Attachment F: Tier 3 Wildlife, Habitat, Plant Survey and Addendum

Tier 3 Wildlife, Habitat, and Plant Survey Report

Wallula Gap Solar Project

Benton County, Washington

Pasture in the northern portion of the Project Area

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1 INTRODUCTION

OneEnergy Development, LLC (OneEnergy) proposed development of the Wallula Gap Solar Project (Project) in Benton County, Washington. OneEnergy contracted Western EcoSystems Technology, Inc. (WEST) to conduct surveys for threatened, endangered, and sensitive wildlife and plant species (TESS), conduct surveys for raptor nests, and to map habitat at the Project. In the absence of state or federal solar energy and wildlife guidelines, study objectives were designed to comply with Tier 3 studies described in the U.S. Fish and Wildlife Service's (USFWS) *Land-based Wind Energy Guidelines* (2012) and the Washington Department of Fish and Wildlife (WDFW) *Wind Power Guidelines* (2009). This report summarizes results from the TESS surveys, raptor nest surveys, and habitat mapping conducted at the Project in 2022.

2 PROJECT AND SURVEY AREA

The Project is located in the Columbia Plateau Ecoregion, which encompasses a large portion of southcentral Washington (Clarke and Bryce 1997). The landscape in this ecoregion consists of expansive sagebrush (*Artemisia* spp.) covered plains and valleys with isolated mountain ranges and river systems (Clarke and Bryce 1997). The Project Area is located on approximately 418 acres (ac; 169 hectares [ha]) of private land adjacent to State Route 14 (Figures 2.1 and 2.2). Located in southcentral Benton County, approximately 1.8 miles (mi; 2.9 kilometers [km]) north of the Columbia River. The Project Area is mostly flat to gently sloping with a predominant southern aspect ranging from approximately 560 feet (ft; 170 meters [m]) above mean sea level (AMSL) at the northern edge and 388 ft (118 m) AMSL at the southern edge of the Project boundary. Based on the National Land Cover Database (NLCD 2019), land cover types within the Project Area are a mixture of shrub/scrub and cultivated cropland (**Error! Reference source not found.**). The P roject Area is located in a heavily modified landscape and part of AgriNorthwest's Plymouth Farm that grows an assortment of fruits and vegetables. Land use in the Project Area is mostly livestock grazing, rock and soil quarries, and roads used to access the surrounding agricultural fields. A gravel-packed airplane landing strip bisects the northern portion of the Project Area. Portions of the Project Area once used for irrigated cropland (e.g., half pivot north of the landing strip and full pivot in the southern area; Appendix C) have been converted to pasture lands where cattle (*Bos taurus*) grazing occurs.

A Survey Area was delineated as a 1.0-mi (1.6-km) radius buffer surrounding the Project Area (Figure 2.1). The highly modified landscape surrounding the Project Area consists of orchards, irrigated center-pivot croplands, and infrastructure (e.g., equipment yards, warehouses, processing plants, rock quarries, electrical systems, and roads) to support AgriNorthwest's industrial agricultural operation.

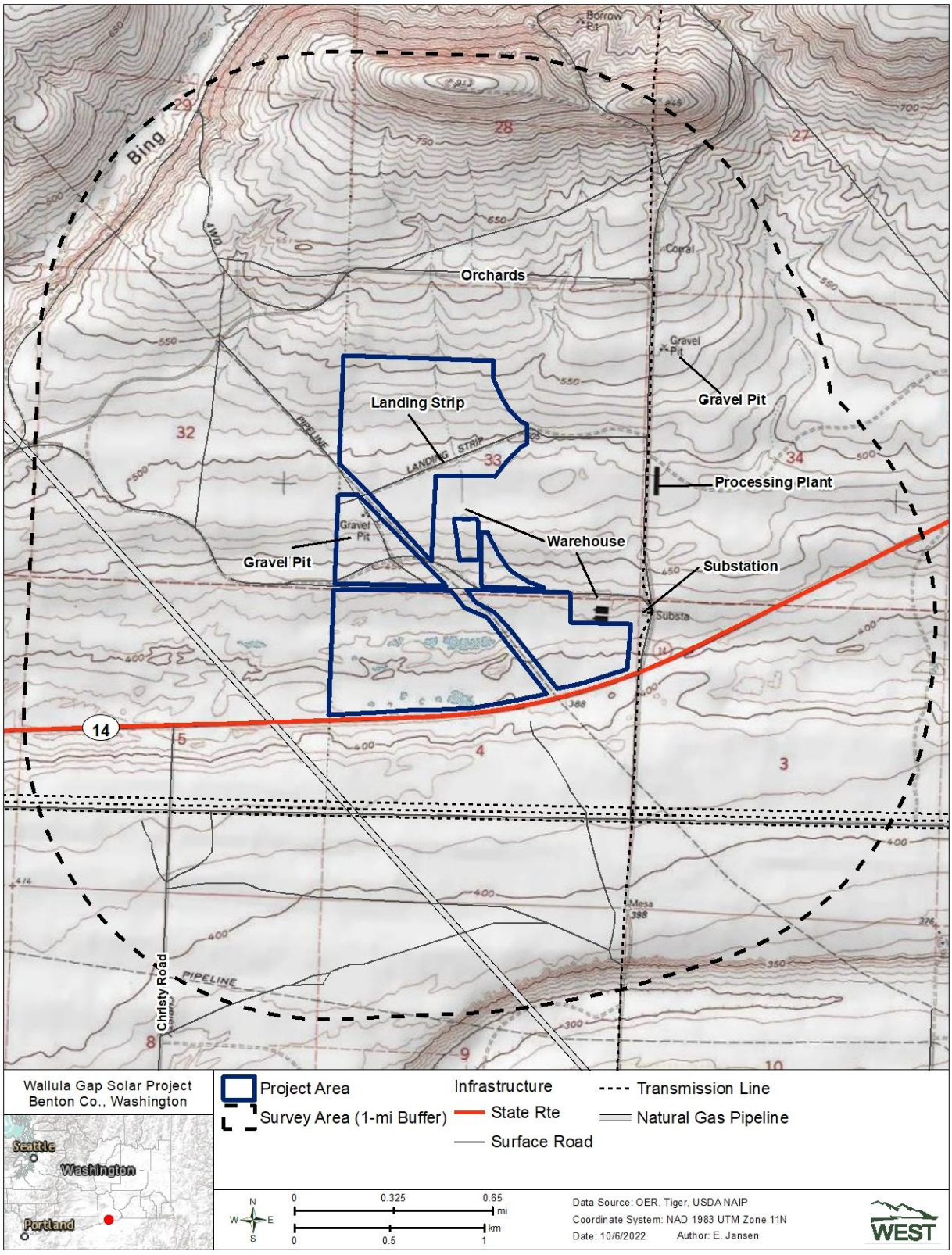

Figure 2.1. Location of the Wallula Gap Solar Project and Survey Area, Benton County, Washington.

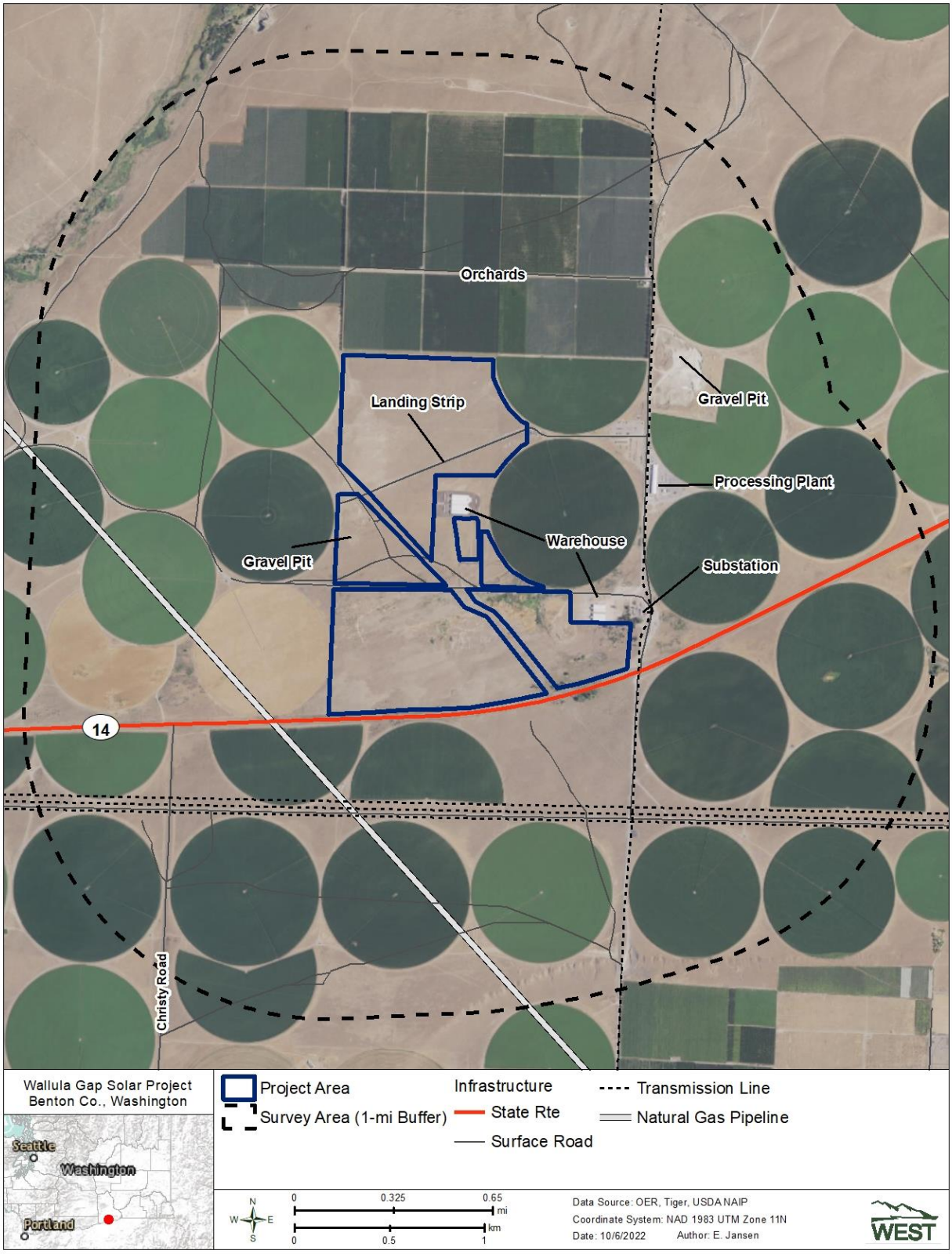

Figure 2.2. Aerial photograph of the Wallula Gap Solar Project and Survey Area, Benton County, Washington.

