ATTACHMENT F

Wildlife and Habitat Survey Report

Redacted

Tier 3 Wildlife and Habitat Survey Report

Goose Prairie Solar Project

Yakima County, Washington

2019–2020

Final Draft

Prepared for:

OER WA Solar 1, LLC

2003 Western Ave, Suite 225
Seattle, Washington 98121

Prepared by:

Western EcoSystems Technology, Inc.

2725 NW Walnut Boulevard
Corvallis, Oregon 97330

September 11, 2020
Revised

STUDY PARTICIPANTS

Karl Kosciuch, PhD	Project Manager, Senior Reviewer
Samantha Brown	Report Writer, GIS, Field Biologist
Erik Jansen	Report Writer, GIS, Field Biologist
Joshua Parrot	Field Biologist
Adam Field	Field Biologist

REPORT REFERENCE

Western Ecosystems Technology, Inc (WEST). 2020. Tier 3 Wildlife Survey Report, Goose Prairie Solar Project, Yakima County, Washington. Final Draft. Prepared for OneEnergy Development LLC, Seattle, Washington. Prepared by WEST, Corvallis, Oregon. September. 21 pages + appendices.

TABLE OF CONTENTS

1 INTRODUCTION....1
2 PROJECT AREA....1
3 METHODS....3
3.1 Threatened Endangered and Sensitive Species Surveys....3
3.1.1 Townsend's ground squirrels (State Candidate)....3
3.1.2 Burrowing owl (State Candidate)....4
3.2 Raptor Nest Surveys....4
3.3 Habitat Mapping....5
3.4 Soil Mapping....6
4 RESULTS....6
4.1 Threatened Endangered and Sensitive Species Surveys....6
4.1.1 2019 Surveys....6
4.1.2 2020 Survey....10
4.2 Raptor Nest Surveys....10
4.2.1 2019 Survey....10
4.2.1 2020 Surveys....11
4.3 Habitat Mapping....13
4.3.1 2019 Survey....13
4.3.2 2020 Survey....13
4.3.3 Soil Mapping....17
5 DISCUSSION....19
6 REFERENCES....20

LIST OF FIGURES

Figure 1. Location of the Goose Prairie Solar Project Area, Yakima County, Washington....2
Figure 2. Threatened Endangered and Sensitive Species survey results for 2019 and 2020 at the Goose Prairie Solar Project Area, Yakima County, Washington....9
Figure 3. Location of raptor nests within the Goose Prairie Solar Project Area and 0.4-km buffer in 2019 and 2020, Yakima County, Washington. Species, territory and nest status reflect 2020 survey period....12
Figure 4. WDFW (2009) habitat types within the Goose Prairie Solar Project Area for 2019 and 2020, Yakima County, Washington....16

Figure 5. Soil types for the Goose Prairie Solar Project Area, Yakima County, Washington from NRCS custom soil report. The blue line represents the Project Area; soil types are identified in Table 6. 18

LIST OF TABLES

Table 1. Species of concern observed during 2019 and 2020 TESS surveys at the Goose Prairie Solar Project, Yakima County, Washington. 7

Table 2. Townsend's ground squirrel colony characteristics during 2019 and 2020 at the Goose Prairie Solar Project, Yakima County, Washington. 8

Table 3. Raptor nests observed during 2019 and 2020 TESS surveys at the Goose Prairie Solar Project, Yakima County, Washington. 11

Table 4. Habitat types observed during 2019 and 2020 surveys at the Goose Prairie Solar Project, Yakima County, Washington. 14

Table 5. Habitat types observed during combined surveys at the Goose Prairie Solar Project, Yakima County, Washington. 15

Table 6. Soil types for the Goose Prairie Solar Project Area, Yakima County, Washington from NRCS custom soil report. Map symbols reflect the soil series ID shown in Figure 5. 17

LIST OF APPENDICES

Appendix A. Wildlife Species Observed at the Goose Prairie Solar Project, Yakima County, Washington, April and May 2019 and March and May 2020.

Appendix B. Site Photos of Wildlife Observations and Habitat at the Goose Prairie Solar Project, Yakima County, Washington, April and May 2019 and March and May 2020.

1 INTRODUCTION

OER WA Solar 1, LLC, a wholly-owned subsidiary of OneEnergy Development, LLC (OneEnergy) has proposed the development of the Goose Prairie Solar and Storage Project (Project) in Yakima County, Washington. During 2019 and 2020, OneEnergy contracted Western EcoSystems Technology, Inc. (WEST) to conduct surveys for wildlife species listed by federal and state agencies as threatened, endangered, and sensitive species (TESS); raptor nests; and to map habitat at the Project. In addition to listed species, TESS surveys included wildlife designated as Birds of Conservation Concern (BCC; United States Fish and Wildlife Service [USFWS] 2008) and Priority Habitats and Species (PHS; Washington Department of Fish and Wildlife [WDFW] 2008). In the absence of state or federal solar energy and wildlife guidelines, study objectives and protocols were designed to comply with Tier 3 studies described in the United USFWS *Land-based Wind Energy Guidelines* (USFWS 2012) and in the WDFW *Wind Power Guidelines* (WDFW 2009) per recommendations from WDFW staff (Bartrand 2019). This report summarizes TESS surveys and habitat mapping conducted in 2019 and 2020 at the Project.

2 PROJECT AREA

The Project is located in the Columbia Plateau Ecoregion, which encompasses a large portion of south-central Washington (Clarke et al. 1997). The landscape in this ecoregion is expansive sagebrush covering plains and valleys, with isolated mountain ranges and river systems (Clarke et al. 1997). The Project is located in the Moxee Valley on 808.4 acres (ac) of privately-owned land approximately 13 miles (mi) southeast of Yakima, Washington and is located directly north of State Route 24 within Yakima County, Washington (Figure 1). The Project Area was divided into two survey areas, the 623.2 ac 2019 Survey Area and the 185.3 ac 2020 Survey Area. Land use surrounding the Project consists primarily of hop (*Humulus lupulus*) cultivation and livestock grazing.

