Attachment C. Habitat and General Wildlife Survey Report

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2022 Habitat and General Wildlife Survey Report for the Carriger Solar, LLC Project

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CONFIDENTIAL BUSINESS INFORMATION

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EXECUTIVE SUMMARY

Tetra Tech, Inc. (Tetra Tech) conducted habitat and general wildlife surveys at the Carriger Solar, LLC Project (Project) in April, May, and June 2022. The Project is located 2 miles west of the city of Goldendale in Klickitat County, Washington. The Project Survey Area consists of 2,011 acres of private land and includes approximately 1-mile of right-of-way (ROW) along Knight Road. Surveys consisted of walking meandering transects in non-cultivated land within the Project Survey Area to map and characterize wildlife and habitat and to document the presence of special status and other wildlife species within or near the Project Survey Area. Habitat surveys were conducted in early April, mid-May, and late June, timed to capture early blooming as well as later blooming plant species. Wildlife surveys were conducted in early May 2022 to overlap with wildlife activity and/or breeding periods.

A botanist mapped six habitat types within the Project Survey Area. Four of the six habitat types mapped within the Project Survey Area are considered Priority Habitats[1] or Priority Habitat Features by the Washington Department of Fish and Wildlife (WDFW), including dwarf shrub-steppe (i.e., shrub steppe), eastside (interior) riparian-wetlands (i.e., riparian), ponderosa pine forest and woodlands (includes eastside oak [i.e., Oregon white oak woodlands]), and eastside (interior) grasslands (i.e., eastside steppe) (WDFW 2008). A total of approximately 260 acres (13 percent of the Project Survey Area) consisted of Priority Habitats.

A biologist observed 44 bird species and 5 mammal species during wildlife surveys. Of these 44 species, two bird species and two mammal species are special status species: Lewis's woodpecker (*Melanerpes lewis*, Bird of Conservation Concern [BCC][2]), mule deer (*Odocoileus hemionus,* Priority Species), western gray squirrel (*Sciurus griseus,* state threatened, Priority Species) and wild turkey (*Meleagris gallopavo,* Priority Species)[3]. No federally endangered, threatened, or candidate species were observed. Wildlife use in general was concentrated in the eastside (interior) riparian-wetlands and the ponderosa pine and oak woodland habitat types.

Tetra Tech performed an analysis to identify known wildlife habitat concentration areas (HCAs) and wildlife priority habitat linkages important for wildlife movement connectivity. None were identified within the Project Survey Area. A biologist mapped mule deer use and movement corridors based on mapping preferred habitat (shrub-steppe, grasslands, riparian and wetlands, and ponderosa pine forest and woodlands) and observations of mule deer sign (scat, tracks, trails, and bedding areas) during field surveys. The majority of mule deer sign observed was concentrated in the eastside (interior) riparian-wetlands and adjacent dwarf shrub-steppe habitat in the central portion of the Project Survey Area, east of the WDFW hatchery.

[1] Priority Habitat designations by WDFW are further described in Section 2.2.2.
[2] Birds of Conservation Concern (BCC) are migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent United States Fish and Wildlife Service highest conservation priorities.
[3]The term Priority Species is further defined in Section 2.2.2.

Based on the results of the habitat and general wildlife surveys, the following measures are recommended to avoid and minimize potential Project-related impacts to habitat and wildlife species:

- Consult with WDFW regarding management recommendations to avoid potential impacts to mule deer, western gray squirrels, and wild turkeys.
- Prepare a Habitat Mitigation Plan that outlines measures that would be taken to avoid, minimize, and mitigate for impacts to wildlife habitat from construction and operation of the Project.
- Avoid Priority Habitats to the extent feasible.

Additional recommendations specific to rare plants and raptors are provided in the Project's Botanical Survey Report (Tetra Tech 2022a) and the Raptor Nest Survey Report (Tetra Tech 2022b).

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Acronyms and Abbreviations

BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
CAO	Klickitat County's Critical Areas Ordinance
CCR	Cypress Creek Renewables
CFR	Code of Federal Regulations
CRP	Conservation Reserve Program
ESA	Endangered Species Act
ETP	Eagle Take Permit
GMA	Growth Management Act
GPS	Global Positioning System
HCA	Habitat Concentration Area
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
PHS	Priority Habitats and Species
Project	Carriger Solar Project
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
Tetra Tech	Tetra Tech, Inc.
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources

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1.0 Project Background, Setting and Purpose

This report presents the methods and results for the 2022 habitat and general wildlife surveys conducted by Tetra Tech, Inc. (Tetra Tech) for the Carriger Solar, LLC Project (Project), performed for Cypress Creek Renewables, LLC (CCR) to support Project permitting and inform potential avoidance, minimization, and mitigation measures. Tetra Tech conducted habitat and wildlife surveys to map and characterize habitat and to document the presence of special status and other wildlife species within or near the Project Survey Area. The Project Survey Area consists of approximately 2,011 acres of the 2,108-acre Project Lease Boundary and includes approximately 1-mile of right-of-way (ROW) along Knight Road (Figures 1a and 1b). The Project Survey Area includes all areas under consideration for Project development. For this report, the term "special status wildlife species" includes federal and state endangered (E), threatened (T), proposed, and candidate (C) species; species of concern; birds of conservation concern (BCC[4]); and state Priority Species[5].

The Project Survey Area is located 2 miles west of the city of Goldendale in Klickitat County, Washington in Sections 1, 11, 12, 13, and 14 of Township 4 North and Range 15 East, in Sections 25, 26, 35, and 36 of Township 5 North and Range 15 East, and in Section 6 of Township 4 North and Range 16 East. The Project is located within the Columbia Plateau Region (Clarke and Bryce 1997). The topography within the Project Lease Boundary is relatively flat with gentle rolling hills (Figure 1b). Most of the habitat has been converted to agriculture. Land use within the Project Lease Boundary consists primarily of farming and ranching activities, with land cover being predominantly cultivated crops.

2.0 Federal, State, and Local Regulations

This section provides a brief background on federal, state and local regulations pertaining to special status wildlife species and habitats potentially present in the vicinity of the Project.

2.1 Federal

2.1.1 Endangered Species Act

The Endangered Species Act (ESA) establishes protections for fish, wildlife, and plants that are listed as threatened or endangered; outlines the process for adding species to and removing them from the list of threatened and endangered species, requires the preparation and implementation of plans for their recovery; provides for interagency cooperation to avoid take of listed species and for issuing permits for otherwise prohibited activities; provides for cooperation with States, including

[4] Birds of Conservation Concern (BCC) are migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent United States Fish and Wildlife Service highest conservation priorities

[5] The term Priority Species is further defined in Section 2.2.2.

authorization of financial assistance; and implements the provisions of the Convention on International Trade in Endangered Species of Wild Flora and Fauna. Under the ESA imperiled animals are protected wherever they occur, but endangered plants are protected only on federal lands.

2.1.2 Bald and Golden Eagle Protection Act

Under authority of the Bald and Golden Eagle Protection Act (BGEPA; 16 USC 668–668d), bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are afforded legal protection. The BGEPA prohibits the take, sale, purchase, offer of sale, purchase or barter, transport, export or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof (16 USC 668). The BGEPA defines take to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb," and includes criminal and civil penalties for violating the statute (16 USC 668c). The term "disturb" is defined as agitating or bothering an eagle to a degree that causes, or is likely to cause, injury to an eagle, or either a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior (50 Code of Federal Regulations [CFR] 22.3).

