and segregation, will not be required. In most of these areas, Applicant will allow vegetation to restore “passively,” i.e., without re-seeding. Noxious weed prevention and control will be necessary within the site boundary.

Soil disturbances at permanent Facility components, such as inverter pad and substation footprints, will not be restored. However, in other areas with soil disturbance, such as trenches for underground cable installation, “active” restoration, i.e., with re-seeding, may be necessary to ensure timely recovery of vegetation, control erosion, and prevent the establishment and spread of noxious weeds. The following subsections describe the measures and practices that Applicant will employ to actively restore vegetation in areas of soil disturbance, with the exception of noxious weed control.

2.1 Soil Management

Soil management measures will begin at the start of construction. Construction crews will adhere to the soil management measures and practices listed below. Applicant will maintain these measures and practices until the affected areas meet the success criteria detailed in Section 4.2.

- Establish stable surface and drainage conditions and use standard erosion control devices and techniques to minimize soil erosion and sedimentation, including the installation of silt fencing, straw bales, mulch, straw wattle, erosion control fabric, and slope breakers, as appropriate. Applicant will use certified weed-free straw bales, straw mulch, hydromulch, and/or other appropriate weed-free mulch materials.
- Due to the limited extent of grading during construction, and due the relatively narrow areas (approximately 3 feet wide) where trenching will occur, Applicant does not foresee the need to strip and segregate topsoil. However, if large areas of soil disturbance (e.g., 50 by 50 feet or larger) that require revegetation are identified during construction, Applicant may implement topsoil stripping and segregation to preserve topsoil. In such instances, Applicant would strip topsoil (generally defined as the upper 6 to 12 inches of soil) from subsoil, segregate it into stockpiles, and then reapply the topsoil to its original location after construction.

2.2 Revegetation

Applicant will initiate revegetation measures (i.e., re-seeding) in construction disturbance areas that create gaps in vegetation, as soon as appropriate after activities in work areas are completed. For example, Applicant expects to install solar modules on approximately 60-acre portions of the Facility at a time. Therefore, any necessary reseedling would occur in the next approved seeding window (refer to Section 2.2.1) after construction activities in each 60-acre area are complete. Applicant may delay some revegetation activities based on seasonal considerations or weather conditions. Areas that require re-seeding that cannot be done so promptly will be stabilized with

mulch or otherwise treated to minimize erosion, if necessary, until seeding can be conducted. Applicant will implement measures to prevent the establishment and spread of noxious weeds (refer to Section 3.0) in conjunction with re-seeding efforts.

2.2.1 Seed Mixture

Applicant will consult the ODFW to develop a final seed mixture appropriate for revegetation efforts on the Facility site. Table 1 provides Applicant’s preliminary proposed revegetation seed mixture developed by consulting the Natural Resources Conservation Service office in Lakeview, Oregon (Corning 2019) and the Lake County CWMA (Jaeger 2019). Applicant may modify this preliminary seed mixture ahead of revegetation at the request of landowners, Lake County, or further coordination with the CWMA or ODFW. The preliminary seed mixture uses four native and one non-native species that are adapted to the conditions of the Facility site to help ensure the greatest probability of germination and long-term survival. All plant materials shall meet the following requirements:

- Seeds will be “source identified.” The original source for the seed mixture(s) should be the Northern Basin and Range ecoregion. The seed should be a locally adapted biotype, adapted to conditions similar to the Facility site.
- Seed will be certified “weed-free.”
- Seed application rates presented in Table 1 assume that drill seeding methods will be employed. If broadcast seeding methods are used, the seed application rates in Table 1 will be doubled.

Table 1 Preliminary Revegetation Seed Mixture

Common Name	Latin Name	Variety	Pure Live Seed Pounds per Acre ¹	Purpose
Bluebunch wheatgrass	<i>Pseudoregneria spicata</i>	Secar	4	(N) (EC)
Thickspike wheatgrass	<i>Elymus lanceolatus</i>	Critana	4	(N) (EC)
Indian ricegrass	<i>Achnatherum hymenoides</i>	Nezpar	3	(N) (EC)
Basin wildrye	<i>Elymus cinereus</i>	Magnar	4	(N) (EC)
Crested Wheatgrass	<i>Agropyron desertorum</i>	Hycrest	4	(I) (EC)
TOTALS			19	

Notes to Table 1:

¹ assume drill seeding methods will be employed. If broadcast seeding methods are used, the seed application rates in Table 1 will be doubled.