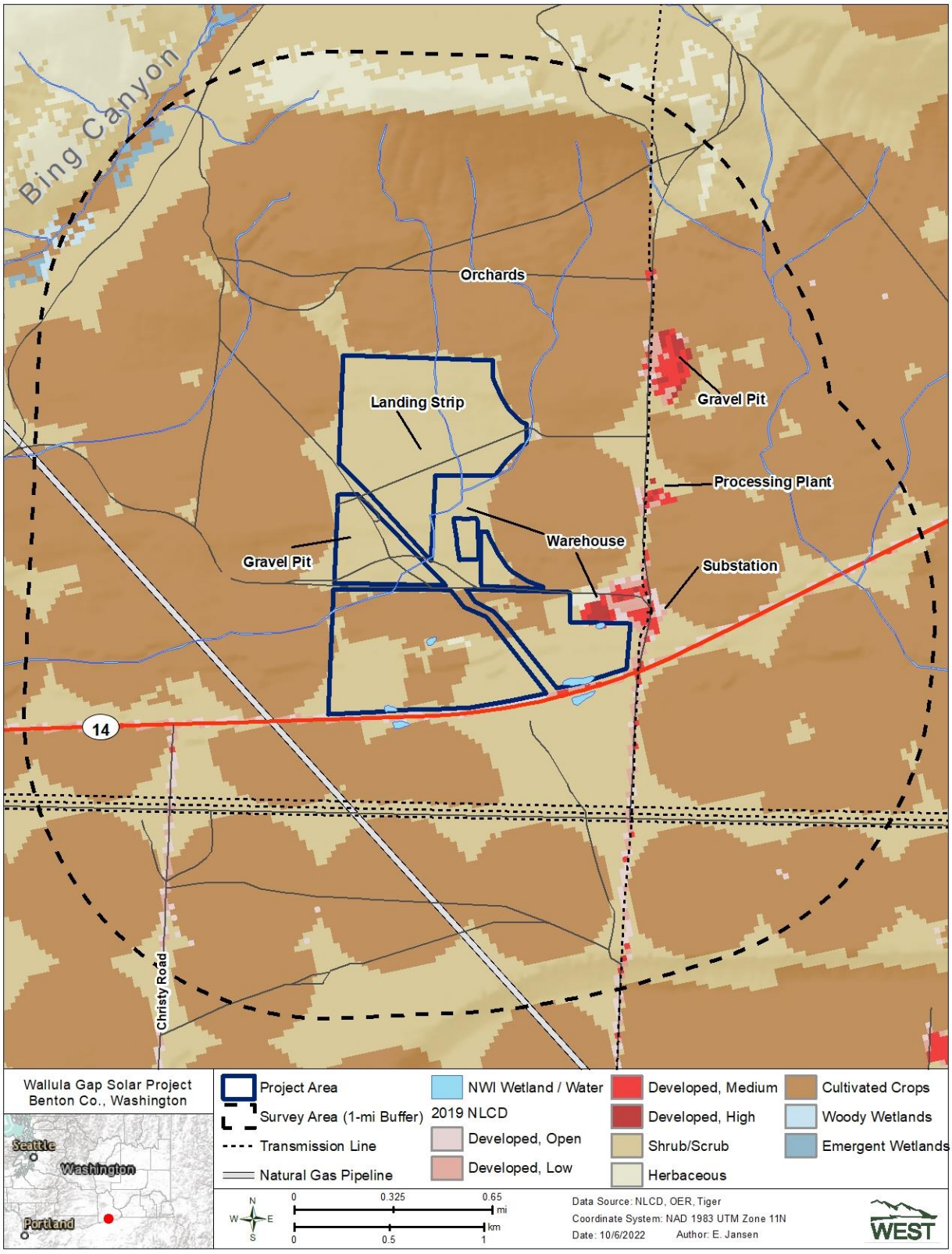

Figure 2.3. National Land Cover types for the Wallula Gap Solar Project and Survey Area, Benton County, Washington.

3 METHODS

OneEnergy provided a project description and information to WDFW who then conducted an internal data review and site visit to the Project along public roads in December 2021. WDFW noted high use of the landscape by waterfowl during winter and potential for the occurrence of burrowing owls (*Athene cunicularia*; OneEnergy 2021, Ritter 2021). To fulfill due diligence obligations, OneEnergy proceeded with a desktop assessment and field surveys of sensitive species and habitats. As part of the desktop analysis, the USFWS Information for Planning and Consultation (IPaC) system and WDFW Priority Habitats and Species (PHS) were queried to develop a list of wildlife and plants listed as threatened, endangered, or as sensitive species (USFWS 2022). Data on wetlands and other waters were obtained from the USFWS National Wetlands Inventory database (NWI 2022). Historical locations of rare plants and rare/high-quality ecosystems were obtained from the Washington Department of Natural Resources (WDNR) Natural Heritage Program (WDNR 2021a).

In 2022, WEST conducted TESS surveys at the Project Area, raptor nest surveys within the Project Area and 1-mi Survey Area, and habitat mapping within the Project Area (Figure 2.1). The objective of the TESS surveys was to determine if any TESS species were present at the Project. TESS surveys were designed mainly for wildlife species identified by WDFW as species of interest at the Project, including Townsend's ground squirrel (*Urocitellus townsendii*), burrowing owl, long-billed curlew (*Numenius americanus*), white-tailed jackrabbit (*Lepus townsendii*), and black-tailed jackrabbit (*Lepus californicus*; WDFW 2022). Other TESS wildlife species, including species identified as Birds of Conservation Concern (USFWS 2021) in the IPaC query (USFWS 2022), were also recorded, if observed. Raptor nest surveys were conducted to determine territory occupancy and breeding status of eagles and other raptors near the Project. Habitat types were mapped to inform mitigation requirements for temporary and permanent impacts to habitat resulting from Project development (WDFW 2009). Additionally, a rare vascular plant assessment and survey was conducted for rare plants listed on the 2021 Benton County List of Known Occurrences of Rare Plants, Mosses, and Lichens (WDNR 2021b). Survey methods are described below.

3.1 Threatened Endangered and Sensitive Species Surveys

WEST conducted three survey rounds to document TESS wildlife, raptor nests, and habitat within the Project Area. A survey round consisted of multiple days when a suite of other biological survey work (e.g., raptor nest or habitat surveys) was conducted. Surveys were conducted between early morning and mid-afternoon in March, April, and May. In March, surveys included an initial pedestrian survey of meandering transects to identify early nesting TESS bird species, documenting and verifying habitat types from remotely sensed data, and an initial rare plant survey. Raptor nests were documented during pedestrian transect surveys and by driving publicly accessible roads throughout the surrounding 1-mi Survey Area. In April, surveys included a systematic search for TESS in the Project Area by walking evenly spaced transects and all raptor nests documented in March surveys were revisited to document nest occupancy and status. A second pedestrian survey of meandering transects was conducted for rare plants in areas of

higher habitat quality for target plant species. In May, surveys repeated the standardized TESS transect surveys and raptor nest surveys, habitat types were rechecked to verify final habitat mapping, and a final rare plant survey was conducted in higher-quality habitats for later-blooming plant target species.

Surveys were conducted a minimum of two weeks apart to account for variation in seasonal activity. Surveys were conducted when wind speeds were less than 15 mi (24 km) per hour to increase species detectability. During standardized TESS surveys, one biologist walked meandering transects spaced approximately 200 ft (60 m) apart (i.e., survey coverage of 100 ft [30 m] on either side of the surveyor). Transects were oriented north to south during the first survey and were modified to an east to west orientation during the second survey. All survey transects were tracked on a Global Positioning System to ensure adequate survey coverage. If a TESS species was detected, the location, number, and behavior of individuals were recorded. In addition, a list of all wildlife species observed during surveys was maintained, per WDFW recommendations. Species-specific survey protocols for Townsend's ground squirrels and burrowing owls were conducted as part of the overall TESS survey and are discussed in detail below.

3.1.1 Townsend's Ground Squirrels (State Candidate)

The objective of Townsend's ground squirrel surveys was to create an inventory of squirrel burrows, determine site occupancy, and delineate the extent of site occupancy within the Project Area. Survey protocols were based on a conspecific ground squirrel species (Washington ground squirrel [*Urocitellus washingtoni*]), were WDFW-approved methods, and have been used at other renewable energy projects in the region. The survey protocol followed methods outlined in Morgan and Nugent (1999), which provides sampling techniques for areas where squirrel occupancy is unknown, and Goodman (2003), which provides sampling techniques for areas with known historical colony sites. This field protocol has previously been successfully implemented at multiple projects in Oregon and Washington (e.g., Tetra Tech 2011, Gerhardt and Kronner 2017).

While surveying, a WEST biologist scanned the ground for ground squirrel sign (e.g., scat, appropriately sized burrow, or tracks) and listened for squirrel vocalizations along each transect. If an active burrow or sign of squirrel was detected, the area within a 100-ft radius of the point was searched for additional sign. If no sign was detected within the 100-ft radius area, radial transects spaced approximately 100 ft apart from the initial burrow entrance would be surveyed out to 492 ft (150 m), marking all burrows detected. This process was continued until the outer-most burrows were identified, thus delineating the boundary of the colony. Once the colony was fully delineated, surveys continued in the same cardinal direction as before.