Under 50 CFR 22.26, eagle take permits (ETPs) are available for incidental take associated with otherwise lawful activities (USFWS 2016). Although ETPs are not required to operate a solar facility, an operator is liable if an eagle is taken without an ETP. ETPs are available for take of both bald and golden eagles and their nests and can be issued for up to 30 years contingent upon 5-year reviews. Issuance of an ETP typically involves consultation with U.S. Fish and Wildlife Service (USFWS), submission of an application, and because it is a federal action, it requires National Environmental Policy Act compliance.

2.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements the United States' obligations under four international treaties for the protection of more than 1,000 species (50 CFR 10 and 21) of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines. The MBTA is administered by the USFWS, which maintains a list of all species protected by the MBTA (50 CFR 10.13). The MBTA makes it unlawful "by any means or in any manner, to pursue, hunt, take, capture, kill … possess, offer for sale, sell … purchase … ship, export, import …transport or cause to be transported… any migratory bird, any part, nest, or eggs of any such bird …" except as otherwise permitted under the regulations (16 USC 703). The word "take" is defined by regulation as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR 10.12). There has been varying guidance from U.S. District Courts on the prohibition of incidental take under the MBTA. The USFWS issued a Final Rule which went into effect on December 3, 2021, determining that incidental take is prohibited under the MBTA, subject to District Court rulings. Currently, no permits are authorized to allow incidental take under MBTA.

2.2 State and Local

2.2.1 Threatened and Endangered Species

Washington provides protection for certain species under the Revised Code of Washington (RCW) 77.12.020, which states that the Washington Fish and Wildlife Commission (the policy-setting arm of the Washington Department of Fish and Wildlife [WDFW]) has the authority to designate species of wildlife as endangered or as protected species, which also includes threatened and sensitive species. Species classified as endangered are designated in Washington Administrative Code (WAC) 220-610-010. Species classified as threatened or sensitive are designated in WAC 220-200-100. Additionally, WDFW has designated species as candidates for state listing (WDFW 2022a).

The Washington Endangered Species Act (WAC 232-12-011) prohibits taking (meaning to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of species protected under the laws. Projects permitted through the State Environmental Policy Act (SEPA) process are required to abide by the State Endangered Species Act, assess impacts to state-listed species, and obtain WDFW approval of measures to avoid and minimize impacts to special-status species and habitats.

2.2.2 WDFW Priority Habitats and Species List

WDFW maintains a list of Priority Habitats and Species (PHS) the agency deems to be of priority for conservation and management. Priority Species are those requiring protective measures or management to ensure their future survival because of low population numbers, sensitivity to habitat alteration, tendency to form in vulnerable groups, or because they are of commercial, recreational, or tribal importance. Priority Habitats are habitat types or elements with unique or significant value to a large number of species. A Priority Habitat may consist of a unique vegetation type like shrub-steppe, dominant plant species like juniper savannah, or a specific habitat feature like cliffs. Cities and counties use PHS for permit evaluation purposes and to fulfill land use planning requirements under Washington State's Growth Management Act (GMA) and Shoreline Management Act. On non-federal lands, the GMA is Washington's primary regulatory tool to protect rare and threatened species from development impacts (WAC 365-190-130).

2.2.3 Washington Natural Areas Preserves Act

The Washington Natural Area Preserves Act, as amended in 1981 (RCW 79.70), established the Natural Heritage Advisory Council and the Washington Natural Heritage Program. This program is implemented by the Washington Department of Natural Resources (WDNR) and 1) identifies the species and ecosystems that are considered priorities for conservation efforts in the state, and 2) maintains a database of Priority Species and ecosystems. This information is used, in part, to inform the WDFW's PHS database (see Section 2.2.2).

2.2.4 Washington State Environmental Policy Act (SEPA)

SEPA requires state and local governments to identify possible environmental impacts before making decisions. The SEPA process is designed to work with other regulatory processes to provide a comprehensive evaluation of probable impacts on all elements of the environment. State and local agencies determine whether a project or proposal needs environmental review under SEPA. Any governmental action may be conditioned or denied pursuant to SEPA (Ecology 2022). The SEPA process requires that impacts to special-status species and habitats and evaluated and WDFW will review proposed projects to identify potential impacts to fish, wildlife, and their habitats.

2.2.5 Critical Area Ordinance

Under Washington State's GMA, all cities and counties are directed to adopt critical areas regulations. Counties and cities are required to include the best available science in developing policies and development regulations to protect the functions and values of critical areas (RCW 36.70A.172). Klickitat County's Critical Areas Ordinance (CAO) was developed to comply with the requirements of the GMA, and was most recently updated on August 6, 2013, consistent with the GMA periodic review requirement in RCW 36.70A.130. The provisions of the CAOs apply to all activities (unless exempted) in unincorporated Klickitat County that require permits or land use approves from the County. Chapter II of the Klickitat County CAO defines critical areas as including the following areas and ecosystems: 1) wetlands, 2) areas with a critical recharging effect on aquifers used for potable water, 3) fish and wildlife habitat conservation areas, 4) frequently flooded areas, and 5) geologically hazardous areas.

As described in Chapters II and IV of the Klickitat County CAO, critical wildlife habitat conservation areas include the following: 1) areas with which known federal or state endangered, threatened, or sensitive species have a primary association, where a primary association consists of areas in which there is a high relative density or species richness and the area is significant for providing breeding habitat, winter range, or movement corridors; 2) habitats of local importance (i.e., a habitat in which a species of local importance has a primary association); and 3) areas designated by the WDNR as state natural area preserves and natural resource conservation areas. Critical fish habitat conservation areas include the following: 1) naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat; 2) waters of the State as defined in Title 222 WAC; and 3) lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity.

The CAO specifies required steps to avoid, minimize, or compensate for adverse impacts upon the functions and values of critical areas. In some cases, the CAO specifies the required mitigation, such as providing for buffer widths. In other instances, the applicant will develop mitigation. Where a project is proposed within a critical wildlife/fish habitat conservation area, and the habitat functions and values are likely to be impaired by the project, a habitat management plan is required.

3.0 Methods

3.1 Background Review and Agency Coordination

3.1.1 Wildlife and Habitat

CCR and Tetra Tech met with WDFW via video meeting on March 30, 2022, to introduce the Project and discuss completed and planned biological surveys. At the meeting, WDFW concurred with the habitat and wildlife survey timing and survey approach. WDFW's primary concerns were potential impacts to mule deer (*Odocoileus hemionus*), especially migration corridors, impacts to groundwater quantity and quality because the nearby Goldendale Hatchery Unit relies on the aquifer for its operations, and potential impacts to recreational hunting opportunities. A summary of this meeting is provided in Appendix A. The input from WDFW provided during this meeting was used to inform the habitat and wildlife background review and field surveys.

Prior to conducting field surveys, Tetra Tech reviewed the Critical Issues Analysis prepared for the Project (TRC Environmental 2018). Tetra Tech also conducted a desktop review of existing information to identify potential habitat types that might be encountered within the Project Survey Area. The desktop review was based on reports prepared for the Project, a search of public information sources, including online databases, as well as Tetra Tech staff experience. In December 2021, WDFW provided query results from the PHS database for all mapped Priority Habitats and priority species that occur within 1 mile of the Project Lease Boundary (WDFW 2021).