Key: (N) = Native, (I) = Introduced, NA = not applicable, (EC) = Erosion Control

2.2.2 Seed Planting Methods and Schedule

Applicant will apply the proposed seed mixture (Table 1) at an approximate rate of 19 pounds per acre (for drill rate; double the rate for broadcast or hydroseeding). Applicant may employ a combination of broadcast seeding, drill seeding, and hydroseeding, depending on slope and other site conditions. Applicant may apply straw mulch, hydromulch, and/or other appropriate weed-free mulch material, as needed, immediately after seeding. When hydroseeding, Applicant will add green-dyed, wood-fiber mulch to the slurry mixture at a rate of 1,000 pounds per acre. In addition to serving as a carrying agent for the seed, the biodegradable green mulch serves as a tracer for visually checking distribution to ensure uniform coverage of the disturbed areas.

Applicant will attempt to conduct re-seeding efforts in February to early April, depending on weather conditions, for construction activities completed during the winter. In areas where crews complete construction activities from mid-April to early November, re-seeding will occur in October or early November. If construction crews complete activities during time periods that do not allow for prompt re-seeding, the affected areas will be stabilized with mulch or otherwise treated to minimize erosion, if necessary, until seeding can be conducted.

3.0 NOXIOUS WEEDS

Invasive, non-native plants are opportunistic, may readily colonize disturbed areas, and can inhibit native plant species from re-establishing. Invasive plants may have significant adverse impacts on agricultural operations and on natural resources, including wildlife habitat. Lake County and the State of Oregon designate certain invasive plant species with elevated economic or environmental concerns as noxious weeds and prioritize these species during weed management planning and operations.

The Oregon Department of Agriculture designates three categories of noxious weeds: “A” list species, “B” list species, and “T” species (ODA 2018). A-listed weeds are economically important and occur in the state in small enough infestations to make eradication or containment possible, or are rare species not known to occur in the state but have a presence in neighboring states, making future occurrence imminent. B-listed weeds are economically important and regionally abundant, but may have limited distribution in some counties. T-designated weeds are selected by the Oregon State Weed Board to be the focus for prevention and control by the Noxious Weed Control Program. T-designated noxious weeds are species selected from either the A or B lists. Refer to ODA’s 2018 Noxious Weed Policy and Classification System for a list

of state-designated noxious weeds. In addition, Lake County maintains a list that designates three categories of Noxious Weeds: “A,” “B,” and “C” (Lake County 2018). The County’s “A” and “B” designations are similar to ODA’s definitions, and the “C” category denotes species that are of economic importance and are abundant county-wide and in neighboring counties. Note that there is only partial overlap between the ODA’s and the County’s weed designations for each species (e.g., a species may have one designation per the ODA and another per the county).

Applicant consulted Lake County and the CWMA program in developing this plan. Lake County works closely with private landowners and the CWMA to control noxious weeds in Lake County (Johnson 2018). Applicant provided draft noxious weed measures for the Facility to the CWMA program contact, who provided feedback. The CWMA’s primary concern is to prevent the spread of noxious weeds to adjacent agricultural areas. With regards to specific noxious weed species, the CMWA is most concerned about the introduction and spread of diffuse knapweed (*Centaurea diffusa*) and spotted knapweed (*Centaurea maculosa*) (Jaeger 2018, 2019). Although diffuse knapweed is a category “B” on the state list, Lake County considers this species to be category “A.” The CWMA offered to coordinate with Applicant to further refine noxious weed control approaches for the Facility during construction and operation (Jaeger 2018).

Applicant intends for the measures described in this section to meet the requirements of Lake County, prevent the introduction of new noxious weed species to the Facility site, and control existing populations of noxious weeds, where feasible.

3.1 Prevention and Control Measures

Applicant will implement noxious weed control measures in accordance with existing state and Lake County regulations. Applicant will attempt to prevent and eradicate new populations of noxious weeds that are identified during construction or operation, and that are caused by the Facility. Applicant’s consultants did not document noxious weed populations during habitat mapping efforts and other field surveys within the site boundary (refer to Exhibit P, Appendix P-1). Should noxious weeds be identified within the site boundary prior to, during, or after construction, the goal will be to prevent further spread, unless eradication is feasible.

Applicant will implement the following measures, as appropriate:

- **Environmental training:** Conduct environmental awareness and sensitivity training before soil and vegetation disturbance activities to educate all personnel regarding environmental concerns and requirements, including weed identification (particularly diffuse knapweed), prevention, and control methods. Qualified personnel will conduct this training.
- **Pre-construction surveys:** Conduct surveys for designated noxious weeds within proposed Facility disturbance areas concurrently with other pre-construction surveys, such as pre-construction surveys for migratory bird nests.
- **Signage:** Demarcate any problem noxious weeds areas on the site (e.g., infestations of

ODA or Lake County category A species, or potentially large but well-defined areas of ODA or Lake County category B, C, or T species) with signs, as appropriate.