3.1.2 Burrowing Owls (State Candidate)

The objective of burrowing owl surveys was to identify the spatial extent of and habitat occupancy of burrowing owls within the Project Area, and were conducted during the spring breeding and summer nesting period (April – May) when owls are most active. Burrowing owl surveys were conducted concurrently with ground squirrel surveys. If a suitable burrow was observed, the biologist departed the transect to investigate the burrow. Burrowing owl habitat occupancy was

determined in the Project Area by an observation of at least one burrowing owl, or, alternatively, sign (e.g., tracks, feathers, pellets), or other items (e.g., prey remains, animal scat) were present at the burrow (California Burrowing Owl Consortium 1993). All occupancy sign was documented and mapped. Burrows were marked as Nest Burrow if shredded dung, vegetation, cast pellets, droppings, and prey remains were observed, Perch Burrow if only cast pellets, droppings, and prey remains were observed, or Inactive if no sign was observed.

3.2 Raptor Nest Surveys

The objective of the raptor nest survey was to locate raptor nests and determine territory occupancy and breeding status within the Project Area and 1-mi Survey Area. WEST conducted three ground-based raptor nest surveys in conjunction with TESS surveys. The first survey was conducted in early March prior to tree leaf out to increase nest detection and determine territory occupancy. Follow-up surveys were conducted in April and May at previously identified nests and in areas with a higher habitat quality (e.g., trees and elevated structures) where a new nest could be constructed. Within the Project Area, the biologist walked 100-ft spaced transects, scanning potential nesting substrate for nests. Within the 1-mi Survey Area, surveys were conducted from publicly accessible roads using spotting scopes and binoculars to scan drainages, trees, and transmission line infrastructure. Although not a raptor, nests occupied or constructed by common ravens (*Corvus corax*) were also recorded because of the species' ability to interchangeably use nests.

If a nest was located, nest status was classified as occupied or unoccupied, based on an approach modified from USFWS 2013 Eagle Conservation Plan Guidance and Steenhof et al. (2017), which were explicit to eagles. Other nest characteristics such as nest size (e.g., small, medium, large), nest condition (e.g., poor, fair, good), and nesting substrate (e.g., tree, structure) were recorded. Geographic coordinates and photograph were recorded for each nest.

3.3 Habitat Mapping

The objectives of vegetation surveys/habitat mapping was to characterize and map general habitat types within the Project Area to inform mitigation requirements for temporary and permanent impacts to habitat resulting from development per WDFW (2009). Habitat types mapped were consistent with those described by the WDFW (2009) and included the following:

- Shrub-steppe – in an undisturbed condition, shrub cover varies from 10% to ≥30%. Sagebrush is common shrub species found within this habitat type. Shrub height typically is medium tall (1.6–3.3 ft [0.5–1 m]). This habitat type may form mosaic landscapes with eastside grasslands (see below).
- Eastside (Interior) Grassland – uncultivated areas with herbaceous vegetation including grasslands enrolled in the U.S. Department of Agriculture Conservation Reserve Program; habitat is dominated by short to medium-tall grasses (less than 3.3 ft). Soil surface between perennial plants can be covered with a diverse cryptogamic or microbiotic layer of mosses, lichens, various soil bacteria, and algae. Native perennial bunchgrasses can

be common but degraded sites may have a residual native grass component dominated by annual non-native grasses and forbs.

- Cropland – lands farmed or cultivated by agricultural methods in growing cycles shorter than 15 years and characterized by a homogenous, cultivated, and maintained stand or are considered croplands.
- Pasture and Mixed Environs – improved lands that produce grass seed or hay or unimproved lands that are predominantly non-native grassland sites, abandoned fields that have little or no active management such as irrigation, fertilization, or herbicide applications. Sites may or may not be grazed by livestock. Outbuildings and barns are common.

The above habitat types were mapped using aerial imagery, remotely sensed data (Yang et al. 2018, NLCD 2019), and the USFWS NWI (2022), which were then field-verified. Following field-verification, Geographic Information Systems was used to delineate the extent of the habitat, calculate acreages, and create a habitat map of the Project.

3.4 Rare Plant Assessment and Survey

Prior to field surveys, a literature review and desktop analysis was conducted to develop a list of target plant species to search for during field surveys (Fertig 2020). The target plant list was developed by identifying rare plant species listed in Benton County, location of current and historical occurrences[1], and plant species and habitat associations. Because the occurrence of rare plants are often associated with particular soil types, soils were mapped and classified according to Natural Resources Conservation Service (NRCS) soil reports. NRCS farmland classifications for soil types that are also designated by the Benton County Comprehensive Plan to inform land use decisions were extracted from reports (Benton County 2018). Noxious weeds were classified according to the 2020 Noxious Weed List (Benton County 2022). Resources that contained the most spatially and temporally relevant information was used, to the extent possible, and included:

- Benton County List of Known Occurrences of Rare Plants, Mosses, and Lichens (WDNR 2021b; https://www.dnr.wa.gov/NHPdata)
- Field Guide to Rare Plants of Washington, hardcopy and electronically (Camp and Gamon 2011; https://www.dnr.wa.gov/NHPfieldguide)
- Locations of Rare Plants and Rare/High-quality Ecosystems (WDNR 2021b; https://www.dnr.wa.gov/NHPdata)
- PLANTS Database (NRCS; https://plants.usda.gov/java/)
- Washington Native Plant Society (https://www.wnps.org/)

[1] Current occurrence is defined by the Natural Heritage Program as records documented after 1977 and still considered extant. Historical occurrences have not been revisited since 1977, or contain imprecise location information, or have been reported as extirpated or destroyed.

- The Burke's Botany Collection (University of Washington Herbarium; http://www.burkemuseum.org/research-and-collections/botany-and-herbarium)
- Web Soil Survey (NRCS; https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
- Noxious Weed List (Benton County 2022; http://www.bentonweedboard.com/)

From these sources, the likelihood of a rare plant species to occur in the Project Area was determined by considering the species' known range (spatial or clinal distribution), habitat suitability, and records of occurrence. Based on these factors, the likelihood of occurrence in the Project Area was defined for each species using the criteria in the following categories:

- None – Outside the species' known range; no suitable habitat; includes species believed be extinct or extirpated
- Unlikely – On the periphery of the species' known range and suitable habitat appears present but the species is highly localized/specialized or has a small population
- Possible – In the species' known range and contains marginal suitable habitat
- Likely – In the species' known range and contains suitable habitat; no records of species' occurrence in the area
- Occurs – In the species' known range and contains suitable habitat; existing records of species' occurrence in the area

Species' with likelihood classifications of Possible, Likely, or Occurs were placed on the target species list for the Project. Surveys were conducted using an intuitive controlled survey method (Whiteaker et al. 1998). This method included a complete survey in habitats with the highest potential for target species' occurrence. Surveys focused in areas that contained primary habitat associations with habitat types where species have previously been recorded (Camp and Gamon 2011, Roché et al. 2019, WDNR 2021a and 2021b). Surveys conducted in March were used to initially identify areas of high habitat quality that would be rechecked upon subsequent survey visits. Once an area of potential occupancy by a target species was located, all suitable habitat was systematically searched which resulted in 100% coverage. Surveys were timed to coincide with the blooming period of the target species. All plant species encountered were recorded in order to obtain a full floristic inventory of the Project Area.

4 RESULTS

4.1 Threatened Endangered and Sensitive Species Surveys

The PHS data provided by WDFW did not identify records of TESS wildlife species in the Project Area or Survey Area. The PHS data, however, did identify some Priority Habitats (e.g., shrub-steppe and eastside steppe) as occurring within the Project Area, but those results were not entirely consistent with ground surveys (see Section 4.3). WEST conducted field surveys at the Project on March 20–21, April 6 and 11, and May 29–30, 2022. On March 21, surveyors observed four bald eagles (*Haliaeetus leucocephalus*) in the Survey Area feeding on a coyote (*Canis*

latrans) carcass along the slopes of Bing Canyon (see Figure 2.3; Appendix A). Additional observations of bald eagles were noted throughout the day on March 21, including circle soaring above the Project Area but none were observed on the ground or perched in the surrounding trees. No suitable bald eagle nesting habitat is present in the Project Area or surrounding Survey Area; however, carrion, cattle carcasses, calves, and after birth provide supplemental foraging opportunities for all raptors (Appendix A). No additional TESS species were identified during surveys. A full list of wildlife species observed at the Project is found in Appendix B.

4.2 Raptor Nest Surveys

WEST identified twelve raptor nests within 1 mi (1.6 km) of the Project Area during surveys (Figure 4.1, Table 4.1). Two nests (16%) were located in the Project Area; one nest was occupied by a red-tailed hawk (*Buteo jamaicensis*; Nest 7) and the other nest was unoccupied (Nest 9). The majority of the Project Area lacks suitable raptor nesting habitat; the suitable nesting habitat that does exist consists of Russian olive (*Elaeagnus angustifolia*) and cottonwood trees (*Populus* spp.) along the southern boundary adjacent to State Route 14. The Project Area lacks cliffs, rock outcrops or other elevated structures suitable for raptor nesting.

The remaining 10 nests (84%) were located outside of the Project Area but within the Survey Area (Figure 4.1). Of these 10 nests, one nest, located in a cottonwood tree adjacent to the substation and main access road, was occupied by a great horned owl (*Bubo virginianus*) and one nest, located on a high-voltage electrical transmission tower, was occupied by a red-tailed hawk (Figure 4.1). The majority (80%) of nests in the Survey Area were unoccupied and were mostly located along *Populus* spp. hedgerows that line the orchards. Suitable raptor nesting substrate within the Survey Area included transmission towers located to the south of the Project Area and isolated patches of trees along roads. Higher-quality nesting habitat was located in more matures trees along the forested riparian area of Bing Canyon, one mi northwest of the Project Area. No cliffs, rock outcrops, or other natural nesting substrate suitable for eagle nesting were documented in the Survey Area (Appendix A).

Table 4.1. Raptor nests documented at the Wallula Gap Solar Project and Survey Area, Benton County, Washington.