Following the desktop review, Tetra Tech generated a list of special status species with potential to occur at the Project (Appendix B). Special status wildlife species' likelihood to occur within the Project Survey area was determined using habitat suitability for breeding, nesting, spawning, migration etc. and population size, documented occurrences, and known ranges in Washington (Appendix B, Table 2). This list was reviewed prior to conducting field surveys to ensure surveyor familiarity with relevant species.

Tetra Tech also consulted the Arid Lands Initiative GIS databases; Spatial Priority Areas GIS Data (LCC 2015), Columbia Plateau Connectivity Analysis GIS Data (WHCWG 2012), and Washington Department of Transportation (WDOT)'s wildlife carcass recovery and collision data for an analysis of wildlife habitat concentration areas (HCAs) and priority linkages to identify wildlife movement connectivity established movement corridors. Wildlife habitat concentrations and priority linkages were available only for mule deer and western gray squirrel (*Sciurus griseus*) (WSDOT 2008, WSDOT 2022).

Sources that were utilized for the preliminary desktop habitat evaluation are presented in Table 1.

Table 1. Sources Utilized for Preliminary Desktop Habitat Evaluation

Source and Citation	Information Provided in Dataset
BirdWeb (BirdWeb 2022)	Provides range maps and habitat description for birds found within Washington.
Ecological Systems of Washington State, A Guide to Identification (Rocchio and Crawford 2015)	Provides descriptions of ecological systems and vegetation types found within Washington.
Google Earth Pro (Google Earth Pro 2022)	Aerial imagery used to determine potential boundaries between land cover and vegetation types within the Project Survey Area based on aerial signatures of land cover and vegetation types.
Management recommendations for Washington's priority habitats (Azerrad et al. 2011)	Provides protocols for identifying and mapping shrub-steppe over broad landscapes.
National Land Cover Database land cover data (Homer et al. 2020)	Land cover types (e.g., shrub/scrub, cultivated crops, grassland/ herbaceous), based on land cover modeling, mapped within and adjacent to the Project Survey Area.
PHS Shrub-steppe – Klickitat County (WDFW 2022b)	Locations of potential shrub-steppe and eastside steppe habitat within and adjacent to the Project Survey Area.
TRC Environmental Critical Issues Analysis Report (TRC Environmental 2018)	Critical issues analysis of aquatic resources, sensitive wildlife species, land use, cultural resources, and environmental quality.
USFWS Birds of Conservation Concern (USFWS 2021)	List of federal bird species of concern in Bird Conservation Region 9 (Great Basin).
USFWS Information for Planning and Consultation (IPaC) Resource List for the Project Lease Boundary and Klickitat County (USFWS 2022a, USFWS 2022b)	List of species and other resources such as critical habitat under USFWS jurisdiction that are known or have the potential to occur on or near the Project.
Washington Large Fires 1973-2020 (WDNR 2022)	Provides the locations and boundaries of large (typically over 100 acres) fires in Washington state between 1973 and 2020. Used to determine locations of past fires within and adjacent to the Project area that may have resulted in changes to vegetation within the Project Survey Area.
WDFW Priority Habitats and Species (PHS) Database (WDFW 2021)	Priority Habitats and Species database query results for the Project Lease Boundary and a 1-mile buffer.
WDFW PHS Distribution by County (WDFW 2022c)	PHS that are known or have the potential to occur in Klickitat County.
WDFW State Listed and Candidate Species (WDFW 2022a)	List of Washington state Endangered, Threatened, Candidate, and Sensitive species.
WDFW Threatened and Endangered Species Profiles (WDFW 2022d)	Reference for individual Washington state Threatened, Endangered, and Candidate species including population size, description, range, climate change sensitivity, and conservation status, threats, and actions needed.
WDFW Wildlife Wind Power Guideline Habitat Types (WDFW 2009)	Provides descriptions of various habitat types found within eastern Washington.

Source and Citation	Information Provided in Dataset
Wetlands and Other Waters of the United States Delineation Report (Ecology and Environment 2020), Wetland and Waterbodies Delineation Report, Carriger Solar Project (WSP USA 2022)	Locations of wetlands and other waters delineated within the Project Survey Area.
Wildlife-habitat Relationships in Oregon and Washington (Johnson and O'Neil 2001)	Provides descriptions of habitat types found in Oregon and Washington, including those found in the Columbia Plateau ecoregion.

3.2 Field Surveys

3.2.1 Habitat

Tetra Tech conducted habitat surveys within the Project Survey Area April 4-7, May 11-13, and June 22-24, 2022. The survey periods were timed to capture early blooming as well as later blooming plant species to aid in habitat mapping and characterization. Tetra Tech conducted habitat surveys concurrently with botanical surveys (botanical surveys are addressed under separate cover [Tetra Tech 2022a]), which consisted of a biologist walking meandering transects in non-cultivated land within the Project Survey Area. Field surveys were conducted by a biologist familiar with eastern Washington Columbia Plateau ecoregion habitats, WDFW Priority Habitats (WDFW 2008), and the WDFW Wind Power Guidelines habitat categories[6] (WDFW 2009).

In general, habitat types were adapted from habitat descriptions in W*ildlife-Habitat Relationships in Oregon and Washington* (Johnson and O'Neil 2001), *Ecological Systems of Washington State, A Guide to Identification* (Rocchio and Crawford 2015), Priority Habitats and Species List (WDFW 2008), and the WDFW Wind Power Guidelines (WDFW 2009). To assist in mapping habitat types, the biologist collected global positioning system (GPS) points at each change in habitat type encountered. Dominant plant species and other habitat characteristics observed at these habitat points (e.g., percent cover of native and non-native species, disturbances noted) were recorded to accurately classify and describe habitat types. In addition, the biologist scanned the adjacent landscape from vantage points that allowed views across the landscape to help map habitat boundaries.

Habitat boundaries were digitized either in the field using aerial imagery on Samsung Galaxy tablets using ArcGIS Field Maps software and/or by drawing habitat boundaries (based on data collected in the field) in Google Earth that were then digitized following the field surveys. A minimum mapping unit of 1 acre was implemented.

[6] The WDFW Wind Power Guidelines (WDFW 2009) provide specific management recommendations, alternatives for site assessment, and mitigation options and construction alternatives for avoiding impacts to Washington's wildlife resources and habitat for proposed wind power projects. Currently, there are no similar guidelines for solar power projects.

3.2.2 Wildlife

Wildlife surveys were conducted May 9-10, 2022, which overlaps with activity and/or breeding periods of the special status wildlife species identified as having the potential to occur in the Project Survey Area (Appendix B; Table 2). During surveys, a biologist walked meandering transects within non-cultivated land throughout the Project Survey Area to including the Knight Road ROW. The biologist scanned for wildlife species and recognizable signs of wildlife (e.g., scat, tracks, burrows, nests, and culverts) and listened for recognizable bird calls (e.g., burrowing owl calls). Surveys began early in the morning and continued through late afternoon to facilitate observations of species most active at dawn and/or late afternoon (i.e., mule deer, western gray squirrel, and burrowing owl). Areas unlikely to support special status wildlife species (i.e., cultivated land and developed areas) were surveyed primarily from vehicles by driving paved, gravel, and two-track roads. These areas were surveyed on foot in situations where the full extent was not visible from the vehicle and/or areas of potential habitat for special status wildlife species were identified. Wildlife surveys were conducted concurrent to the second round of raptor nest surveys[7]. Wildlife observed outside the Project Survey Area were recorded as incidental observations. The biologist recorded all wildlife species and recognizable sign observed during wildlife surveys. When encountered, special status wildlife species locations were mapped with a Samsung Galaxy tablet using ArcGIS Field Maps software. Following field surveys, the digitized data were downloaded and processed in a Geographic Information System (GIS) and were reviewed for quality control and assurance.