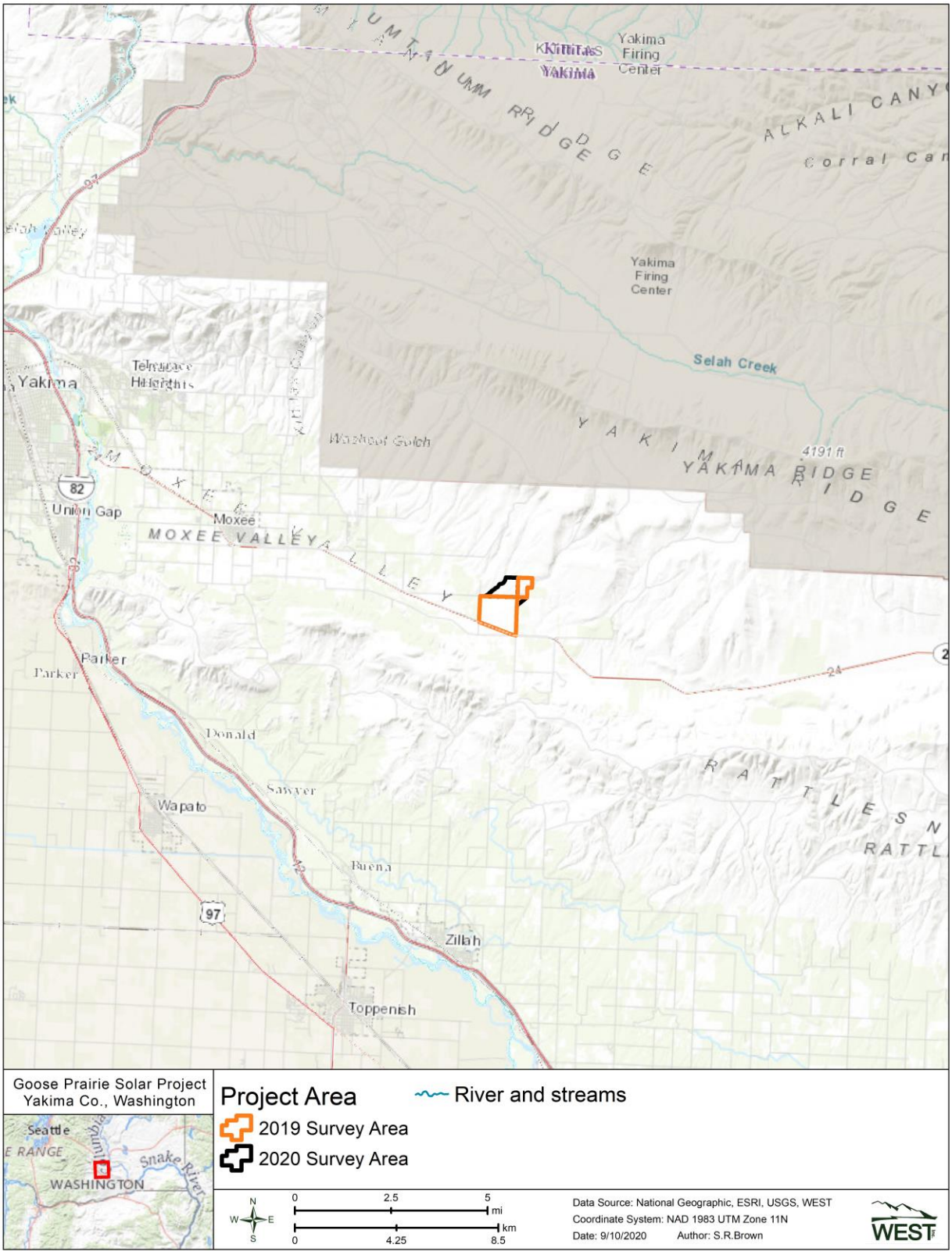

Figure 1. Location of the Goose Prairie Solar Project Area, Yakima County, Washington.

3 METHODS

Prior to 2019 field surveys, OneEnergy provided WEST a letter from WDFW and USFWS that contained a list of species of interest and recommended field survey methods, which was used to design the TESS surveys (Bartrand 2019, Thompson 2019). TESS surveys focused on Townsend's ground squirrel (*Urocitellus townsendii*), burrowing owl (*Athene cunicularia*), long-billed curlew (*Numenius americanus*), white-tailed jackrabbit (*Lepus townsendii*), and black-tailed jackrabbit (*Lepus californicus*). Other TESS wildlife species were recorded if observed and included species identified as a BCC (USFWS 2008) or as a PHS (WDFW 2008). The objective of the TESS surveys was to determine if any of the TESS species were present in the Project Area. Additionally, raptor nest surveys were conducted to determine territory occupancy and breeding status. Finally, habitat types were mapped to inform mitigation requirements for temporary and permanent impacts to habitat that may result from Project development (WDFW 2009).

3.1 Threatened Endangered and Sensitive Species Surveys

WEST conducted transect surveys to document TESS wildlife species within the Project Area in 2019 and in 2020. Surveys were conducted April 15 – 18, and May 18, 2019, and March 24 – 26 and May 5, 2020. Surveys were conducted between the early morning and mid-afternoon period. Surveys were conducted a minimum of two weeks apart to account for variation in seasonal activity, and surveys were conducted when wind speeds were less than 15 miles per hour (mph) to increase species detectability. A team of one to three biologists walked parallel transects spaced approximately 60 meters (m; 197 ft) apart (i.e., survey coverage of 30 m (99 ft) on either side of the surveyor). During the first survey in both years, transects were oriented north to south and were modified during the second survey to an east to west orientation. All survey transects were tracked on a Global Positioning System (GPS) to ensure adequate survey coverage. If a TESS species was detected, the location, number, and behavior of individuals were recorded. In addition, if a species of interest, as indicated by WDFW, was observed, the area was searched for possible nesting or burrow use. A list of all wildlife species observed during surveys was maintained, per WDFW recommendations. Below describes specific survey methods followed for Townsend's ground squirrel and burrowing owl.

3.1.1 Townsend's ground squirrels (State Candidate)

To identify the potential occurrence and map the extent of Townsend's ground squirrel colonies within the Project Area, survey protocols were based on WDFW-approved methods that have been used at other renewable energy projects in the region. The survey protocol followed methods outlined in Morgan and Nugent (1999), which describes sample techniques in areas where ground squirrel occupancy is unknown and Goodman (2003), which is used in areas of known historical colony sites for Washington ground squirrel (*Urocitellus washingtoni*) and is applicable to the Townsend's ground squirrel. The field protocol has been successfully implemented at multiple projects in Oregon and Washington (e.g., Tetra Tech 2011, Gerhardt and Kronner 2017).

WEST biologists scanned the ground for Townsend's ground squirrel sign and listened for vocalizations during transect surveys. If an active burrow or sign was detected, the area within a 30 m (98-ft) radius of the burrow or sign was searched for additional sign. Sign was defined as scat, appropriately sized burrow, tracks, or vocalizations. If no sign was detected within the 30-m radius area, radial transects spaced approximately 30 m apart from the initial burrow entrance would be surveyed out to 150 m (492 ft), marking all burrows detected. This process was continued until the outer-most burrows were identified, thus delineating the boundary of the colony. After documenting a colony, surveys continued along the same cardinal direction as before. In areas of higher habitat quality (e.g., deep loamy soils with intact vegetation), transect spacing was decreased from 60 m to approximately 30 m even if a burrow or sign had not been detected.

3.1.2 Burrowing owl (State Candidate)

Burrowing owl habitat occupancy was determined in the Project Area by an observation of at least one burrowing owl, or, alternatively, sign such as molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance or perching structures such as fence posts (California Burrowing Owl Consortium 1993). If sign was documented at a burrow entrance, then a radius of 150 m surrounding the burrow was searched for additional owl sign. All sign was documented and mapped. Surveys occurred during the spring breeding and summer nesting period (March – June) when owls are most active.

3.2 Raptor Nest Surveys

The objective of the raptor nest survey was to locate and document raptor nests and nest occupancy within 0.4 kilometer (km; 0.25 mile [mi]) of the Project Area as recommended by Bartrand (2019). WEST conducted one ground-based raptor nest survey prior to tree leaf out in conjunction with the first TESS survey in both survey years. Within the Project Area, biologists walked the 60-m spaced transects, scanning potential nesting substrate for nests with binoculars. Within the surrounding 0.4-km buffer, surveys were conducted from publicly accessible roads using spotting scopes and binoculars to scan the surrounding topography.