Nest ID	Nesting Species	Status	Substrate	Nest Size	Nest Condition	Comments
1	Common raven	Occupied	Deciduous tree	Medium	Good	
2	Unknown raptor	Unoccupied	Deciduous tree	Medium	Fair	
3	Unknown raptor	Unoccupied	Deciduous tree	Medium	Fair	
4	Common raven	Occupied	Deciduous tree	Medium	Good	Adult on nest
5	Unknown raptor	Unoccupied	Deciduous tree	Medium		
6	Great horned owl	Occupied	Deciduous tree	Large	Good	At least two nestlings
7	Red-tailed hawk	Occupied	Deciduous tree	Large	Good	At least two nestlings
8	Unknown raptor	Unoccupied	Deciduous tree	Medium	Fair	
9	Unknown raptor	Unoccupied	Deciduous tree	Medium	Fair	
10	Common raven	Occupied	Tower	Medium	Good	Adult on nest
11	Red-tailed hawk	Occupied	Tower	Large	Good	Adult on nest
12	Unknown raptor	Unoccupied	Tower	Medium	Good	

Figure 4.1. Raptor nest survey results within the Wallula Gap Solar Project and Survey Area, Benton County, Washington.

4.3 Habitat Mapping

PHS remotely-sensed spatial data provided by WDFW identified general locations of Priority Habitats shrub-steppe and eastside steppe within the Project Area (Appendix C). Our field habitat assessments, however, did not find close correspondence between PHS mapping and vegetation characteristics or habitat types. The majority of areas mapped by PHS as shrub-steppe lacked the primary plant community that characterizes shrub-steppe (sagebrush and native grasses; Azerrad et al. 2011). Those areas consistent with habitat types identified in PHS mapping tended to be fenced areas that excluded livestock grazing, past agricultural conversion, or other ground disturbing activities (Appendix A).

Based on field habitat mapping, the dominant habitat type in the Project Area was pasture, which comprised approximately 387 ac (157 ha) or 93% of the total Project area (Table 4.2, Figure 4.2; Appendix A). Pasture is characterized by low herbaceous vegetation, absent substantive shrub cover or over story. Vegetation at the Project Area consisted primarily of non-native grasses and forbs; however, early successional shrubs (rubber rabbitbrush [*Ericameria nauseosa*]) and patches of woody vegetation (willow [*Salix* spp.] and Russian olive) were scattered throughout pastures, particularly in the southern portion of the Project Area. A series of earthen berms connected by culverts provided cattle a water source in the middle of the southern Project Area. Grazing and other disturbances reduced plant cover from pastures, exposing bare ground and sandy soils in many areas. Cattle were observed grazing in the pastures during all except the last survey. Early season ground cover in pastures consisted primarily of common stork's-bill (*Erodium cicutarium*), spring draba (*Draba verna*), gold-star (*Crocidium multicaule*), and the rosette's of fiddleneck (*Amsinckia* spp.) and other assorted weedy species. Patches of bare sand was common and grass height remained low (less than 2–3 inches [5–8 centimeters]). However, by the end of the last survey in May, vegetative growth increased to 3.3 ft, resulting in a uniform cover of primarily of non-native, introduced plant species (Appendix A). A matrix of mixed environs was embedded within and surrounding pastures and included gravel-packed and dirt roads, quarries, buildings, equipment staging areas, and wastelands. The highly disturbed and modified areas encouraged the establishment of ruderal plant species along the edge and into the interior of pastures. Common non-native, ruderal species included flixweed (*Descurainia sophia*), Kochia (*Bassia scoparia*), Russian thistle (*Salsola tragus*), and tall tumblemustard (*Sisymbrium altissimum*). A full list of plant species observed in found in Appendix D.

Shrub-steppe land cover was located on approximately 23 ac (9.3 ha) or about 5% of the Project Area. Patch size ranged 0.1–22.7 ac (0.04–9.2 ha) with the majority of patches less than 2.5 ac (1.0 ha; standard deviation = 5.3). The largest, most contiguous patch was located north of the landing strip, between a fence and cropland where cattle were excluded (Figure 4.2). Shrub species in shrub-steppe was co-dominated by big sagebrush (*Artemisia tridentata*), and rubber rabbitbrush. North of the landing strip and a 22.7 ac patch in the southeast corner were the few examples where sagebrush was the dominant shrub within a shrub-steppe patch. Sagebrush density and vigor was variable with higher densities and taller shrubs (greater than 4.0 ft [1.2 m]) in areas where grazing pressure was less apparent.

Pools of standing water were observed in several locations during the March survey and were in the general location of the NWI mapped wetlands; however, a formal wetland delineation was not conducted as part of the survey effort (Figure 2.3; Appendix A).

Table 4.2. Washington Department of Fish and Wildlife habitat types within the Wallula Gap Solar Project Area, Benton County, Washington.

Habitat Type	Area (acres)	Percent Composition
Pasture	387.2	93
Shrub-steppe	22.7	5
Mixed Environs	8.3	2
Total	**418.2**	**100**

4.4 Rare Plant Assessment and Survey

WDNR did not report any current or historical records of rare plants within the Project Area or Survey Area. The nearest record included grand redstem (*Ammannia robusta*), located approximately 3.3 mi (5.1 km) east of the Project Area, along a backwater shoreline of the Columbia River (Appendix E). The majority of rare plants/rare plant communities in Benton County occur north of the Project, along the ridgelines of the Horse Heaven Hills, Rattlesnake Hills Natural Area, and the Hanford Reach (Appendix E).

Although not listed in the USFWS iPaC report, one federally threatened plant species (state-listed endangered), the Umtanum desert buckwheat (*Eriogonum codium*), is known to occur within Benton County (WDNR 2021b). Species distribution is highly restricted, with the entire known population occurring along a 1.9-ac (0.8-ha) cliff on the eastern end of Umtanum Ridge within the Hanford Reach National Monument, approximately 47 mi (76 km) north of the Project Area (USFWS 2019). Species likelihood to occur is classified as None based on the small, isolated population, habitat type, and distance from the Project.

WDNR listed an additional 28 rare plant species documented in Benton County; eight of which were classified as Possible to occur within the Project Area based on similar habitat types and elevation (Table 4.3). Species included three state listed threatened and five sensitive species. No rare plant species were classified as “Likely” to occur based on the marginal, degraded land cover and habitat. Plant species with a classified likelihood to occur as Unlikely or None are reviewed in Appendix F. Surveys focused in areas that contained primary habitat associations with habitat types where species have previously been recorded including exposed sandy areas absent vegetation, road margins, banks of rock quarries, and patches of shrub-steppe habitat. Soil types classified as Dune Lands, Burbank Loamy Fine Sand and road margins encompassed the majority of survey areas for species associated with sandy habitat (Appendix G). Patches of shrub-steppe were surveyed for sagebrush, loamy-soil associated species (Figure 4.2, Appendix G).

No rare plants were documented in the Project Area during surveys conducted March – May 2022. Areas with primary habitat associations listed in Table 4.3 were comprised primarily of non-native species including cheatgrass (*Bromus tectorum*), wall barley (*Hordeum murinum*),

cereal rye (*Secale cereal*), and tall tumblemustard. The low growing conditions of the vegetation observed during the March and April surveys was significantly different during May when many non-native plants were at peak growth and in-bloom, highlighted the difference in native and non-native species composition. Past and current land use and management activities in the Project Area have resulted in degraded land cover conditions that are subject to reoccurring disturbances, thus reducing the likelihood for rare plant species to occur.

Figure 4.2. Washington Department of Fish and Wildlife (2009) habitat types within the Wallula Gap Solar Project Area, Benton County, Washington.

Table 4.3. Rare plant species with possible likelihood to occur at the Wallula Gap Solar Project Area, Benton County, Washington.

Scientific name (Common Name)	State Status[1]	Typical Habitat Characteristics	Survey Period	Rational for Likelihood
Aliciella leptomeria (Great Basin gilia)	T	Open habitats in semiarid regions, on dry bluffs or in sandy swales. Substrates are often hard, gravelly or sandy, fine reddish to blackish basalt soils, or fine non-basalt gravel with caliche fragments. 470–1,140 feet (ft).	April–June	Habitat, Elevation
Astragalus columbianus (Columbian milkvetch)	S	Shrub-steppe habitats on sandy or gravelly loams, silts, rocky silt loams, and lithosols. 420–2,320 ft.	April–June	Habitat, Elevation
Calyptridium roseum (rosy pussypaws)	T	Sagebrush desert to arid montane forest, in sandy to gravelly soils in very dry shrub-steppe, low swales in dark sandy soil. In spring, the swale microsites may be moister than the surrounding habitat. 525 ft.	May–June	Habitat
Cryptantha leucophaea (gray cryptantha)	T	Sandy substrates, especially sand dunes that have not been completely stabilized. Appears to be restricted to areas where there is still some wind-derived movement of open sand. 300–2,500 ft.	May–June	Habitat, Elevation
Eremogone franklinii var. *thompsonii* (Thompson's sandwort)	S	Sand dunes, scabland, and sagebrush slopes. 320–2,625 ft.	May–June	Habitat, Elevation
Eremothera minor (small-flower evening-primrose)	S	Gravelly basalt slopes, sandy and alkaline soils, and dry rocky hillsides; often with considerable cover of bare soil. 460–1,140 ft.	May–June	Habitat, Elevation
Leymus flavescens (yellow wildrye)	S	Occurs in sandy soils throughout its range, including sandy roadsides. Historical occurrence only. Elevation unknown.	June–July	Habitat
Oenothera caespitosa ssp. *caespitosa* (cespitose evening-primrose)	S	Open sagebrush desert; on loose talus slopes, steep, sandy or gravelly slopes, road cuts, and dry hills; as well as along the flat river terrace of the Columbia River. 410–1,800 ft.	April–June	Habitat

[1] S = Sensitive, vulnerable, or declining and could become Endangered or Threatened in Washington.
T = Threatened, likely to become Endangered in Washington.

5 REFERENCES

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Appendix A. Photos from the Wallula Gap Solar Project, Benton County, Washington.