To help address WDFW's concern with potential impacts to mule deer habitat and their established movement corridors, the biologist identified, and mapped mule deer use based on preferred habitat (shrub-steppe, grasslands, riparian and wetlands, and ponderosa pine forest and woodlands) and observations of mule deer sign (scat, tracks, trails, and bedding areas).

4.0 Results

4.1 Background Review

4.1.1 Habitat

The desktop review confirmed the absence of USFWS Critical Habitat within the Project Survey Area (USFWS 2022a, USFWS 2022b). The PHS dataset identified two Priority Habitats within the Project Survey Area (eastside steppe and shrub-steppe) and one Priority Habitat (Oregon white oak woodland) approximately 0.75 miles to the east of the Project Survey Area (Figure 2; WDFW 2021, WDFW 2022b, WDFW 2022c). One perennial and multiple intermittent and ephemeral streams, as well as several wetlands were identified within the Project Survey Area during wetland and other

[7] Tetra Tech conducted raptor nest surveys within the Project Lease Boundary and a 0.5-mile buffer. Two rounds of surveys were conducted: March 29-30, 2022, and May 4 and May 9-10, 2022. The results of the raptor nest survey are provided in Tetra Tech 2022b.

water delineation surveys conducted for the Project (Ecology and Environment 2020, WSP USA 2022). There are no past large wildfires identified as having occurred within the vicinity of the Project since 1973 (WDNR 2022).

4.1.2 Wildlife

Tetra Tech identified 39 special status wildlife species with the potential to occur in the Project Survey Area. These species included 26 birds, 1 fish, 2 invertebrates, 8 mammals, and 4 reptiles and amphibians (Appendix B). Of these 39 species, 28 are state listed as endangered, threatened, or candidate species, and/or a Priority Species and 7 are federally listed as endangered, threatened, or candidate species under the ESA and 19 are federal BCC. BCC species are migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent USFWS highest conservation priorities. All species on the BCC list are protected under the Migratory Bird Treaty Act of 1918 but the BCC list does not confer regulatory or legal protection to the included species but instead serves as a way to focus conservation efforts across the federal government and its partners. The desktop review also identified bald eagle and golden eagle as having potential to occur at the Project (BirdWeb 2022, USFWS 2022a, USFWS 2022b, WDFW 2022c); these species are protected under the BGEPA and are BCC (Appendix B).

The USFWS Information for Planning and Consultation (IPaC) resource list for Klickitat County identified six federally listed species with potential to occur on or near the Project; gray wolf (*Canus lupis,* E), northern spotted owl (*Strix occidentalis caurina*, T), yellow-billed cuckoo (*Coccyzus americanus,* T*)* Oregon spotted frog (*Rana pretiosa,* T), bull trout (*Salvelinus confluentus,* T), and the monarch butterfly (*Danaus plexippus,* C; USFWS 2022b). A query of IPaC data for the Project Survey Area identified gray wolf, northern spotted owl, yellow-billed cuckoo, and the monarch butterfly with the potential to occur on or near the Project Survey Area (USFWS 2022a).

The WDFW PHS database identified occurrences of three Priority Species: wild turkey (*Meleagris gallopavo*), mule deer, and western gray squirrel within or near the Project Survey Area. Wild turkey Priority Habitat overlaps the northeast corner of the Project Survey Area and western gray squirrel Priority Habitat abuts the northeast portion of the Project Survey Area (Figure 2). Western gray squirrel shelters/nests and colony observations have been documented in this area from 1994 thru 2009 (WDFW 2021a). These species were observed in or near the Project Survey Area during surveys.

The likelihood of special status wildlife species to occur within the Project Survey area was determined habitat suitability for breeding, nesting, spawning, migration etc. and the population size, documented occurrences, and known ranges in Washington (Appendix B). Table 2 shows species whose ranges and/or suitable habitat is not found within or adjacent to the Project Survey Area. These species are not likely to occur within the Project Survey Area.

Table 2. Special Status Wildlife Species Not Likely to Occur within the Project Survey Area

Common Name	Scientific Name	Status (Federal; State)	Preferred Habitat
Birds			
black swift	*Cypseloides niger*	BCC	Nests on forested areas near rivers; outside species range and habitat
northern spotted owl	*Strix occidentalis caurina*	FT; ST, PS	Nests and forages in mature conifer forests with dense canopy closure; outside species range and habitat
white-headed woodpecker	*Leuconotopicus albolarvatus*	BCC; C, PS	Restricted to relatively open Ponderosa pine forests at altitudes from 2,000 to 5,000 feet; outside habitat and species range.
yellow-billed cuckoo	*Coccyzus americanus*	FT; E, PS	Considered extirpated in Washington; Historically found in riparian zones with cottonwoods and willows and fir woodlands and open brushy hillsides; outside of species range
Fish			
bull trout	*Salvelinus confluentus*	FT; C, PS	Found in marine shorelines and lakes; outside of species range.
Mammals			
Rocky Mountain Elk	*Cervus canadensis nelsoni*	PS	Found primarily in the mountain ranges and shrub-steppe of eastern Washington; outside species range.
Reptiles and Amphibians			
Oregon spotted frog	*Rana pretiosa*	FT; ST, PS	Lives in streams, ponds, lakes, and permanent and ephemeral wetlands; outside species range.
Western pond turtle	*Actinemys marmorata*	C: E, PS	Lives in in streams, ponds, lakes, and permanent and ephemeral wetlands; outside species range.
Sources: BirdWeb 2022, Cornell 2022, USFWS 2022a, USFWS 2022b, USFWS 2022c, USFWS 2021, WDFW 2022c, WDFW 2022d			

No wildlife HCAs or priority linkages for wildlife movement connectivity were identified in the Project Survey Area by the Arid Lands Initiative GIS databases; Spatial Priority Areas GIS Data (LCC 2015), Columbia Plateau Connectivity Analysis GIS Data (WHCWG 2012), and Washington Department of Transportation (WDOT)'s wildlife carcass recovery and collision data (WSDOT 2008, WSDOT 2020). HCAs and priority linkages were located at least 5 miles to the north, west, and east of the Project Survey Area. Only detailed analyses and maps of mule deer and western gray squirrel were available for HCA and priority linkage information (WHCWG 2012).

Raptor nests identified at the Project are addressed in the Raptor Nest Survey Report (Tetra Tech 2022b), which describes ground-based raptor nest surveys conducted from March 29-30 and May 4 and 9-10, 2022.

For species Priority Species observed within or near the Project Survey Area, more detailed species information is provided below.

4.1.2.1 Lewis's Woodpecker

Lewis's woodpeckers (*Leuconotopicus albolarvatus*) are federal BCC species and breed in eastern Washington. The biologist observed Lewis's woodpeckers in white oak woodland inside and just outside the Project Survey Area to the east and the northwest (Figure 3). Lewis's Woodpeckers prefer open forests with brushy understories and snags for nesting. In Washington, they use three main types of habitats: forested riversides with large cottonwoods (*Populus* sp.) and other hardwoods, ponderosa pine (*Pinus ponderosa*) forests, especially at the lower edge of the tree line, and Oregon white oak (*Quercus garryana*) stands. A decline seen in Washington and throughout their range over the years has led to their listing as an at-risk species by Partners in Flight, Audubon-Washington, and the Washington Gap Analysis project. They are locally common at the transition zone between Ponderosa pine and shrub-steppe habitats (BirdWeb 2022).