WEST categorized basic nesting territories and nest status using definitions originally proposed by Postupalsky (1974) and largely followed today (USFWS 2013). Territories were classified as occupied if any of the following were observed at the nest structure: (1) an adult in an incubating position; (2) eggs; (3) nestlings or fledglings; (4) presence of an adult (sometimes sub-adults); (5) a newly constructed or refurbished stick nest in the area where territorial behavior of a raptor had been observed earlier in the breeding season; or (6) a recently repaired nest with fresh sticks (clean breaks) or fresh boughs on top, and/or droppings and/or molted feathers on its rim or underneath. Occupied nests were further classified as active if an egg or eggs were laid. Nests were classified as inactive if no eggs or chicks were present. Nests not meeting the above criteria for "Occupied" during at least two consecutive surveys were classified as "Unoccupied." Other nest characteristics such as nest size (e.g., small, medium, large), nest condition (e.g., poor, good, excellent), and nesting substrate (e.g., tree, structure, etc.) were recorded. A GPS location and photograph were taken for each nest.

3.3 Habitat Mapping

The objective of the habitat mapping was to characterize and map the general habitat types across the Project Area. 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 between 10 to 30 percent and greater. Sagebrush (*Artemisia* spp.) is a common shrub species found within this habitat type. Shrub height typically is medium-tall (1.6-3.3 ft) and it may form mosaic landscapes with eastside grasslands;

- Eastside (Interior) Grassland – uncultivated areas with herbaceous vegetation including Conservation Reserve Program (CRP) grasslands; habitat is dominated by short to medium-tall grasses (<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;

    - CRP Grasslands – Administered by the Farm Service Agency (FSA), the CRP annually subsidizes farmers to remove environmentally sensitive land from agricultural production and planting species that will improve environmental quality. Contracts are typically 10-15 years in duration; Yakima county had approximately 41,000 acres enrolled in 2017 (FSA 2019)

- Cropland – lands farmed or cultivated by agricultural methods in growing cycles shorter than fifteen 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.

WDFW (2009) does not distinguish between degraded habitat and intact functioning habitat; however, land use practices could result in habitat that no longer provides the function and value of the underlying habitat type to wildlife. To provide more resolution on the potential function and value of shrub-steppe habitat, we created two categories, degraded and intact. Shrub-steppe habitat can transition to a degraded state through several mechanisms including drought, poor grazing practices, or poor shrub management. The resulting habitat could have an appropriate shrub component but will be dominated by cheatgrass (downy brome; *Bromus tectorum*), medusahead (*Taeniatherum caput-medusae*) and other exotic annual grasses and forbs. Alternatively, the grass and forb component could be removed resulting in an excessive shrub understory (NRCS 2004). We did not measure vegetation or complete a botanical survey during the habitat mapping. Rather, we evaluated the shrub-steppe habitat patches against known

stressors (NRCS 2004) and relative to each other to determine patches that were degraded and intact. Our results do not represent a continuum of shrub-steppe habitat function and value but allow us to distinguish degraded shrub-steppe habitat relative to intact habitat.

Habitat types were preliminary mapped using 2017 National Aerial Imagery (U.S. Department of Agriculture 2017), 2018 aerial imagery (Google Earth 2019), and remotely sensed data (2016 National Land Cover Dataset; Yang et al 2018), which were field-verified. Following field-verification, habitat types were digitized according to final habitat classifications in accordance to WDFW (2009), acreages of habitat types were calculated, and a habitat map of the Project was created.

3.4 Soil Mapping

WEST examined the underlying soil types using a custom soil resource report from the Natural Resource Conservation Service (NRCS 2020). The soil report characterizes soils within the Project area and is used to provide context for the habitat mapping results. To obtain results from NRCS, WEST submitted the entire Project area (2019 and 2020 survey areas combined), and we do not distinguish between the 2019 and 2020 survey areas when discussing soils.

4 RESULTS

4.1 Threatened Endangered and Sensitive Species Surveys

In 2019, 25 wildlife species were documented during TESS surveys, of which 21 were avian species and four were mammals (Appendix A1). In 2020, 32 wildlife species were documented during TESS surveys, of which 30 were avian species and two were mammals (Appendix A2).

4.1.1 2019 Surveys

Of the 25 species documented in 2019, five were designated as TESS, which included sandhill crane (*Antigone canadensis*; State Endangered), long-billed curlew (USFWS Birds of Conservation Concern (BCC)), sagebrush sparrows (*Artemisiospiza nevadensis*; State Candidate), loggerhead shrike (*Lanius ludovicianus*; State Candidate) and Townsend's ground squirrel (State Candidate; Table 1).

Seventeen total sandhill cranes were observed in two groups during the first survey period in April. Individuals were observed flying north at approximately 400 m above ground level and did not exhibit site use within the Project or surrounding area. April coincides with migration when cranes fly to their breeding grounds. A small population (approximately 100 individuals) of sandhill cranes breeds in Yakima County (Stinson 2017); however, no suitable foraging, loafing or roosting habitat (i.e., migratory stopover habitat) occurred within the Project Area. Stopover habitat typically includes a matrix of wetlands and grain waste from croplands (Stinson 2017).

Long-billed curlews were observed during both survey periods with observations primarily located in grasslands found north of Den Beste Rd in the Project Area (Figure 2). Observations consisted of one or two individuals that were observed calling from the ground or during other courtship

displays, which represents attempts at pair formation (Sedgwick 2006). Despite thorough searches in areas where birds were flushed, no long-billed curlew nests were found during TESS surveys.

Sagebrush sparrows were observed during surveys and were primarily associated with drainage bottoms that contained mature patches of shrub-steppe habitat. Males were observed singing from nearby shrubs, a behavior indicative of territoriality and could indicate a pair with a nest (Martin and Carson 1988). Despite thorough searches in areas where birds were observed, no sagebrush sparrow nests were found during TESS surveys.

One loggerhead shrike was observed during the second survey period along the eastern edge of the 2019 Survey Area adjacent to the CRP lands where the individual was being chased by a pair of western kingbirds (*Tyrannus verticalis*). Suitable loggerhead shrike nesting habitat typically includes trees, hedgerows or windbreaks (Pruitt 2000) which is mostly absent from the Project Area.

Table 1. Species of concern observed during 2019 and 2020 TESS surveys at the Goose Prairie Solar Project, Yakima County, Washington.