- **Pretreatment:** Prior to vegetation or soil disturbance, Applicant may treat areas of known noxious weeds with herbicides or manually remove them, if practicable.
- **Treatment during construction:** During construction, Applicant may treat identified new noxious weed populations, as necessary. Treatment methods and timing will be based on species-specific and area-specific conditions (e.g., proximity to water, agricultural areas, topography, land use, and time of year) and will be coordinated with and follow requirements and guidelines of Lake County or the ODA.
- **Clean vehicles/equipment:** Personnel will thoroughly clean all vehicles and equipment of soil and plant material before mobilizing to the Facility site, and will clean all clearing and grading equipment prior to leaving any identified noxious weed sites.
- **Cleaning station:** If some vehicles or equipment cannot be cleaned prior to mobilization to the Facility site, and pre-construction surveys have identified multiple problem noxious weed areas, Applicant will construct a fixed water cleaning station at the point of Facility site entry for construction equipment and vehicles. The Facility environmental inspectors and management staff will determine the need for a fixed water cleaning station, taking the findings of pre-construction surveys into consideration. The water cleaning station will use high-pressure water over a non-permeable synthetic fabric so that the soil and plant material from the cleaning operation can be removed and disposed of without contaminating the underlying soil. Cleaning efforts will be concentrated on tracks, feet, or tires and on the undercarriage, with special emphasis on axles, frames, cross members, motor mounts, the underside of running boards, and front bumper/brush guard assemblies.
- **Mobile cleaning stations:** As needed, construction crews will clean seeds, roots, and rhizomes off equipment and vehicles used to move vegetation and topsoil in identified noxious weed-infested areas during the clearing phases before proceeding to other parts of the Facility site. In most infestation locations, personnel will clean vehicles with compressed air.
- **Weed-free stray bales:** The contractor will ensure that all straw bales used for sediment and erosion controls, mulch distribution, and restoration seed mixes—if used—are certified as weed-free from the supplier.
- **Post-construction monitoring:** After construction, during operation, Facility staff will monitor for noxious weeds and treat weeds, as appropriate. If needed, a state-licensed weed control contractor will be used to treat noxious weeds.

3.2 Treatment Methods

Noxious weed treatment methods typically include manual methods (e.g., pulling plants by hand or clipping seed heads), mechanical methods (e.g., mowing or burning), chemical methods (i.e.,

application of herbicides), or biological methods (e.g., introduction of insects for biological control). For construction and operation of the Facility, Applicant expects to utilize manual or chemical weed control methods only. Applicant will coordinate with Lake County and the CWMA to determine appropriate treatment methods and schedules. The decision to use either manual or chemical methods will depend on a variety of factors, including the species of the noxious weed population, the density and geographic extent of the population, and the location of the population in relation to other sensitive resources (e.g., proximity to waters or sensitive crops).

If manual control methods are used, any removed plant parts, including seeds, roots, and rhizomes, will be removed from the Facility site and disposed of properly. If herbicide treatment is necessary, Applicant will only use herbicides that are approved for use in the state of Oregon by the U.S. Environmental Protection Agency (EPA) and the ODA. Applicant will notify landowners of the herbicide proposed for use on their lands and obtain approval prior to application. Applicant will apply herbicides to treatable noxious weed populations as described below.

Applicant will hire a state-licensed weed control contractor to apply herbicides according to EPA and ODA standards. In general, herbicide application will not occur when the following conditions exist:

- Wind velocity exceeds 15 miles per hour for granular application or 10 miles per hour for liquid applications;
- Snow or ice covers the foliage of target species; or
- Adverse weather conditions are forecasted in the next few days.

The weed control contractor will use vehicle-mounted sprayers (e.g., handgun, boom, and injector) mainly in open areas that are readily accessible by vehicle. They may use hand application methods (e.g., backpack spraying) in areas not accessible by vehicle. Equipment will be calibrated prior to spraying and periodically during spraying to ensure proper application rates.

The state-licensed weed control contractor will follow all applicable state requirements and guidelines in effect at the time.

4.0 MONITORING, SUCCESS CRITERIA, AND REPORTING

As stated above, after construction of the Facility Applicant will comply with the requirements of specific Facility permit conditions, including the 1200-C Construction Stormwater permit, and of any applicable conditions of approval to the Site Certificate. In addition, Applicant will comply with state and county requirements to control noxious weeds. Applicant's primary goals for post-construction monitoring are (1) meet the Oregon Department of Environmental

Quality's final vegetative stabilization measures, as will be described in the 1200-C Construction Stormwater permit, and (2) avoid the introduction to or spread from the Facility of noxious weeds. Applicant will include mostly native plant species within the seed mixture to revegetate the Facility site to help promote use by native wildlife species after construction.