4.1.2.2 Mule Deer

Mule deer and their sign were observed in the Project Survey Area (Figure 3). Mule deer are common throughout much of eastern Washington State and their year-round range overlaps the Project Survey Area (WDFW 2016). Mule deer habitat use in the Columbia Plateau ecoregion is associated with shrub-steppe and other undisturbed vegetation that provides both year-round and seasonal habitat for fawning and fawn rearing, migration corridors, foraging, and escape cover. The juxtaposition of remaining natural habitats with wheat or hay farmland across parts of the Columbia Plateau provide a matrix of edge, cover, and forage areas beneficial to mule deer (WDFW 2016). HCAs associated with Rock Creek, Alder Creek and Pine Creek in Klickitat County and priority linkages were mapped at least 5 miles to the north, west, and east of the Project Survey Area. (WHCWG 2010).

WDFW identifies mule deer migration corridors and riparian zones and high moisture bottom-lands as key habitat components for mule deer. WDFW considers retention, protection, and enhancement of these limited natural areas to be a high priority. Migration corridors provide opportunities to escape from predators and ensure connectivity between key habitats. Riparian zones and high moisture bottom-lands are very limited across the Columbia plateau ecoregion and are particularly important to lactating does raising fawns. During the hot, dry summers, these habitats provide lactating does the highest quality forage available, unless they have access to irrigated hay or alfalfa. The riparian zones and high moisture bottomlands tend to shrink in size as the summer growing season progresses, limiting availability of these habitats even further (WDFW 2016).

4.1.2.3 Western Gray Squirrel

The western gray squirrel is listed as a Washington state threatened species (WAC 232-12-011) and a Priority Species (WDFW 2008). The biologist observed two western gray squirrels and a nest/shelter within .25 miles of the Project Survey Area (Figure 3). Western gray squirrel nests are typically found in tree cavities in which females give birth and rear their young. The squirrels also construct stick nests: large, round shelter nests that provide protection from the elements and are sometimes used to rear young. Nests and shelter may not be readily distinguishable from the ground (Linders, et al. 2010). The nest/shelter was in western gray squirrel Priority Habitat east of the Project Survey Area and north of Wildhorse Ranch Road. A western gray squirrel was observed west of the Project Survey Area, east of Hill Road and just south of Pine Forest Road and another was observed east of the Project Survey Area crossing Pine Forest Road just south of Goldenpine Road.

The WDFW PHS dataset identified 67 known observations of western gray squirrel nests/shelters within 1 mile of the Project Survey Area in Priority Habitat (WDFW 2021a). The Priority Habitat near the Project Survey Area is typical of western gray squirrel habitat in Washington with the exception of Douglas Fir (*Pseudotsuga menziesii*); mast-producing conifer-hardwood forest types transitional forests of ponderosa pine, Oregon white oak, Douglas-fir, and various riparian tree species. Most occupied forest habitats contain pine or oak, though the presence of both is not essential. Suitable conditions are often found close to edges between forest and grass or shrub-dominated landscapes (WHCWG 2010).

WDFW outlines recommended protection and mitigation for western gray squirrel (Linders et al. 2010). These include surveys to map known nests with a permanent year-round 15 m (50 ft) buffer clearly marked around each nest tree. In addition to the year-round buffers, seasonal buffers should be reserved around known nest trees to reduce the exposure of pregnant females and newly weaned young to potentially harmful activities. From March 1 to August 31, activities (e.g., prescribed fire, logging, road-building) that may disrupt access to mates or young should not occur within 120 m (400 ft) of a nest. Since activities producing sudden and irregular noise may impact squirrels when adults are rearing their young, such activities should be carefully timed to avoid disturbances during this sensitive period (Linders et al 2010).

4.1.2.4 Wild Turkey

The biologist observed one wild turkey just outside of the northeast portion of the Project Survey Area south of Evergreen Drive and next to Pine Forest Road (Figure 3). While native to parts of North America, wild turkeys were introduced to Washington beginning in the early twentieth century. Priority Habitat for wild turkeys is near the Project Survey Area to the north and overlaps the Project Survey Area in the northeast (Figure 2). This Priority Habitat for wild turkey consists of mature ponderosa pine forest and ponderosa pine/oak forest.

WDFW recommends wild turkey habitat be managed so that 50-75% of the area is composed of mature, mast-producing tree species such as Oregon white oak and ponderosa pine. In areas where food sources are scarce, mast-producing shrubs and small trees should be planted as orchards or as

edges in clearings. When reseeding, WDFW recommends sowing a mixture of grasses and forbs that provide both food and cover for turkeys and forest cover be maintained in areas where wild turkeys exist. Forested areas are used extensively for nesting, roosting, escape and thermal cover, and even brood rearing in more open forest types. In addition, WDFW states wild turkeys are sensitive to disturbance at their nest sites (Lutz and Crawford 1987); therefore, major land management activities in nesting habitat should be minimized during April, May, and early June (Larsen et al. 2004).

4.2 Field Surveys

4.2.1 Habitat

Vegetation within the majority of the Project Survey Area has been modified due to historic and current agriculture and grazing activity. Non-native invasive grasses and forbs are prevalent throughout the Project Survey Area due to historic and current farming and grazing activity.

Six habitat types were mapped within the Project Survey Area: agriculture, pastures, and mixed environs, dwarf shrub-steppe, eastside (interior) grasslands, eastside (interior) riparian-wetlands, ponderosa pine forest and woodlands (includes eastside oak), and urban and mixed environs. As noted above, habitat types were adapted from the habitat descriptions in *Wildlife-Habitat Relationships in Oregon and Washington* (Johnson and O'Neil 2001), *Ecological Systems of Washington State, A Guide to Identification* (Rocchio and Crawford 2015), the WDFW PHS List (WDFW 2008), and the WDFW Wind Power Guidelines (WDFW 2009).

Table 3 lists the acres of each habitat type found within the Project Survey Area and Figure 3 displays the location of the habitat types mapped within the Project Survey Area. Each of these habitat types is briefly described below. Representative photos of habitat types are provided in Appendix C and the locations of these photos is provided on Figure 3. In addition to the six habitat types listed in Table 3, 23 wetlands and 14 stream segments were mapped within the Project Survey Area; these features are discussed in the Amendment to the 2020 and 2022 Carriger Solar and Wetland and Waterbodies Delineation Reports (Tetra Tech 2022c) and are not included in habitat data presented in this report.