Common Name	Number of Individuals Observed	Status[1]
2019 Surveys		
loggerhead shrike	1	BCC, SC
long-billed curlew	5	BCC
sagebrush sparrow	12	BCC, SC
sandhill crane	17	SE
Townsend's ground squirrel	12 colonies	SC
2020 Surveys		
loggerhead shrike	2	BCC, SC
sagebrush sparrow	12	BCC, SC
Townsend's ground squirrel	2 colonies	SC

[1] BCC = Federal Birds of Conservation Concern Bird Conservation Region 9; SC = State Candidate; SE = State Endangered

During 2019, a total of 12 Townsend’s ground squirrel colonies were located during TESS surveys (Table 2; Appendix B). The majority of colonies [redacted] (Figure 2). The largest colony observed was Colony 9, which was [redacted] and was approximately 2 acres. The next largest colony was Colony 6, which was also located along the southern fence line and was approximately 1.2 acres (Table 2; Figure 2). The majority of Townsend’s ground squirrel colonies were [redacted] (Figure 2). In several areas, the perimeter of Townsend’s ground squirrel colonies extended beyond the 2019 Survey Area. The majority of these instances occurred [redacted]. Colony 2 extended beyond the western boundary of the 2019 Survey Area toward [redacted], the edge of Colony 11

straddled the boundaries of the 2019 and 2020 Survey Areas (Figure 2). Young squirrels were observed running between and standing on burrow entrances during the second survey period.

Table 2. Townsend's ground squirrel colony characteristics during 2019 and 2020 at the Goose Prairie Solar Project, Yakima County, Washington.

Colony ID	Area (ac)	Description
2019 Survey		
1	0.010	Isolated colony consisting of less than 5 burrow entrances.
2	0.004	Isolated colony consisting of less than 5 burrow entrances.
3	0.075	Small colony of less than 25 burrows
4	0.032	Small colony of less than 15 burrows
5	0.041	Small colony of less than 15 burrows
6	1.059	Narrow colony along fence line adjacent to highway right-of-way. Additional burrows [redacted].
7	0.186	Colony along fence line adjacent to highway right-of-way. Additional burrows [redacted]
8	0.169	Colony along fence line adjacent to highway right-of-way. Additional burrows [redacted].
9	1.963	Narrow colony along fence line adjacent to highway right-of-way. Additional burrows [redacted].
10	0.011	Isolated burrow that likely connects to a colony within the adjacent alfalfa field. Individuals observed running across road into cropland.
11	0.040	Partial area of colony that is associated with burrows located outside of 2019 Survey Area. Young observed.
12	0.084	Colony [redacted]
2020 Survey		
13	0.262	Partial area of colony that is associated with burrows located outside of 2020 Survey Area.
14	0.020	Small colony of less than 8 burrows. [redacted]

[REDACTED DUE TO SENSITIVE INFORMATION]

Figure 2. Threatened Endangered and Sensitive Species survey results for 2019 and 2020 at the Goose Prairie Solar Project Area, Yakima County, Washington.

4.1.2 2020 Survey

Of the 32 species documented in 2020, three were designated as TESS, which included sagebrush sparrow (State Candidate), loggerhead shrike (State Candidate) and Townsend's ground squirrel (State Candidate; Table 1).

Sagebrush sparrows were observed during surveys and were primarily associated with mature patches of shrub-steppe habitat that runs diagonally across the northern portion of the 2020 Survey Area. Males were observed singing from nearby shrubs, a behavior indicative of territoriality and could indicate a pair with a nest (Martin and Carson 1988). Despite thorough searches in areas where birds were observed, no sagebrush sparrow nests were found.

Two loggerhead shrikes were observed during the second survey period on May 5th, 2020 and were located along the southern edge of the 2020 Survey Area. Suitable loggerhead shrike nesting habitat typically includes trees, hedgerows or windbreaks (Pruitt 2000) which is mostly absent from the Project Area.

Two Townsend's ground squirrel colonies were located during the 2020 TESS surveys (Table 2). [redacted] The largest colony observed was Colony 13, which was approximately 0.3 acres, and extended beyond the 2020 Survey Area into the 2019 Survey Area where Colony 11 was detected. [redacted] the edge of Colony 11 and 13 are likely part of the same colony system given their proximity to each other (Figure 2). Squirrels were observed visually and audibly during the two survey rounds in 2020.

Although no long-billed curlew were observed during the two surveys, evidence of foraging within the Project Area was present throughout the patches of eastside grasslands within the 2020 Survey Area.

4.2 Raptor Nest Surveys

4.2.1 2019 Survey

Three nests were located within the 0.4-km buffer during the first TESS survey on April 15, 2019; one occupied common raven (*Corvus corax*) nest (Nest 3; Appendix B) was located in the Project Area and the remaining two nests, one occupied by a red-tailed hawk (*Buteo jamaicensis*; Nest 1; Appendix B) and another unoccupied nest (Nest 2), [redacted] The common raven nest was located in a stunted deciduous tree whereas the red-tailed hawk nest was located in a small stand of cottonwood trees (*Populus* spp.; Figure 3; Appendix B). The unoccupied nest was located adjacent to the red-tailed hawk nest in the same tree stand and did not show signs of occupancy or nesting activity.

During the second TESS survey on May 18, 2019, two adult common ravens were perched on the tree with Nest 3 and at least three nestlings were observed in the nest. A pair of red-tailed hawks were observed soaring and calling above the cottonwood stand that contained Nest 1 but nesting status (i.e., the number of nestlings) could not be determined.

Table 3. Raptor nests observed during 2019 and 2020 TESS surveys at the Goose Prairie Solar Project, Yakima County, Washington.

Nest ID	Species	Status
2019 Surveys		
1	red-tailed hawk	Occupied/Active
2	unknown	Unoccupied/Inactive
3	common raven	Occupied/Active
2020 Surveys		
1	red-tailed hawk	Occupied/Active
2	N/A	Did not locate
3	unknown	Unoccupied/Inactive
4	unknown	Unoccupied/Inactive
5	unknown	Unoccupied/Inactive

4.2.1 2020 Surveys

Four nests were documented within the 0.4-km buffer during the first TESS survey on March 24, 2020; one occupied active red-tailed hawk (*Buteo jamaicensis*; Nest 1; Appendix B) was located, and the remaining three nests were unoccupied inactive (Nest 3, 4, and 5) and were located within the Project Area (Figure 3). The red-tailed hawk nest was located in the same small stand of cottonwood trees (*Populus* spp.; Figure 3; Appendix B) from the 2019 survey year. In 2019, a second nest (Nest 2) was located in the cottonwood stand with Nest 1. Nest 2 was not located during the 2020 survey and was likely blown out of the tree. Nest 3 had been occupied by pair of common ravens during 2019 but was unoccupied inactive during the 2020 survey. Nest 4 and 5 were newly located nests during the 2020 survey [redacted]

During the second TESS survey on May 4, 2020, nest status remained the same for all four nests. A pair of red-tailed hawks were observed at the cottonwood stand that contained Nest 1 but nesting status (i.e., the number of nestlings) could not be determined.

[REDACTED DUE TO SENSITIVE INFORMATION]

Figure 3. Location of raptor nests within the Goose Prairie Solar Project Area and 0.4-km buffer in 2019 and 2020, Yakima County, Washington. Species, territory and nest status reflect 2020 survey period.

4.3 Habitat Mapping

4.3.1 2019 Survey

The dominant habitat type in the 2019 Survey Area was land enrolled in CRP (approximately 487 ac; Table 4; Appendix B). CRP was composed primarily of non-native species including downy brome, crested wheat (*Agropyron cristatum*), Russian thistle (*Salsola tragus*), blue mustard (*Choriospora tenella*), black mustard (*Brassica nigra*), western tansymustard (*Descurainia pinnata*), and yellow salsify (*Tragopogon dubious*). The extent of CRP was clearly defined and located entirely within the area north of State Route 24 and south of Den Beste Rd.