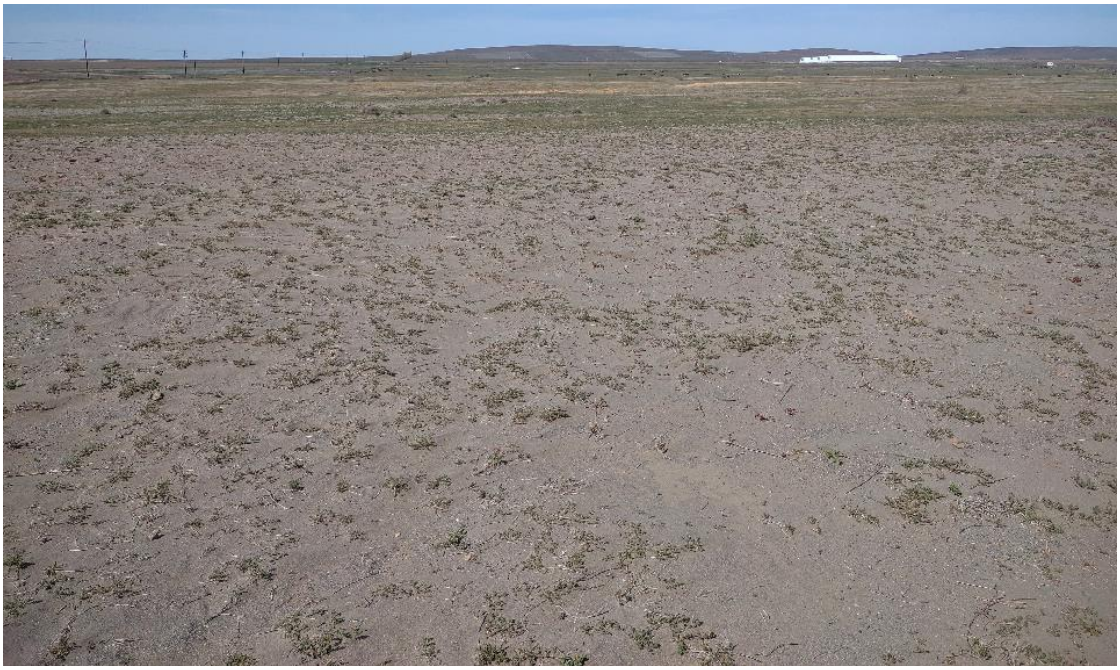
Appendix A1. Two of the four bald eagles feeding on a coyote carcass in shrub-steppe north of the Project Area. Photo taken 3/21/2022.

Appendix A2. Mixed environs of earthen quarry and wasteland in the Project Area. Photo taken 3/21/2022.

Appendix A3. Innundated depression behind quarry with Russian thistle and signs of cattle use. Photo taken 3/21/2022.

Appendix A4. Pasture with low vegetation and no shrub cover taken from the northern boundary of Project Area facing south, toward warehouse. Photo taken 4/6/2022.

Appendix A5. Pasture with bare ground, low vegetation, and no shrub cover taken from the middle of Project Area facing north, toward orchards. Photo taken 4/6/2022.



Appendix A6. Exposed dunes with mixed forbs in the southern portion of the Project Area, facing north. Photo taken 4/7/2022.

Appendix A7. Compacted gravel substrate and ruderal vegetation along an abandoned access road and rock quarry within the Project Area. Photo taken 4/7/2022.

Appendix A8. Livestock in pastures and Russian thistle along access road. Photo taken 4/6/2022.

Appendix A9. Low-density shrub-steppe stand in middle of Project Area with low composition of sagebrush and relatively higher proportion of rubber rabbitbrush. Photo taken 3/20/2022.

Appendix A10. Small 1.2 acre patch of sagebrush in southern Project Area, facing warehouse. Example of a sagebrush dominant patch without rabbit brush. Photo taken 3/20/2022.

Appendix A11. Accumulation of Russian thistle along fence line in southeast corner of the Project Area. Photo taken 3/21/2022.

Appendix A12. Livestock bone yards in the southern portion of the Project Area. Photo taken 3/21/2022.

Appendix A13. Overgrown pasture margin with primarily non-native species, south of the landing strip. Photo taken 5/29/2022.

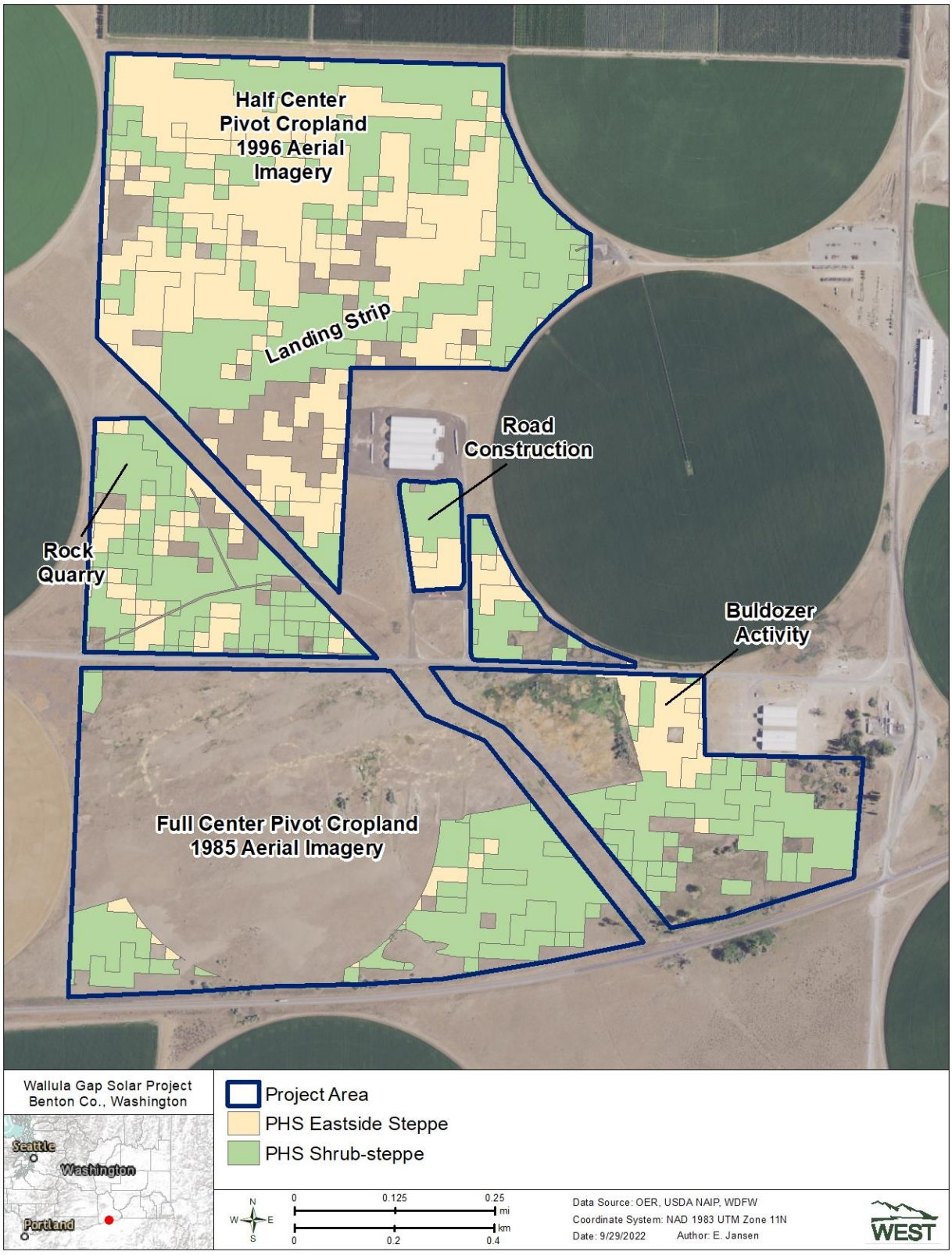
Appendix A14. Overgrown pasture with primarily non-native species in the southern Project Area, facing toward the highway. Photo taken 5/29/2022.

Appendix B. Wildlife Species Observed during 2022 Surveys at the Wallula Gap Solar Project, Benton County, Washington.

Appendix B. Wildlife species observed during 2022 surveys at the Wallula Gap Solar Project, Benton County, Washington.

Type/Species	Scientific Name
Birds	
American kestrel	*Falco sparverius*
American robin	*Turdus migratorius*
black-billed magpie	*Pica hudsonia*
California quail	*Callipepla californica*
common raven	*Corvus corax*
European starling	*Sturnus vulgaris*
bald eagle	*Haliaeetus leucocephalus*
great horned owl	*Bubo virginianus*
house finch	*Haemorhous mexicanus*
northern flicker	*Colaptes auratus*
northern harrier	*Circus hudsonius*
red-tailed hawk	*Buteo jamaicensis*
red-winged blackbird	*Agelaius phoeniceus*
Savannah sparrow	*Passerculus sandwichensis*
western meadowlark	*Sturnella neglecta*
white-crowned sparrow	*Zonotrichia leucophrys*
Mammals	
coyote	*Canis latrans*
northern grasshopper mouse	*Onychomys leucogaster*
northern pocket gopher	*Thomomys talpoides*
sagebrush vole	*Lemmiscus curtatus*

Appendix C. Washington Department of Fish and Wildlife Priority Habitats and Species Mapping of Shrub-steppe and Eastside Steppe at the Wallula Gap Solar Project, Benton County, Washington.



Appendix C. Washington Department of Fish and Wildlife Priority Habitats and Species (PHS) mapping of shrub-steppe and eastside steppe at the Wallula Gap Solar Project, Benton County, Washington.