Table 3. Habitat Types Mapped within the Project Survey Area

Habitat Type (Per Johnson and O'Neil 2001)	Habitat Type (Per WDFW 2009)	Habitat Type (Per Rocchio and Crawford 2015)	Acres in Project Survey Area	Percent of Project Survey Area
Agriculture, Pastures, and Mixed Environs	Croplands, Pasture, and Mixed Environs	None[6]	1,727	86%
Dwarf Shrub-steppe[1]	Shrub-steppe	Columbia Plateau Scabland Shrubland	228	11%
Urban and Mixed Environs	Urban and Mixed Environs	None[6]	24	1%
Eastside (Interior) Riparian-Wetlands[1, 2]	None[5]	Columbia Basin Foothill Riparian Woodland and Shrubland / Rocky Mountain Alpine-Montane Wet Meadow[7]	21	1%
Ponderosa Pine Forest and Woodlands (includes Eastside Oak) [1, 3]	Ponderosa Pine Forest and Woodlands (includes Eastside Oak Woodlands)	Northern Rocky Mountain Ponderosa Pine Woodland and Savanna / East Cascades Oak-Ponderosa Pine Forest and Woodland	11	1%
Eastside (Interior) Grasslands[1, 4]	Eastside (Interior) Grasslands	Columbia Plateau Steppe and Grassland	<1	<1%
		Total[8]	**2,011**	**100%**

[1] Listed as a High Priority Habitat or Priority Habitat Feature by the WDFW (WDFW 2008).

[2] Listed as Riparian in WDFW 2008.

[3] Oregon White Oak Woodlands are considered a Priority Habitat per WDFW 2008.

[4] Listed as Eastside Steppe in WDFW 2008.

[5] Wetlands and riparian areas are not included as a vegetation/habitat type in WDFW 2009, as wetlands and streams are regulated under the authority of the Washington Department of Ecology and U.S. Army Corps of Engineers, and other applicable regulations and policies.

[6] Rocchio and Crawford (2015) focuses on natural ecological systems and does not include descriptions of altered (e.g., agricultural) vegetation communities.

[7] No ecological system in Rocchio and Crawford (2015) accurately describes the wet meadows observed in the Project Survey Area; the Rocky Mountain Alpine-Montane Wet Meadow ecological system is the closest match.

[8] Totals may not sum exactly due to rounding.

4.2.1.1 Agriculture, Pastures, and Mixed Environs

Agriculture, pastures, and mixed environs was the most prevalent habitat type within the Project Survey Area comprising 1,727 acres (86 percent of the Project Survey Area; Table 3). This habitat type includes the following subtypes: cultivated croplands and improved pastures, as well as unimproved pasture, and modified grasslands (Figure 3).

Approximately 764 acres (38 percent of the Project Survey Area) consisted of cultivated cropland. Cultivated croplands within the Project Survey Area consisted predominantly of wheat fields that are typically grown on a two-year wheat-fallow cycle.

Approximately 493 acres (25 percent of the Project Survey Area) were mapped as improved pastures. Per Johnson and O'Neil (2001), improved pastures are used to produce perennial herbaceous plants for grass seed and hay. Improved pastures within the Project Survey Area primarily consisted of fields planted with alfalfa (*Medicago sativa*) or grasses, such as smooth brome (*Bromus inermis*), for the production of hay.

Approximately 295 acres (15 percent of the Project Survey Area) were mapped as unimproved pastures. Unimproved pastures, following Johnson and O'Neil (2001), includes abandoned fields that have little or no active management and may or may not be grazed by livestock. Unimproved pastures also include rangelands planted with non-native grasses found on private land, state wildlife areas, federal wildlife refuges and Conservation Reserve Program (CRP) sites (Johnson and O'Neil 2001). Unimproved pastures within the Project Survey Area included abandoned fields and areas planted with non-native grasses[8]. Typically, these unimproved pastures were being grazed by cattle. Species observed in this habitat type included planted non-native grasses, such as crested wheatgrass (*Agropyron cristatum*), intermediate wheatgrass (*Thinopyrum intermedium*), tall wheatgrass (*Thinopyrum ponticum*), and smooth brome (*Bromus inermis*). In addition to planted grasses, non-native grasses, including bulbous bluegrass (*Poa bulbosa*), cheatgrass (*Bromus tectorum*), medusahead (*Taeniatherum caput-medusae*), and ventenata (*Ventenata dubia*) were also commonly observed in this habitat type. With the exception of alfalfa (*Medicago sativa*), which was commonly observed in this habitat type, forb cover and diversity was typically low in areas mapped as unimproved pasture. Forbs that were observed included the native forbs yarrow (*Achillea millefolium*), bare-stem lomatium (*Lomatium nudicaule*), hawksbeard (*Crepis* spp.), lupine (*Lupinus* spp.), and large-flowered Agoseris (*Agoseris* grandiflora) and the non-native forbs, redstem stork's bill (*Erodium cicutarium*), yellow salsify (*Tragopogon dubius*), spring whitlow-grass (*Draba verna*), and jagged chickweed (*Holosteum umbellatum*).

Approximately 176 acres (9 percent of the Project Survey Area) were mapped as modified grasslands. Per Johnson and O'Neil (2001), modified grasslands typically consist of overgrazed habitats that are "*dominated by non-native annual plants with only remnant individual plants of the*

[8] The WDFW Wind Power Guidelines (WDFW 2009) classifies CRP land as separate from agriculture (i.e., croplands), pastures and mixed environs. However, it is unknown whether any of the land within the Project Survey Area is currently enrolled in the CRP.

native vegetation." Modified grasslands within the Project Survey Area were dominated by non-native grasses, including cheatgrass, soft chess (*Bromus hordeaceus*), medusahead (, bulbous bluegrass, ventenata, tall oatgrass (*Arrhenatherum elatius*), and non-native forbs, including redstem stork's bill, bachelor's button (*Centaurea cyanus*), yellow salsify, prickly lettuce (*Lactuca serriola*), and burr chervil (*Anthriscus caucalis*). Although native grasses and forbs, including Sandberg bluegrass (*Poa secunda* ssp. *secunda*), squirreltail (*Elymus elymoides*), bare-stem lomatium, arrowleaf buckwheat (*Eriogonum compositum*), yarrow *millefolium*), lupine, and fiddleneck (*Amsinckia* spp.) also occurred in modified grasslands, they typically represented a small percentage of the overall vegetative cover in the area.

4.2.1.2 Dwarf Shrub-Steppe

Approximately 228 acres (11 percent of the Project Survey Area) is comprised of dwarf shrub-steppe habitat. Dwarf shrub-steppe (i.e., shrub-steppe or shrubsteppe) is considered a Priority Habitat by the WDFW (WDFW 2008). This habitat type typically occurs on sites with little soil development that often have extensive areas of exposed rock, gravel, or compacted soil (Johnson and O'Neil 2001, Rocchio and Crawford 2015). Vegetation cover within this habitat type typically consisted of dwarf shrubs and subshrubs, including arrowleaf buckwheat (*Eriogonum compositum*), scabland wild buckwheat (*Eriogonum sphaerocephalum* var. *sublineare*), strict buckwheat (*Eriogonum strictum* ssp. *proliferum*), and showy phlox (*Phlox speciosa*), interspersed with grasses and forbs.

In less disturbed areas of dwarf shrub-steppe habitat, native grasses, including Sandberg bluegrass, bluebunch wheatgrass (*Pseudoroegneria spicata*), squirreltail, and Idaho fescue (*Festuca idahoensis*), and forbs, including tapertip onion (*Allium acuminatum*), lomatiums (*Lomatium brevifolium, L. macrocarpum, L. nudicaule, L. triternatum*), sagebrush violet (*Viola trinervata*), flatpod (*Idahoa scapigera*), Carey's balsamroot (*Balsamorhiza careyana*), yarrow, and thin-petal larkspur (*Delphinium nuttallianum*) were more abundant. In more highly disturbed dwarf shrub-steppe habitat, non-native grasses and forbs including bulbous bluegrass, cheatgrass, soft brome, ventenata, redstem stork's bill, and bachelor's button were abundant.