Shrub-steppe habitat was the second most abundant habitat type (approximately 72 ac; Table 4). Plant species within shrub-steppe was dominated by sagebrush (*Artemisia* spp.), with a minor component of spiny hopsage (*Grayia spinosa*), saltbush (*Atriplex* spp), greasewood (*Sarcobatus* spp.), and other woody shrubs. Native forbs such as twin arnica (*Arnica sororia*), prairie star (*Lithophragma parviflorum*), arrowleaf balsamroot (*Balsamorhiza sagitata*), and desert parsley (*Lomatium* spp.) were present; however, dense areas of downy brome covered much of the understory. All shrub-steppe habitat mapped in 2019 was considered intact although the understory consisted of non-native grass species. Areas of taller shrubs and higher shrub density was found in drainage bottoms south of Den Beste Rd (Figure 4; Appendix B).

Eastside grasslands composed approximately 52 ac and was interspersed between shrub-steppe north of Den Beste Rd (Figure 4). Although grazed by livestock, grasslands contained a minor component of native grass species such as squirreltail/wheatgrasses (*Elymus* spp.) and bunchgrasses, (*Grama* spp.). Grazing was evident within grasslands, which reduced grass cover and species diversity and was concentrated in the area north of Den Beste Rd.

Pasture mixed environs composed approximately 7.5 ac north of Den Beste Rd. The area was a former cattle corral and now contains several abandoned buildings and several vehicles; vegetation was heavily trampled and soils impacted. Shrub cover was absent from the area and shrub management around the southern fence line was apparent.

Croplands composed less than one percent of habitat within the 2019 Survey Area (approximately 4.5 ac). A newly planted orchard was located at the border adjacent to the south of Den Beste Rd.

4.3.2 2020 Survey

Plant species within shrub-steppe was dominated by sagebrush and had similar species composition that was observed during the 2019 survey. Dense areas of downy brome covered much of the understory. Degraded shrub-steppe habitat (45.3 acres) was found immediately north of Den Beste Rd where active cattle grazing reduced shrub height, herbaceous cover and compacted soils. Evidence of supplementary cattle forage (e.g., hay) was evident throughout the degraded shrub-steppe habitat. Intact shrub-steppe comprised the remainder of the shrub-steppe habitat in the 2020 survey area (77.9 acres).

Eastside grasslands composed approximately 43 ac and was interspersed between shrub-steppe north of Den Beste Rd (Figure 4). Grasslands contained a minor component of native grass species similar to what was observed in 2019. Grazing was evident within grasslands which reduced grass cover and species diversity.

Pasture mixed environs composed approximately 7 ac north of Den Beste Rd. This area is associated with a transmission line that runs through the Project Area; vegetation was heavily trampled and soils impacted from cattle and vehicle usage in the area. Shrub cover was absent from the area.

Croplands composed approximately 12.5 ac of habitat within the 2020 Survey Area (approximately 8.7 percent of the habitat). Vegetation within cropland habitat included a fruit orchard that was located south of the Den Beste Rd (Figure 4).

Table 4. Habitat types observed during 2019 and 2020 surveys at the Goose Prairie Solar Project, Yakima County, Washington.

Habitat Type	Area (ac)	% Composition
2019		
Conservation Reserve Program	487.3	78.2
Shrub-steppe - Intact	71.6	11.5
Eastside Grasslands	52.4	8.4
Pasture Mixed Environs	7.4	1.2
Croplands	4.5	0.7
Subtotal	623.2	100
2020		
Shrub-steppe - Intact	77.9	42.0
Shrub-steppe - Degraded	45.3	24.4
Eastside Grasslands	42.6	23.0
Croplands	12.4	6.7
Pasture Mixed Environs	7.1	3.8
Subtotal	185.3	100
Total	808.5	100

Table 5 below shows the total acreage for each habitat type for the entirety of the Project Area.

Table 5. Habitat types observed during combined surveys at the Goose Prairie Solar Project, Yakima County, Washington.

Habitat Type	Area (ac)	% Composition
Conservation Reserve Program	487.3	60.3
Shrub-steppe - Intact	149.5	18.5
Shrub-steppe - Degraded	45.3	5.6
Eastside Grasslands	95.0	11.8
Croplands	16.9	1.8
Pasture Mixed Environs	14.5	2.1
Total	808.5	100