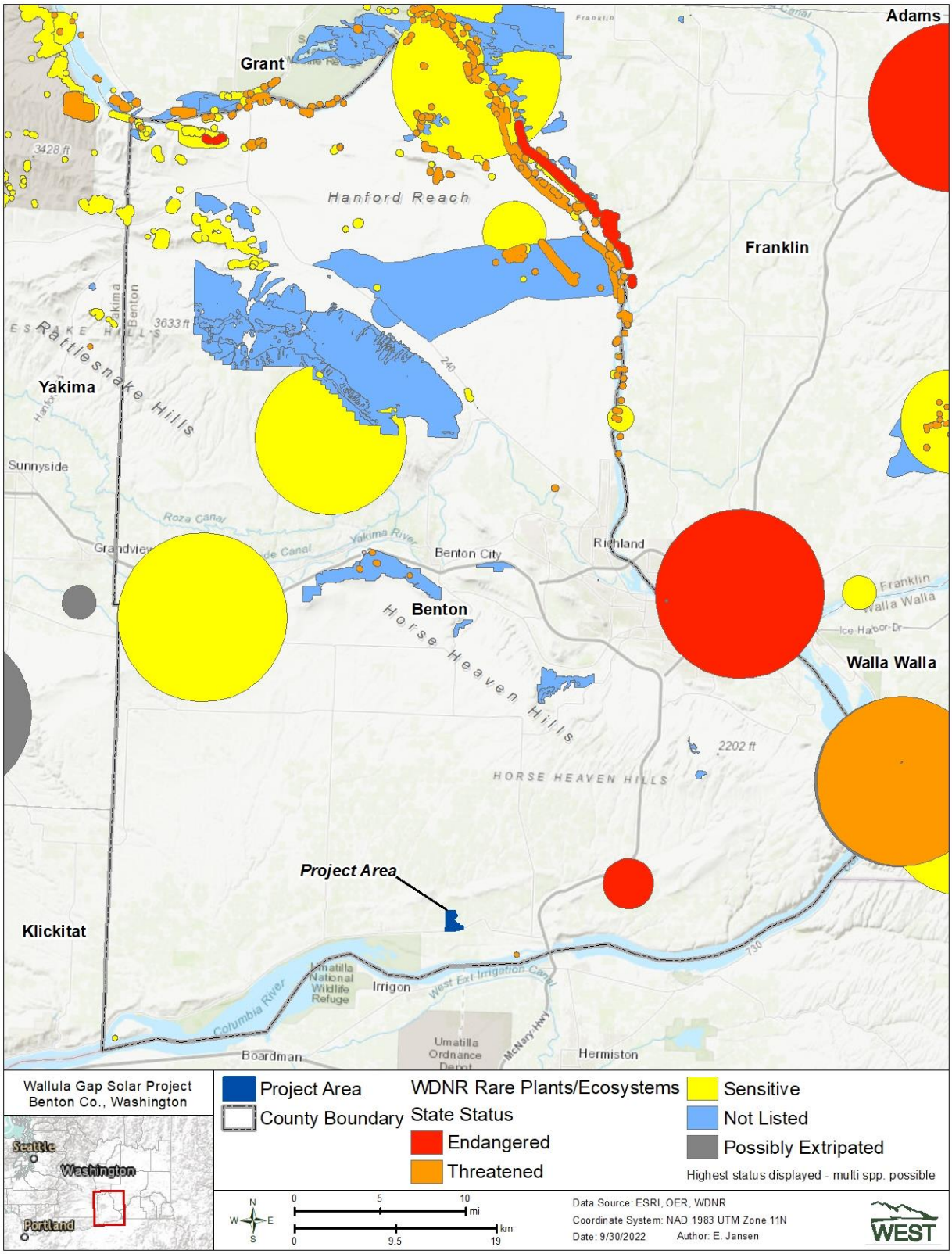
Appendix D. Plant Species Observed during Threatened, Endangered and Sensitive Species and Botanical Surveys at the Wallula Gap Solar Project, Benton County, Washington.

Appendix D. Plant species documented at the Wallula Gap Solar Project, Benton County, Wahington.

Scientific Name	Common Name	Noxious Weed Status[1]
Achillea millefolium occ.	western yarrow	-
Agropyron cristatum	crested wheatgrass	-
Alnus spp.	alder species	-
Amsinckia menziesii	Menzies fiddleneck	-
Amsinckia spp.	fiddleneck species	-
Artemisia tridentata	big sagebrush	-
Asclepias speciosa	showy milkweed	-
Astragalus inflexus	hairy milk-vetch	-
Bassia scoparia	kochia	B
Bromus inermis	smooth brome	-
Bromus tectorum	cheatgrass	-
Capsella bursa-pastoris	shepherd's purse	-
Chondrilla juncea	rush skeletonweed	B
Chorispora tenella	musk mustard	-
Chrysothamnus viscidiflorus	green rabbit brush	-
Crepis acuminata	tapertip hawksbeard	-
Crocidium multicaule	gold-star	-
Delphinium nuttallianum	twolobe larkspur	-
Descurainia pinnata	western tansymustard	-
Descurainia sophia	flixweed	-
Draba verna	spring draba	-
Elaeagnus angustifolia	Russian olive	-
Erodium cicutarium	common stork's-bill	-
Erysimum capitatum	western wallflower	-
Hesperostipa comata	needle-and-thread	-
Hordeum murinum	wall barley	-
Juncus balticus	Baltic rush	-
Lactuca serriola	prickly lettuce	-
Lagophylla ramosissima	slender hareleaf	-
Lepidium latifolium	perennial pepperweed	-
Lepidium perfoliatum	clasping pepperweed	-
Oenothera biennis	evening primrose	-
Opuntia spp.	prickly pear cactus	-
Phlox diffusa	spreading phlox	-
Plantago patagonica	woolly plantain	-
Poa bulbosa	bulbous bluegrass	-
Poa secunda	Sandberg bluegrass	-
Pseudoroegneria spicata	bluebunch wheatgrass	-
Ribes aureum	golden currant	-
Rosa woodsii	Wood's rose	-
Salix exigua	coyote willow	-
Salsola tragus	Russian thistle	-
Secale cereale	cereal rye	C
Sisymbrium altissimum	tall tumblemustard	-
Taraxacum officinale	dandelion	-
Tragopogon dubius	yellow salsify	-

[1] Class B: Non-native species presently limited to portions of the state. Species are designated for required control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal. Class C: Noxious weeds that are typically widespread in the state or are of special interest to the state's agricultural industry. The Class C status allows county weed boards to require control if locally desired, or they may choose to provide education or technical consultation (Benton County 2022).

Appendix E. Washington Department of Natural Resources Natural Heritage Rare Plant Occurrence within Benton County and Surrounding Counties. Includes Current and Historical Observations.



Appendix E. Washington Department of Natural Resources (WDNR) Natural Heritage rare plant occurrence within Benton County and surrounding counties. Includes current and historical observations.

Appendix F. Rare Plants Categorized with likelihood to occur as Unlikely or None within the Wallula Gap Solar Project Area, Benton County, Washington.

Appendix F. Rare plant species with likelihood to occur of Unlikely or None at the Wallula Gap Solar Project, Benton County, Washington.

Scientific Name (Common Name)	State Status	Typical Habitat Characteristics	Survey Period	Likelihood of Occurrence	Rational for Likelihood
Ammannia robusta (grand redstem)	T	Shoreline and islands along the Columbia River, in riparian mudflats dominated by annual species.	May–June	None	Habitat
Astragalus kentrophyta var. *douglasii* (thistle milkvetch)	X	On sandy ground, dunes, or eroded riverbanks at low elevations. Not documented since 1883; presumed extirpated.	June	None	Extirpated
Astragalus misellus var. *pauper* (pauper milk-vetch)	S	Regional endemic of open ridgetops and upper slopes, along western margin of the Columbia Basin; historical occurrences only. 500–3,280 feet (ft).	April–June	Unlikely	Habitat, Distribution
Cryptantha scoparia (desert cryptantha)	S	Dry, alkaline areas with full sun and little competing vegetation on south-facing slopes and ridges between small canyons with fine, dry silt and talus. 1,200–2,100 ft.	April–June	Unlikely	Habitat, Elevation
Cryptantha spiculifera (Snake River Cryptantha)	S	Sandy knolls and badlands and talus at low elevations; dry, open, flat or sloping areas in stable or stony soils. 450–3,500 ft.	May–July	Unlikely	Habitat
Cuscuta denticulata (desert dodder)	T	Parasite of native shrubs in desert areas; historical occurrences only. 880–1,089 ft.	July–August	Unlikely	Elevation, Historical
Eleocharis coloradoensis (dwarf spike-rush)	X	Fresh to brackish bare wet soil in vernal pools, stream beds or tidal wetlands. 0–6,900 ft.	Spring–Fall	None	Habitat, Extirpated
Eremothera pygmaea (dwarf evening-primrose)	S	Sagebrush steppe on unstable soil or gravel in steep talus, dry washes, banks, and road cuts. 450–2,050 ft.	April–June	Unlikely	Habitat
Eriogonum codium (Umtanum desert buckwheat)	E[1]	Known from one cliff population 45 miles north of Project. Overall vegetation cover is low. 1,120–1,300 ft.	May–August	None	Habitat, Elevation, Localized Population
Erythranthe suksdorfii (Suksdorf's monkeyflower)	S	Seasonally moist swales or vernal pools in shrub-steppe vegetation. Microhabitats often disturbed by small erosive events. 430–7,100 ft.	April–June	None	Habitat
Hypericum majus (Canadian St. John's-wort)	S	Occurs in completely submerged habitat during portions of the growing season or periodically inundated from water controlled by hydroelectric dams. 50–2,340 ft.	July–September	None	Habitat
Lipocarpha aristulata (awned halfchaff sedge)	T	Wet soil and mud, often comprised of fine sand and silt, in bottomlands, sandbars, beaches, shorelines, and islands below high water mark. <500 ft.	June–August	None	Habitat
Loeflingia squarrosa (spreading pygmyleaf)	T	Low swales and shallow vernal pools in sandy and silty areas during unusually wet years. 430–580 ft.	May	Unlikely	Habitat

Appendix F. Rare plant species with likelihood to occur of Unlikely or None at the Wallula Gap Solar Project, Benton County, Washington.

Scientific Name (Common Name)	State Status	Typical Habitat Characteristics	Survey Period	Likelihood of Occurrence	Rational for Likelihood
Lomatium tuberosum (Hoover's desert-parsley)	S	Loose basalt talus in sagebrush steppe, with variable slope aspects but may be south- to southwest-facing slopes in the western portion of its distribution. 460–4,000 ft.	March–April	Unlikely	Habitat
Micromonolepis pusilla (red povertyweed)	T	Desert regions, in saline or alkaline clay soils, salt-encrusted soils, or edges of alkaline ponds, adapted to extreme conditions; historical occurrence only. 1,950–2,210 ft.	April–June	None	Habitat, Elevation
Mimetanthe pilosa (false monkeyflower)	S	Moist, sandy or gravelly soils, especially by small streams, seeps, springs, and disturbed areas; historical occurrence only. 1,000–4,500 ft.	May–July	None	Habitat, Elevation
Myosurus alopecuroides (foxtail mousetail)	T	Obligate vernal pool species; found on hard, bare, desiccated clay in sparsely vegetated areas of shallow pools. 250–2,500 ft.	March–June	None	Habitat
Nicotiana attenuata (coyote tobacco)	S	Dry, sandy bottom lands, dry rocky washes, and in other dry open places. 320–2,640 ft.	June–September	Unlikely	Habitat
Rorippa columbiae (Columbia yellowcress)	T	Riverbanks, permanent lakes, and streams; internally-drained lakes with extended periods of dryness, wet meadows, and ditches along the Columbia River.	April–October	None	Habitat
Rotala ramosior (lowland toothcup)	S	Riparian, damp areas in fine sand and silt, wet, swampy places, mudflats, lakes and pond margins, and along free-flowing river reaches. 200–2,260 ft.	June–August	None	Habitat
Sabulina nuttallii var. *fragilis* (Nuttall's sandwort)	T	Open desert ridges of raised basalt, gravelly benches, dry rocky areas, or limestone talus from open sagebrush hills to alpine slopes. 520–2,350 ft.	April–June	Unlikely	Habitat, Elevation

S = Sensitive, vulnerable, or declining and could become Endangered or Threatened in Washington.