4.2.1.3 Urban and Mixed Environs

Approximately 24 acres (1 percent of the Project Survey Area) were mapped as urban and mixed environs. This habitat identified within the Project Survey Area included roads, portions of an existing transmission line, structures and other areas disturbed in association with agricultural and ranching activities. Most of the areas mapped as urban and mixed environs were unvegetated or sparsely vegetated. However, where present, vegetation within developed areas was dominated by non-native invasive species such as bulbous bluegrass, cheatgrass, medusahead, ventenata, redstem stork's bill, and yellow salsify.

4.2.1.4 Eastside (Interior) Riparian-Wetlands

Approximately 21 acres (1 percent of the Project Survey Area) was mapped as eastside (interior) riparian-wetlands habitat. Areas mapped as this habitat type were located along perennial and intermittent streams and consisted either of vegetation dominated by woody riparian species or

areas dominated by herbaceous species. Eastside (interior) riparian-wetlands (i.e., riparian) is considered a Priority Habitat by the WDFW (WDFW 2008).

Trees and shrubs in areas dominated by woody species included black hawthorn (*Crataegus douglasii*), willow (*Salix* spp.), black cottonwood (*Populus trichocarpa*), golden currant (*Ribes aureum*), common snowberry (*Symphoricarpos albus*), chokecherry (*Prunus virginiana*), and wild rose (*Rosa* spp.). The understory of these riparian woodland and shrubland areas was typically dominated by non-native grasses and forbs including cheatgrass, reed canarygrass (*Phalaris arundinacea*), tall oatgrass, burr chervil, hairy vetch (*Vicia hirsuta*) and curly dock (*Rumex crispus*), as well as scattered native forbs including common bedstraw (*Galium aparine*), Oregon checker mallow (*Sidalcea oregana*), and yarrow.

Common species observed in areas dominated by herbaceous species included native species such as common camas (*Camassia quamash*), purple-eyed grass-widow (*Olsynium douglasii*), Nevius's garlic (*Allium nevii*), northern mule's ears (*Wyethia amplexicaulis*), and two-spike larkspur (*Delphinium distichum*), that occur in seasonally moist areas that dry out by late spring to early summer, as well as white brodiaea (*Triteleia hyacinthina*), lineleaf Indian lettuce (*Montia linearis*), bare-stem lomatium, swamp saxifrage (*Micranthes nidifica*), and small-flower woodland star (*Lithophragma parviflorum*). Later in season, these areas became dominated by non-native species including medusahead, ventenata, tall oatgrass, reed canarygrass, and bachelor's buttons.

4.2.1.5 Ponderosa Pine Forests and Woodlands (Includes Eastside Oak)

Approximately 11 acres (1 percent of the Project Survey Area) of ponderosa pine forests and woodlands (includes eastside oak) habitat were mapped within the Project Survey Area, two in the north, one in the northeast, and one in the south (Figure 3). Oregon white oak woodlands are considered a Priority Habitat by the WDFW (WDFW 2008), and Ponderosa pine forest and woodlands (includes eastside oak woodlands) is considered a Class I habitat type according to the WDFW Wind Power Guidelines (WDFW 2009).

Ponderosa pine (*Pinus ponderosa*) was the only tree species observed in three of these four areas; whereas, both ponderosa pine and Oregon white oak (*Quercus garryana*) were observed in the fourth area, located in the northeastern portion of the Project Survey Area.

In addition to ponderosa pine, other species observed in the three areas dominated by ponderosa pine included cheatgrass, cereal rye (*Secale cereale*), ventenata, burr chervil, yarrow, triternate biscuit-root (*Lomatium triternatum*), arrowleaf balsamroot (*Balsamorhiza sagittata*), woodland-star (*Lithophragma* spp.), red-stem stork's bill, yellow salsify, and prickly lettuce. The largest area of ponderosa pine woodland is located in the southern portion of the Project Survey Area. This woodland is contiguous to an area of eastside (interior) riparian-wetlands to the west which is composed of predominantly of young pine trees and other shrubs, including black hawthorn, blue elderberry (*Sambucus cerulea*), and chokecherry, that appear to have been planted. These plantings extended into the area mapped as eastside (interior) riparian-wetlands.

The area mapped as this habitat type in the northeastern portion of the Project Survey Area consisted of a sparse canopy of ponderosa pine and Oregon white oak trees and was heavily grazed.

Species observed in the understory in this area included cheatgrass, bulbous bluegrass, soft chess, ventenata, bluebunch wheatgrass, Idaho fescue, arrow-leaf balsamroot, bare-stem lomatium, four-spot (*Clarkia quadrivulnera*), yarrow, and prickly lettuce. The adjacent woodland located outside of the Project Survey Area to the northeast consisted of a much denser canopy cover of ponderosa pine and Oregon white oak trees and appeared not to have been heavily grazed (Appendix C, Photos 11 and 12).

4.2.1.6 Eastside (Interior) Grasslands

Less than one acre of eastside (interior) grasslands habitat type (<1 percent of the Project Survey Area) was mapped in one location in the south-central in portion of the Project Survey Area. This area was mapped as this habitat type due to the prevalence of native grasses and forbs and the lack of shrub species observed in the area. Eastside (interior) grasslands (i.e., eastside steppe) is considered a Priority Habitat by the WDFW (WDFW 2008).

Common species observed in the eastside (interior) grasslands habitat type included the native grasses and forbs: bluebunch wheatgrass, Idaho fescue, squirreltail, bare-stem lomatium, yarrow, Pacific lupine (*Lupinus Lepidus* var. *lepidus*), common tarweed (*Madia gracilis*), and slender hareleaf (*Lagophylla ramosissima*), as well as the non-native grasses and forbs: cheatgrass, bulbous bluegrass, soft chess, prickly lettuce, and yellow salsify.

4.2.2 Wildlife

Weather conditions were optimal for detecting wildlife during surveys, with no rain and low wind. Tetra Tech observed 44 bird species and 5 mammal species during wildlife surveys (Appendix D). Of these 49 species, 2 bird species and 2 mammal species are special status species: Lewis's woodpecker (*Melanerpes lewis*, BCC), mule deer (Priority Species), wild turkey (Priority Species), and western gray squirrel (state threatened, Priority Species). No federally endangered, threatened, or candidate species were observed. Wildlife use in general was concentrated in the eastside (interior) riparian-wetlands and the ponderosa pine and oak woodland habitat types.

4.2.2.1 Birds

The greatest bird diversity was observed in the oak woodlands in the northeast and east central areas in and just outside the Project Survey Area. American crows (*Corvus brachyrhynchos*), nesting common ravens (*Corvus corax*), downy woodpecker (*Picoides pubescens*), Lewis's woodpeckers, nesting European starlings (*Sturnus vulgaris*), hermit thrush (*Catharus guttatus*), juniper titmouse (*Baeolophus ridgwayi*), mountain bluebird (*Sialia currucoides*), northern flickers (*Colaptes auratus*), orange-crowned warbler (*Ermivora celata*), western wood pewee (*Contopus sordidulus*), and nesting Swainson's hawks (*Buteo swainsoni*) were observed in this habitat.