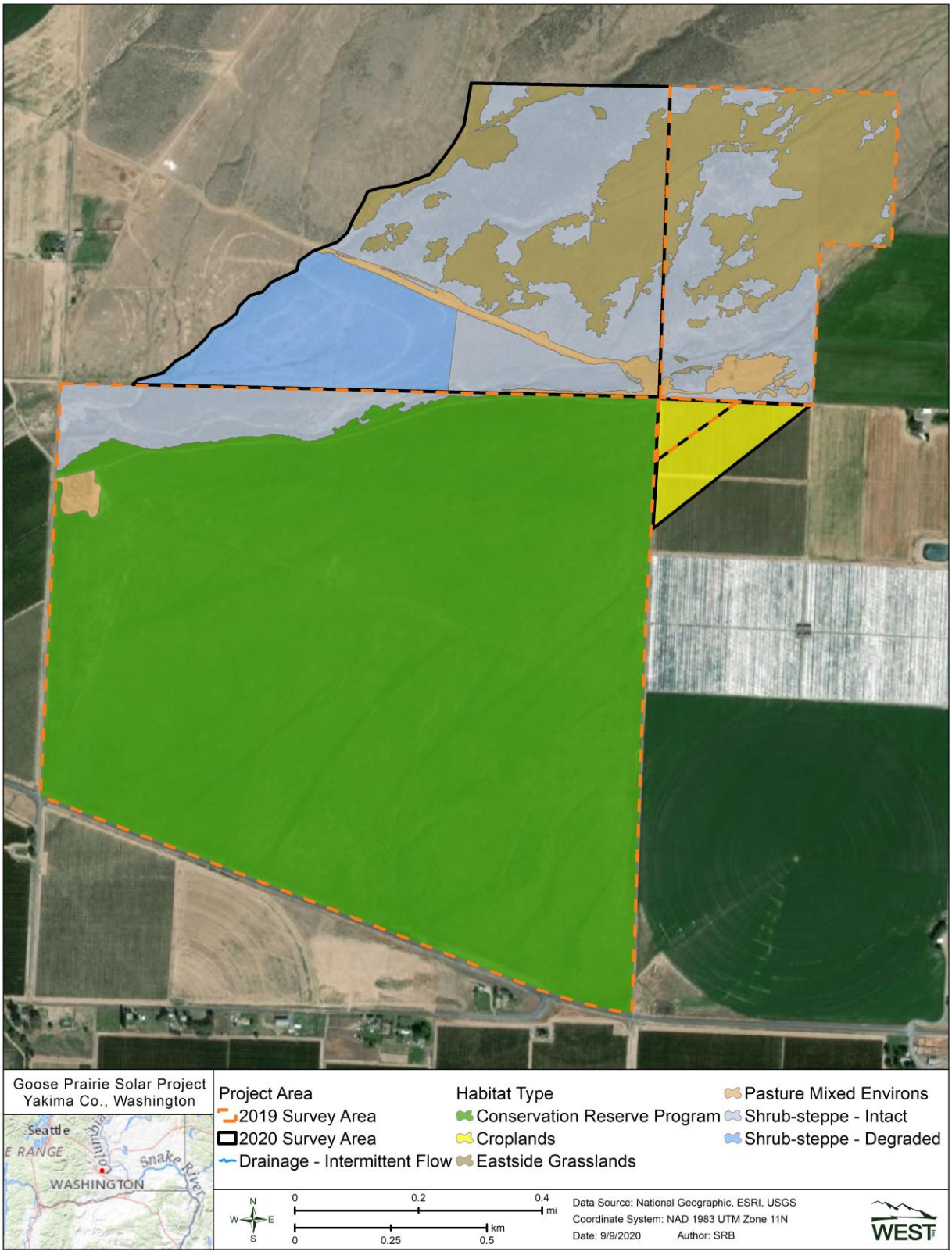

Figure 4. WDFW (2009) habitat types within the Goose Prairie Solar Project Area for 2019 and 2020, Yakima County, Washington.

4.3.3 Soil Mapping

Silt loam soils were the primary underlying soil type accounting for 95.2% of the soil types with only Finley cobbly fine sandy loam the non-silt soil type (Figure 5, Table 6). The primary soil type found in the CRP habitat was Willis silt loam, 2 to 5% slopes and is the same underlying soil type as that found in the intact shrub-steppe habitat differing only in the percent slope (Willis silt loam, 8 to 15% slopes).

Table 6. Soil types for the Goose Prairie Solar Project Area, Yakima County, Washington from NRCS custom soil report. Map symbols reflect the soil series ID shown in Figure 5.

Map Symbol	Soil Description	Acres
36	Finley cobbly fine sandy loam, 0 to 5 percent slopes	38.6
65	Kiona stony silt loam, 15 to 45 percent slopes	2.1
68	Lickskillet very stony silt loam, 5 to 45 percent slope	6.6
83	Moxee slit loam, 2 to 15 percent slopes	168.6
93	Pits	5.6
101	Ritzville slit loam, 8 to 15 percent slopes	1.4
187	Willis slit loam, 2 to 5 percent slopes	399.5
188	Willis slit loam, 5 to 8 percent slopes	65.8
189	Willis slit loam, 8 to 15 percent slopes	121.0
Total		809[1]

[1] Minor difference in total Project acreage due to NRCS mapping service and rounding

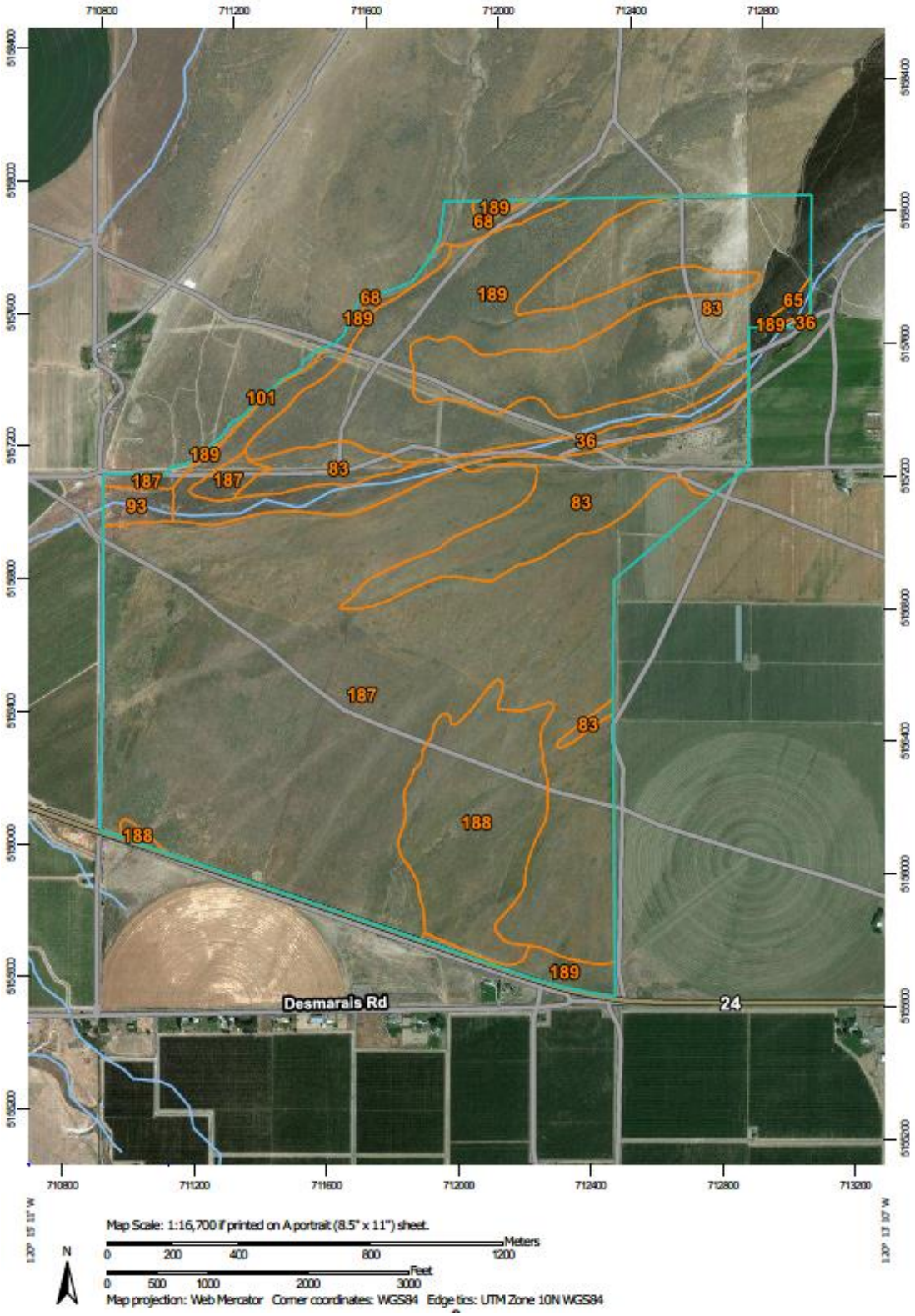

Figure 5. Soil types for the Goose Prairie Solar Project Area, Yakima County, Washington from NRCS custom soil report. The blue line represents the Project Area; soil types are identified in Table 6.

5 DISCUSSION

The Project Area contains suitable habitat for three shrub-steppe and grassland-associated bird and mammal species observed during TESS surveys and considered sensitive by USFWS or WDFW. Sagebrush sparrow nesting behavior was observed in shrub-steppe habitat in 2019 and 2020, nesting behavior for long-billed curlew was observed in 2019, and the majority of Townsend's ground squirrel colonies were documented along the Project boundary adjacent to State Route 24.