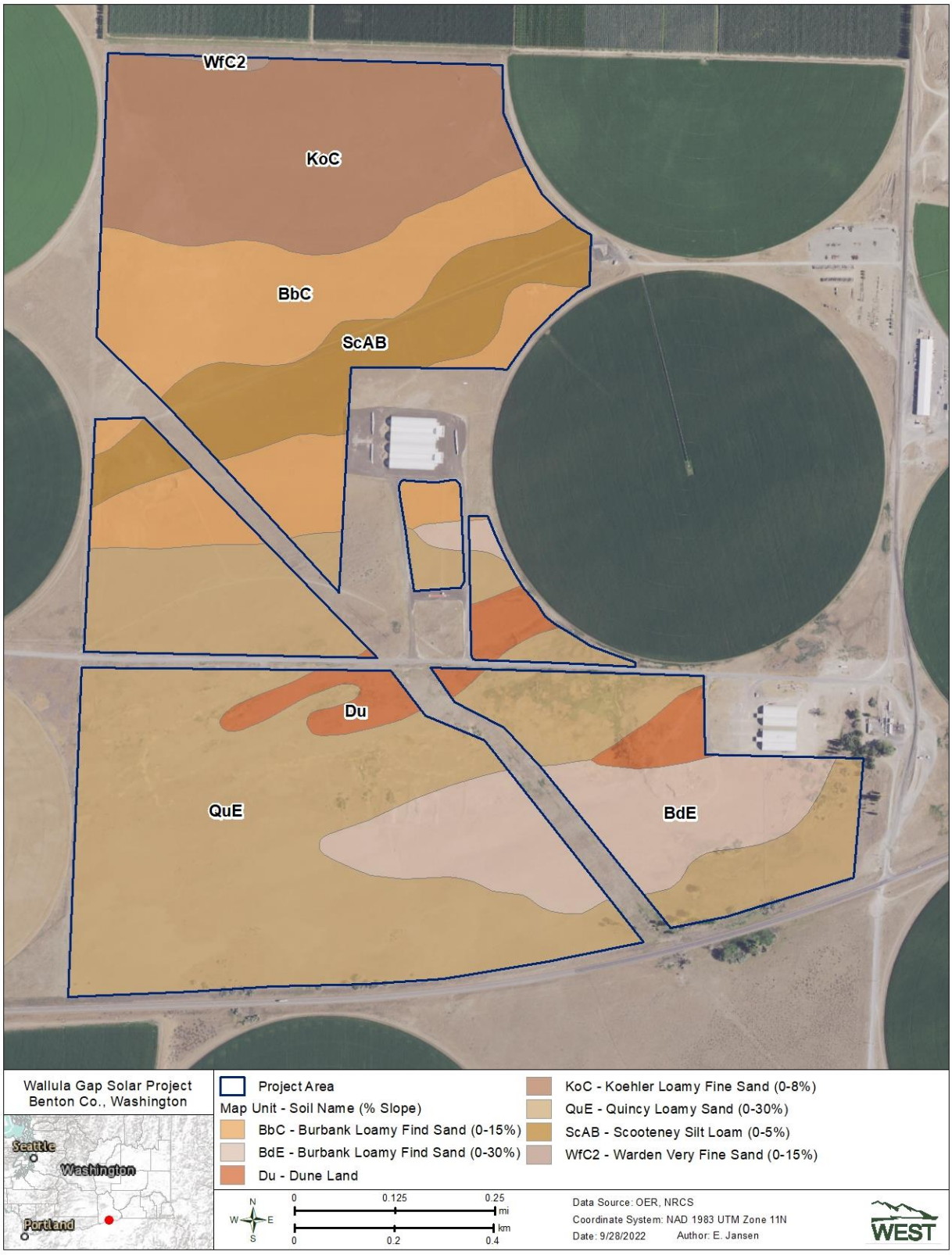
T = Threatened, likely to become Endangered in Washington.

E = Endangered, in danger of becoming extinct or extirpated from Washington.

X = Possibly extinct or extirpated from Washington State (includes state historical species).

[1] *E. codium* also federally listed as endangered.

Appendix G. Natural Resources Conservation Service Soil Types, Composition, and Farmland Classification at the Wallula Gap Solar Project Area, Benton County, Washington.



Appendix G. Natural Resources Conservation Service soil types at the Wallula Gap Solar Project Area, Benton County, Washington.

Appendix G (*continued)*. Natural Resources Conservation Service soil types, percent (%) composition, and Farmland Classification at the Wallula Gap Solar Project Area, Benton County, Washington.

Map Symbol	Soil Description	Acres	% Composition	Farmland Class
BbC	Burbank loamy fine sand 0 to 15% slope	70.4	16.8	Not Prime Farmland
BdE	Burbank loamy fine sand, basalt substratum 0 to 30% slope	46.9	11.2	Not Prime Farmland
Du	Dune land	17.1	4.1	Unclassified
KoC	Koehler loamy fine sand 0 to 8% slope	68.2	16.3	Not Prime Farmland
QuE	Quincy loamy sand 0 to 30% slope	178.8	42.9	Not Prime Farmland
ScAB	Scooteney silt loam 0 to 5% slope	35.6	8.5	Prime Farmland if Irrigated
WfC2	Warden very fine sandy loam 0 to 15% slope	1.0	0.2	Farmland of Statewide Importance
Total		**418**	**100**	

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TECHNICAL MEMORANDUM

Date: November 2, 2023

To: Tanner Gillespie and Erin Lynch, OneEnergy Development, LLC

From: Julia Fields and Erik Jansen, Western EcoSystems Technology, Inc

Subject: Addendum to the 2023 Tier 3 Wildlife, Habitat, and Plant Survey Report, Wallula Gap Solar Project, Benton County, Washington

INTRODUCTION

OneEnergy Development, LLC (OneEnergy) is considering development of the Wallula Gap Solar Project (Project) in Benton County, Washington and the addition of new land to the Project (Figure 1). On June 22, 2023, Mike Ritter with Washington Department of Fish and Wildlife (WDFW) indicated an addendum to the *Tier 3 Wildlife, Habitat, and Plant Survey Report* was adequate for concurrence from WDFW (Jansen and Lawes 2023). OneEnergy requested that Western EcoSystems Technology, Inc. (WEST) complete a field visit to record habitat type, priority habitat species, and rare plants in the land addition. This addendum describes habitat types and rare plants observed in the land addition and Facility Area.

STUDY AREA

The land addition is 9.1 acres (ac; 3.7 hectares [ha]) in the middle of existing Project parcels (Figure 1). The land addition is embedded within a highly managed landscape used for orchard, cropland, rock quarry, and cattle grazing operations. A full description is found in Jansen and Lawes (2023). Based on the National Land Cover Database (2019), land cover types within the land addition are a mixture of shrub/scrub and cultivated cropland.

The Facility Area extended outside the original Project Area surveyed for habitat and rare plants in 2022. Limited areas within the Facility Area were not included in the 2022 habitat and rare plant field surveys; however, habitats were assessed using a desktop analysis as well as photo analysis based on photos taken during wildlife surveys in 2022 (Jansen and Lawes 2022).

METHODS

WEST conducted a rare plant survey and habitat mapping within the land addition on July 5, 2023 (Figure 1). Habitat types were mapped to inform mitigation requirements for temporary and permanent impacts to habitat resulting from Project development (WDFW 2009). Additionally, a rare vascular plant survey was conducted for species listed on the 2023 Benton County *List of*