4.1 Monitoring

Applicant will conduct revegetation and noxious weed monitoring. The purpose of monitoring is to evaluate soil stability, vegetation composition and cover, and occurrence of noxious weeds within areas of construction-related soil disturbance.

Vegetation will be allowed to reestablish on most portions of the Facility. The monitors will inspect and record general (visual) observations of revegetation success across the entire Facility site. More detailed observations may be recorded in portions of the Facility site boundary where Applicant conducted reseeding activities.

The monitors will survey a representative sample of Facility areas (including both revegetated and undisturbed areas) annually to gauge revegetation success and noxious weed control needs. In addition, monitors will survey for noxious weeds along all perimeter and main internal access roads.

Monitoring will begin in the first year following initial revegetation of disturbance areas and continue until the revegetation areas meet the success criteria (refer to Section 4.2). If areas do not meet success criteria within five years, Applicant will coordinate additional monitoring with Lake County and notify the Oregon Department of Energy (ODOE).

During revegetation monitoring surveys, monitors will collect the information listed below from representative monitoring locations, including along main access roads and areas of especially heavy disturbance, as well as at sample plots across the Facility site (one sample plot per quarter-section, or 160 acres). One sample plot will be randomly selected from a grid of 10 square 16-acre (approximately 0.025 square miles) plots within each quarter-section. The sample plots will be compared with reference sample plots in undisturbed areas of the same habitat type within the site boundary (i.e., avoidance areas).

- Confirmation that all disturbance areas requiring active revegetation have been re-seeded;
- Visual estimates of:
 - Percentage of total vegetative ground cover of individual plant species in two categories (grasses/forbs and shrubs), and
 - Percentage of bare soil;
- Presence of noxious weeds species (including density and geographical extent of populations); and

- Presence of windblown or water erosion problems that require additional measures.

Applicant will maintain records of monitoring results and assess the progress of vegetation establishment. If the field observations indicate that the revegetation efforts are not trending toward success, the monitors will describe remedial measures—including additional re-seeding—to correct deficiencies or shortcomings. Following each monitoring event, Applicant will implement remedial measures, as needed. The nature of the remedial actions will depend on the specific issues that arise. Applicant will report recommended remedial action in an annual report to ODOE (refer to Section 4.2). Applicant will implement warranted remedial actions promptly, taking into account the season, weather conditions, and other site-dependent constraints.

4.2 Success Criteria and Reporting

The success criteria for revegetation efforts will largely be driven by the Oregon Department of Environmental Quality's requirements in the 1200-C Construction Stormwater permit. The success criteria for noxious weed control will be based on qualitative observations to attempt to comply with Lake County and ODA recommended actions to control each category of noxious weed (ODA 2018; Lake County 2018).

Applicant will use the following criteria to determine success of revegetation efforts, unless instructed to use other criteria by Lake County or ODA:

1. The vegetation percent cover (both seeded and naturally recruited) is approximately 70 percent or more, or not substantially less than the percent vegetation cover of surrounding undisturbed areas.
2. State- or County-listed noxious weeds are absent or constitute only a very small percentage (e.g., less than 1%) of vegetation otherwise dominated by native or desirable non-native species, unless the noxious weeds present are similar to pre-construction conditions or adjacent undisturbed areas.
3. The percentage of bare soil in the sample plot is not substantially greater than the percentage of bare soil in surrounding undisturbed areas.

In general, Applicant will consider restoration successful when the restored areas are similar to surrounding undisturbed areas in vegetation percent cover and erosion potential, and noxious weeds are not dominant in the plant community (or the noxious weeds present are similar to pre-construction conditions).

Applicant will prepare a Revegetation and Noxious Weed Control Monitoring Report annually, following the initial re-seeding effort until success criteria are achieved. Each annual report will be submitted to ODOE and will summarize field data collected during field visits and assess

whether revegetation efforts are meeting the success criteria. The reports will also document remedial actions taken to date, additional remedial actions planned for areas that are not trending toward success, and the anticipated dates of completion of each of these actions. Once Applicant determines that revegetation and noxious weed control is successful, it will report this in the relevant annual report. Upon reaching success, Applicant will have no further obligation to monitor revegetation of the Facility site. Noxious weed control will continue for the life of the Facility, as required by county and state regulations.

5.0 REFERENCES

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