Sagebrush sparrow and long-billed curlew were observed in intact shrub-steppe habitat and not observed in degraded shrub-steppe habitat supporting the classification of degraded shrub-steppe habitat. Although the underlying soil type is the same in the degraded and intact shrub-steppe habitat (Willis silt loam, 8 to 15% slopes) the degraded shrub-steppe habitat has lower function and value to wildlife evidenced by the loss of herbaceous vegetation and compromised shrub cover due to overgrazing. In eastern Washington, sagebrush sparrow nest exclusively in shrub-steppe habitat dominated by sagebrush or mixed shrub communities, which occur in Project Area in intact shrub-steppe (Weins and Rotenberry 1981). Long-billed curlews typically use grasslands with tall grasses that provide nesting cover; however, habitats with greater shrub cover (greasewood or sagebrush) have been used in southeastern Washington (Pampush 1980) and similar habitat occurs the Project Area in intact shrub-steppe. The prevalence of cheatgrass throughout the grasslands and shrub-steppe habitat in the Project Area likely outcompetes the establishment of native shrubs (Pendleton et al. 2007).

Townsend's ground squirrel colonies were primarily located within the CRP field along the Project boundary adjacent to State Route 24 in the 2019 Survey Area. The species prefers well-drained, friable soils with high sand content suitable for burrow excavation (Rickart 1987). Previously disturbed habitat such as railroad embankments, abandoned farmlands, and canals have been documented as preferred habitat (Fifield 2013). Higher densities of ground squirrel burrows were documented in the 2019 Survey Area colonies at the edge of the Project Area where State Route 24 and road construction had disturbed soils. Similarly, the CRP field had previously been plowed, seeded and remains loosely packed soil, which may help facilitate colony establishment in the interior portions of the Project Area. Although the underlying soil type in the CRP is the same as that found in intact shrub-steppe habitat (Willis silt loam), the CRP has no current function and value as shrub-steppe habitat evidenced by the tilling and planting of grasses and absence of shrub cover and associated sagebrush sparrow and long-billed curlew observations.

6 REFERENCES

Bartrand, E. 2019. Guidance for and Preliminary Attributes of the Goose Prairie Potential Solar Site in Yakima County, Washington. Washington Department of Fish and Wildlife, Olympia. Transmitted to OneEnergy, dated March 19, 2019.

California Burrowing Owl Consortium. 1993. Burrowing owl survey protocol and mitigation guidelines. April. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83842&inline.

Clarke, S. E. and S. A. Bryce. 1997. Hierarchical Subdivisions of the Columbia Plateau and Blue Mountains Ecoregions, Oregon and Washington. Gen. Tech. Rep. PNW-GTR-395. Portland, Oregon, US Department of Agriculture, Forest Service, Pacific Northwest Research Station. 114 p.

ESRI. 2019. World Imagery and Aerial Photos. (World Topo). ArcGIS Resource Center. Environmental Systems Research Institute (ESRI), producers of ArcGIS software. Redlands, California. Available online: http://www.arcgis.com/home/webmap/viewer.html?useExisting=1.

Farm Service Agency. 2019. Washington summary. Available online: https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/State-Offices/Washington/pdfs/wa_summary_11_21_2017.pdf. Accessed August 13, 2019.

Fifield, E. 2013. *Spermophilus townsendii*, Animal Diversity Web. Available online: https://animaldiversity.org/accounts/Spermophilus_townsendii/.

Gerhardt, R., and K. Kronner. 2017. Leaning Juniper II Wind Power Facility 2017 Washington Ground Squirrel Report. Prepared for Leaning Juniper Wind Power II, LLC, Portland Oregon. Prepared by Northwest Wildlife Consultants, Inc. Pendelton, Oregon. September 18. Available online: https://www.oregon.gov/energy/facilities-safety/facilities/Facilities%20library/2018-05-23-LJIIB-Wildlife-Report.pdf.

Goodman, S. 2003. 2003 protocol for Washington ground squirrel surveys. Washington Department of Fish and Wildlife. Olympia.

Google Earth. 2019. East of Moxee, Washington. 46°32’05.49 120°13’48.26. Imagery date: October 14, 2018.

Martin, J. W. and B. A. Carlson 1998. Sagebrush sparrow (*Artemisiospiza nevadensis*), version 2.0. In The Birds of North America (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, New York, USA. Available online: https://birdsna.org/Species-Account/bna/species/sagspa1.

Morgan, R. L., and M. Nugent. 1999. Status and habitat use of the Washington ground squirrel (Spermophilus washingtoni) on State of Oregon Lands, South Boeing, Oregon in 1999. Report to the Oregon Department of Fish and Wildlife.

National Geographic Society (National Geographic). 2018. World Maps. Digital topographic map. PDF topographic map quads. Accessed March 8, 2018. Available online: http://www.natgeomaps.com/trail-maps/pdf-quads.

Natural Resources Conservation Service (NRCS). 2004. Ecological Site Description. Site Type: Rangeland, Site Name: Loamy 9-15 PZ.

Natural Resources Conservation Service (NRCS). 2020. Custom Soil Resource Report for Yakima County Area, Washington.

North American Datum (NAD). 1983. Nad83 Geodetic Datum.

Pampush, G. J. 1980. Breeding chronology, habitat utilization and nest-site selection of the Long-billed Curlew in northcentral Oregon. Unpublished M.Sc. Thesis, Oregon State University, Corvallis, Oregon.

Pendleton, R. L.; B. K. Pendleton, S. D. Warren, J. R. Johansen, L. L. St. Clair. 2007. Shrub establishment in the presence of cheatgrass: The effect of soil microorganisms. In: R. E. Sosebee, D. B. Wester, C. M. Britton, E. D. McArthur, S. G. Kitchen, compilers. Proceedings: Shrubland dynamics -- fire and water; 2004 August 10-12; Lubbock, TX. Proceedings RMRS-P-47. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. p. 136-141.

Postupalsky, S. 1974. Raptor Reproductive Success: Some Problems with Methods, Criteria, and Terminology. In Management of Raptors, Raptor Research Report No. 2., edited by F.N. Hamerstrom, Jr., B.E. Harrell, and R.R., Olendorf, pp. 21-31. Vermillion, South Dakota: Raptor Research Foundation.

Pruitt, L. 2000. Loggerhead shrike status assessment. U. S. Fish and Wildlife Service. Bloomington Indiana. Available online: https://www.fws.gov/midwest/es/soc/birds/losh/loshsa_entire.pdf.

Rickart, E. 1987. *Spermophilus townsendi*. Mammalian Species No. 268. Available online: https://doi.org/10.2307/0.268.1.

Sedgwick, J. A. 2006., Long-billed Curlew (*Numenius americanus*): a technical conservation assessment.. USDA Forest Service, Rocky Mountain Region. December. Available online: http://www.fs.fed.us/r2/projects/scp/assessments/longbilledcurlew.pdf.

Stinson, D. W. 2017. Periodic status review for the Sandhill Crane. Washington Department of Fish and Wildlife, Olympia, Washington.

Tetra Tech. 2011. Boardman to Hemingway Transmission Line Project. 2011 Washington Ground Squirrel Surveys. Prepared for Idaho Power Company, Boise, Idaho. Prepared by Tetra Tech, Boise, Idaho. December. Available online: http://union-county.org/wp-content/uploads/2016/01/16d_Attachment-P-8D.pdf.