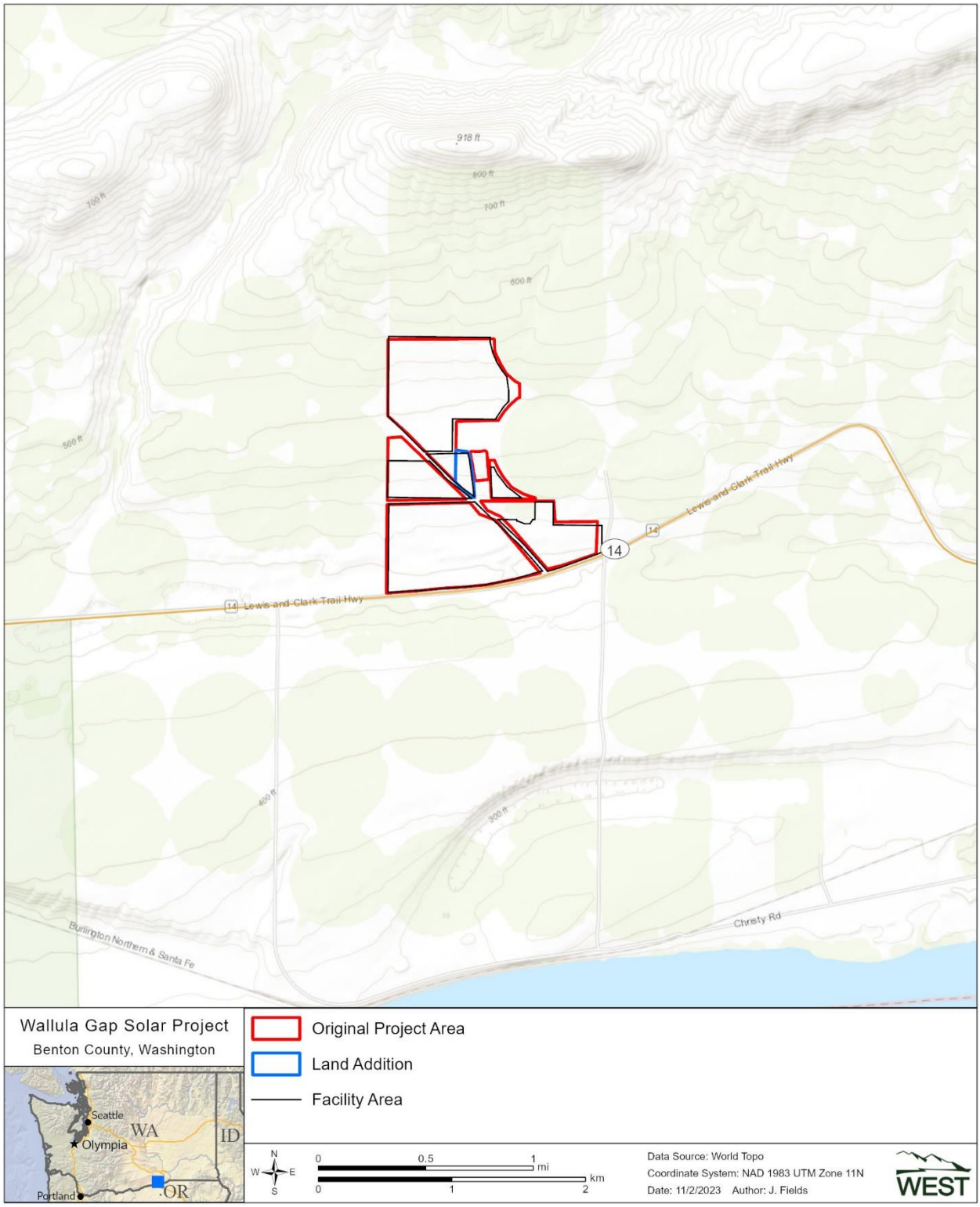

Figure 1. Location of the Wallula Gap Solar Project and Land Addition, Benton County, Washington.

Known Occurrences of Rare Plants, Mosses, and Lichens (WDNR 2023). Noxious weeds were identified using the *Benton County Noxious Weed List* (Benton County Noxious Weed Control Board 2022). Survey methods were the same as described in the *Tier 3 Wildlife, Habitat, and Plant Survey Report* (Jansen and Lawes 2023). Surveys for threatened, endangered, or sensitive wildlife species were not conducted for the land addition since this area was previously surveyed for wildlife but not wildlife habitat.

A desktop assessment was conducted in October 2023 to designate habitat within the Facility Area that was not surveyed as part of the original Project Area (Jansen and Lawes 2023). Habitat was categorized using aerial imagery and notes from the original field survey.

RESULTS

Habitat Mapping

Habitat types in the land addition were characterized and mapped on July 5, 2023. The dominant habitat type was pasture, which comprised approximately 7.9 ac (3.2 ha) or 88% of the land addition (Table 1, Figures 2 and 3). Vegetation in the land addition consisted primarily of non-native grasses and forbs including cheatgrass (*Bromus tectorum*) and diffuse knapweed (*Centaurea diffusa*; Benton County Class B Noxious Weed[1]). Early successional shrubs such as rubber rabbitbrush (*Ericameria nauseosa*) and patches of Russian olive (*Elaeagnus angustifolia*) were scattered throughout. Common forbs included yarrow (*Achillea millefolium*), evening primrose (*Oenothera biennis*), and fiddleneck (*Amsinckia* sp.). A gravel road ran east-west through the southern portion of the land addition and had patches of Russian thistle (*Salsola tragus*).

Degraded shrub-steppe habitat was located in two remnant patches on approximately 0.9 ac (0.36 ha) or 3% of the land addition (Table 1, Figures 2, 4, and 5). The dominant shrub species was rubber rabbitbrush (10–30% cover). Russian olive and wild buckwheat (*Eriogonum* sp.) were also present in shrub-steppe habitat areas. The understory was dominated by cheatgrass and diffuse knapweed. Patches of bare ground, low shrub cover, and non-native graminoid and forb species characterized the land addition. Big sagebrush (*Artemisia tridentata*) or other sagebrush species (*A.* spp.) were not observed in the land addition. Land cover characteristics and species composition of plants within the land addition indicated a disturbed landscape composed primarily of early successional native plant species or non-native exotic perennial grasses and noxious weeds.

[1] Class B = Non-native species presently limited to portions of the State. Species are designated for control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority (WDNR 2022).

Table 1. Washington Department of Fish and Wildlife habitat types within the Wallula Gap Solar Project Land Addition, Benton County, Washington.

Habitat Type	Area (acres)	Percent Composition
Pasture	7.9	88
Shrub-steppe	0.9	9
Mixed Environs (Developed)	0.3	3
Total	**9.1**	**100**

Sums of values may not add to the total value shown, due to rounding.

The dominant habitat type in the combined Project Area and Facility Area was pasture (408.4 ac) followed by shrub steppe (23.9 ac) and mixed environs (9.0 ac) for a total surveyed area of 441.3 ac (Table 2).

Table 2. Washington Department of Fish and Wildlife habitat types within the Wallula Gap Solar Project, Benton County, Washington.

	Area (acres)			
Habitat Type	Intersection of Project Area and Fenceline	Facility Area Only	Project Area Only	Total
Pasture	353.1	13.3	41.9	408.4
Shrub-steppe	19.1	0.3	4.5	23.9
Mixed Environs (Developed)	5.5	0.5	3.0	9.0
Total	**377.7**	**14.1**	**49.5**	**441.3**

Sums of values may not add to the total value shown, due to rounding.

Rare Plant Survey

No rare plants were documented in the land addition on July 5, 2023.

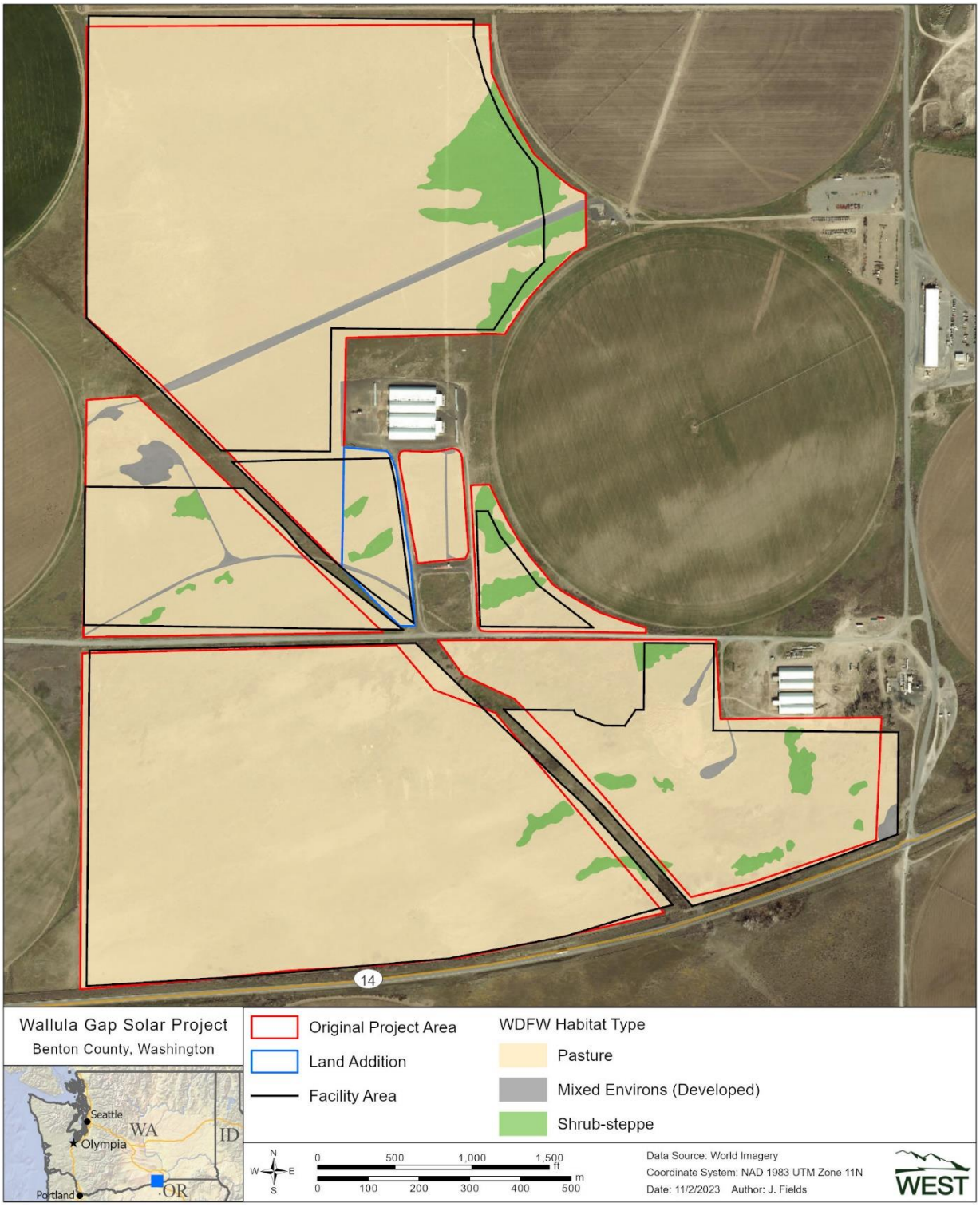

Figure 2. Washington Department of Fish and Wildlife (2009) habitat types within the Wallula Gap Solar Project, Benton County, Washington.

Figure 3. View from the northeast corner of the Wallula Gap Solar Project Land Addition. Photo taken 7/5/2023.

Figure 4. Northern patch of remnent shrub-steppe habitat in the Wallula Gap Solar Project Land Addition. Photo taken 7/5/2023.

Figure 5. Southern patch of remnent shrub-steppe habitat in the Wallula Gap Solar Project Land Addition. Photo taken 7/5/2023.

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