Thompson, B. 2019. U.S. Fish and Wildlife Comments on the Goose Prarie Solar Project. U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington. Transmitted to OneEnergy, dated March 28, 2019.

U. S. Department of Agriculture. 2017. National Aerial Imagery Program. Washington. Farm Service Agency. Available at: https://gis.apfo.usda.gov/arcgis//rest/services.

U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern (BCC) 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. Available online: https://www.fws.gov/migratorybirds/pdf/grants/BirdsofConservationConcern2008.pdf.

U.S. Fish and Wildlife Service. 2012. Land-based Wind Energy Guidelines. March 23, 2012. 82 pp. Available online: http://www.fws.gov/cno/pdf/Energy/2012_Wind_Energy_Guidelines_final.pdf.

US Fish and Wildlife Service. 2013. Eagle Conservation Plan Guidance: Module 1 - Land-Based Wind Energy, Version 2. US Department of the Interior, Fish and Wildlife Service, Division of Migratory Bird Management. April 2013. Executive Summary and frontmatter + 103 pp.

U.S. Geological Survey (USGS). 2018. USGS Topographic Maps. Accessed June 2019. Information online: https://nationalmap.gov/ustopo/index.html.

Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species. Olympia, Washington. Updated 2019.

Washington Department of Fish and Wildlife. 2009. Wind Power Guidelines. Olympia, Washington. 30pp.

Yang, L., S. Jin, P. Danielson, C. Homer, L. Gass, A. Case, C. Costello, J. Dewitz, J. Fry, M. Funk, B. Grannemann, M. Rigge, and G. Xian. 2018. A New Generation of the United States National Land Cover Database: Requirements, Research Priorities, Design, and Implementation Strategies, p. 108–123.

Appendix A. Wildlife Species Observed at the Goose Prairie Solar Project, Yakima County, Washington, April and May 2019 and March and May 2020.

Appendix A1. Wildlife Species Observed during the 2019 survey at the Goose Prairie Solar Project, Yakima County, Washington, April and May 2019.

Type/Species	Scientific Name
Birds	
Passerines	
cliff swallow	*Petrochelidon pyrrhonota*
European starling	*Sturnus vulgaris*
horned lark	*Eremophila alpestris*
lark sparrow	*Chondestes grammacus*
loggerhead shrike	*Lanius ludovicianus*
red-winged blackbird	*Agelaius phoeniceus*
savannah sparrow	*Passerculus sandwichensis*
western kingbird	*Tyrannus verticalis*
western meadowlark	*Sturnella neglecta*
Gamebirds	
California quail	*Callipepla californica*
Waterbirds	
sandhill crane	*Antigone canadensis*
Waterfowl	
Canada goose	*Branta canadensis*
mallard	*Anas platyrhynchos*
Shorebirds	
long-billed curlew	*Numenius americanus*
sandhill crane	*Antigone canadensis*
Diurnal Raptors	
Buteos	
red-tailed hawk	*Buteo jamaicensis*
Swainson's hawk	*Buteo swainsoni*
Falcons	
American kestrel	*Falco sparverius*
Northern Harrier	
northern harrier	*Circus hudsonius*
Large Corvids	
common raven	*Corvus corax*
black-billed magpie	*Pica hudsonia*
Mammals	
coyote	*Canis latrans*
northern pocket gopher	*Thomomys talpoides*
sagebrush vole	*Lemmiscus curtatus*
Townsend's ground squirrel	*Urocitellus townsendii townsendii*

Appendix A2. Wildlife Species Observed at the Goose Prairie Solar Project, Yakima County, Washington, March and May 2020.

Type/Species	Scientific Name
Birds	
Passerines	
American goldfinch	*Spinus tristis*
American robin	*Turdus migratorius*
brown-headed cowbird	*Molothrus ater*
dark-eyed junco	*Junco hyemalis*
European starling	*Sturnus vulgaris*
horned lark	*Eremophila alpestris*
house finch	*Haemorhous mexicanus*
loggerhead shrike	*Lanius ludovicianus*
lark sparrow	*Chondestes grammacus*
mourning dove	*Zenaida macroura*
northern flicker	*Caloaptes auratus*
rock pigeon	*Columba livia*
red-winged blackbird	*Agelaius phoeniceus*
Say's phoebe	*Sayornis saya*
sagebrush sparrow	*Artemisiospiza nevadensis*
savannah sparrow	*Passerculus sandwichensis*
unknown swallow	
vesper sparrow	*Pooecetes gramineus*
western kingbird	*Tyrannus verticalis*
western meadowlark	*Sturnella neglecta*
white-crowned sparrow	*Zonotrichia leucophrys*
Gamebirds	
California quail	*Callipepla californica*
Shorebirds	
killdeer	*Charadrius vociferus*
Diurnal Raptors	
Buteos	
red-tailed hawk	*Buteo jamaicensis*
Swainson's hawk	*Buteo swainsoni*
Falcons	
American kestrel	*Falco sparverius*
prairie falcon	*Falco mexicanus*
Northern Harrier	
northern harrier	*Circus hudsonius*
Large Corvids	
common raven	*Corvus corax*
black-billed magpie	*Pica hudsonia*
Mammals	
coyote	*Canis latrans*

Appendix A2. Wildlife Species Observed at the Goose Prairie Solar Project, Yakima County, Washington, March and May 2020.

Type/Species	Scientific Name
Townsend's ground squirrel	*Urocitellus townsendii townsendii*

Appendix B. Site Photos of Wildlife Observations and Habitat at the Goose Prairie Solar Project, Yakima County, Washington, April and May 2019 and March and May 2020.

[REDACTED DUE TO SENSITIVE INFORMATION]

Appendix B. Townsend's ground squirrel Colony 7(left) and adult with young at Colony 13 (right) at the Goose Prairie Solar Project. Photos taken on 4/17/2019 and 5/18/2019, respectively.

[REDACTED DUE TO SENSITIVE INFORMATION]

Appendix B. Occupied active red-tailed hawk Nest 1 (right) and unoccupied inactive Nest 2 (left) during the 2019 survey (left picture). Occupied active red-tailed hawk Nest 1 during the 2020 survey (right picture; nest circled in yellow) [redacted] Goose Prairie Solar Project. Photos taken 4/15/2019 and 03/25/2020.

[REDACTED DUE TO SENSITIVE INFORMATION]

Appendix B. Occupied active common raven Nest 3 during 2019 survey in the CRP land of the Project Area (left picture; Photo taken 4/18/2019). [redacted] (right picture; Photo taken 3/25/2020) during the 2020 surveys at the Goose Prairie Solar Project.

Appendix B. Example of shrub-steppe habitat in the Project Area along Den Beste Rd during the 2019 Survey Area (south of Den Beste Rd; left photo) and the 2020 Survey Area (north of Den Beste Rd; right photo) at the Goose Prairie Solar Project. Photo taken 4/15/2019 on left and photo taken 3/24/2020 on right.

Appendix B. CRP adjacent to shrub-steppe habitat located south of Den Beste Rd (left picture; photo taken 5/18/2019) and CRP land north of state highway 24 in the Project Area (right picture; photo taken 4/17/2019) at the Goose Prairie Solar Project.