In eastside (interior) grasslands and agriculture, pastures, and mixed environs, western kingbirds (*Tyrannus verticalis*), black-billed magpies (*Pica hudsonia*), Brewer's blackbirds (*Euphagus cyanocephalus*), horned larks (*Eremophila alpestri*), lark sparrows (*Chondestes grammacus*), mourning doves (*Zenaida macroura*), western bluebirds (*Salia Mexicana*), and western meadowlarks (*Sturnella neglecta*) were observed. Killdeer (*Charadrius vociferus*), two long-billed

curlews (*Numenius americanus)*, and a rough-legged hawk (*Buteo lagopus*) flew over a pasture. Red-winged blackbirds (*Agelaius phoeniceus*) and yellow-rumped warblers (*Dendroica coronata*) were detected in riparian areas and mallards (*Anas platyrhynchos*), Canada geese (*Branta canadensis*), and a great blue heron (*Ardea herodias*) were seen flying from the pond near the WDFW hatchery. American crows (*Corvus brachyrhynchos*), American goldfinches (*Spinus tristis*), American robins (*Turdus migratorious)*, California quail (*Callipepla californica),* house finches (*Haemorhous mexicanus*), house sparrows (*Passer domesticus)*, mourning doves (*Zenaida macroura*), and yellow warblers (*Setophaga petechia)*, were detected near residential areas. Within the Knight Road ROW, an American kestrel (*Falco sparverius*), cliff swallows (*Petrochelidon pyrrhonotoa*), and barn swallows (*Hirundo rustico*) were perched on telephone lines and American goldfinches (*Spinus tristis*), western bluebirds (*Sialia mexicana*), and lark sparrows were perched on fences. Black-billed magpies (*Pica hudosnia*) were nesting in trees and large shrubs adjacent to the ROW.

Birds observed during the 2022 field surveys that nest on the ground and/or in shrubs/brush are American goldfinch, California quail, California scrub jay (*Aphelocoma californica*), black-billed magpie, hermit thrush, horned lark, killdeer, lark sparrow, long-billed curlew, mourning dove, orange-crowned warbler, western meadowlark, wild turkey, and yellow warbler. Brewer's blackbirds, Canada goose, great blue heron, mallard, and red-winged blackbird nest on the ground near water. The remainder of the bird species observed nest in trees, buildings, cliffs, or other manmade structures (Cornell 2022).

4.2.2.2 Mammals

The biologist observed three medium- to-large sized mammal species: mule deer, a coyote (*Canis latrans*), and an American badger (*Taxidea taxus*] during the survey. Of these three medium-to-large sized mammal species, only the mule deer is a special status species (see Appendix D). A group of four mule deer does were observed feeding with goats near a trough approximately 1.5 miles west of the Project Survey Area's western boundary on two separate evenings. Nine individuals of mule deer were observed in the Project Study Area (Figure 3).

Two small mammal species were observed: California ground squirrel (*Otospermophilus beecheyi*), and western gray squirrel (a special status species). No jackrabbits were seen. The biologist observed two western gray squirrels and a nest/shelter within 0.25-mile to the northwest and northeast of the of the Project Survey Area (Figure 3). California ground squirrel were observed in the northeast portion of the Project Survey Area.

Tetra Tech mapped mule deer movement corridors (Figure 4) based on preferred habitat (shrub-steppe, grasslands, riparian and wetlands, and ponderosa pine forest and woodlands) and mule deer sign to include scat, tracks, trails, and bedding areas. The majority of mule deer sign observed was concentrated in the eastside (interior) riparian-wetlands and adjacent dwarf shrub-steppe habitat in the central portion of the Project Survey Area, east of the hatchery. Several mule deer trails existed around and under the riparian cottonwood and willow trees that led to fresh bedding areas in this area. Movement corridors with less sign observed but still important to mule deer are also mapped in ephemeral streams that facilitate mule deer movement within and thru agriculture. The amount of mule deer sign observed in the Project Survey Area and the small number of mule

deer observed (9 individuals) during the raptor, habitat, sensitive plant, and wildlife surveys suggests that there may be a low concentration of mule deer using the Project Survey Area, at least during the spring months.

5.0 Conclusions and Recommendations

Based on the results of the habitat and general wildlife surveys, the following measures are recommended to avoid and minimize potential Project-related impacts to habitat and wildlife species:

- Consult with WDFW regarding management recommendations to avoid potential impacts to mule deer, western gray squirrel, and wild turkey.
- Prepare a Habitat Management Plan that outlines measures that would be taken to avoid, minimize, and mitigate for impacts to wildlife habitat from construction and operation of the Project.
- Avoid Priority Habitats to the extent feasible.

Additional recommendations specific to rare plants and raptors are provided in the Botanical Survey Report (Tetra Tech 2022a) and the Raptor Nest Survey Report (Tetra Tech 2022b).

6.0 References

Azerrad, J. M., K. A. Divens, M. F. Livingston, M. S. Teske, H. L. Ferguson, and J. L. Davis. 2011. Management recommendations for Washington's priority habitats: managing shrub-steppe in developing landscapes. Washington Department of Fish and Wildlife, Olympia, Washington. Updated September 2020.

BirdWeb. 2022. Seattle Audubon Society. Birds. Life History and Range in Washington. Available online at: http://www.birdweb.org/birdweb/birds. Accessed July 2022.

Clarke, S.E. and S.A. Bryce. 1997. Hierarchical subdivisions of the Columbia Plateau & Blue Mountains ecoregions, Oregon & Washington. General Technical Report PNW-GTR-395. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR. 114p.

Cornell Lab of Ornithology (Cornell). 2022. All About Birds. Cornell Lab of Ornithology, Ithaca, New York. Available online at: https://www.allaboutbirds.org/guide/Accessed September 2022

Ecology and Environment (Ecology and Environment, Inc. Member of WSP). 2020. Wetlands and Other Waters of the United States Delineation Report for the Carriger Solar Project. November 30, 2020.

Ecology (Washington Department of Ecology). 2022. Overview of Washington Environmental Policy Act (SEPA). Available at: https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/Basic-

overview#:~:text=Commonly%20called%20SEPA%2C%20the%20law,grocery%20store%2C%20or%20apartment%20complex. Accessed September 2022.

E. Larsen, J. M. Azerrad, N. Nordstrom, editors. 2004. Management recommendations for Washington's Priority Species, Volume IV: Birds. Washington Department of Fish and Wildlife, Olympia, Washington, USA.

GoogleEarth Pro (v7.3.4.8573). 2022. Carriger Solar Project Survey Area. Google Earth imagery.

Homer, C.G., Dewitz, J.A., J. Suming, G. Xian, C. Costello, P. Danielson, L. Gass, M. Funk, J. Wickham, S. Stehman, R. Auch, and K. Ritters. 2020. Conterminous United States land cover change patterns 2001-2016 from the 2016 National Land Cover Database. *ISPRS Journal of Photogrammetry and Remote Sensing* 162: 184-199.

Johnson, D.H., and T.A., O'Neil. 2001. Wildlife-Habitat Relationships in Oregon and Washington. Oregon State University Press. Corvallis, Oregon.

LCC (Network Data Steward [administrator], Great Northern Landscape Conservation Cooperative [administrator], Tom Miewald [Principal Investigator]). 2017. Priority Core Area (PCA) and Priority Linkage Area (PLA) geodatabase. 2015-10-15(creation). 2017-07-26 (last update).

Linders, M. J., W. M. Vander Haegen, J. M. Azerrad, R. Dobson, and T. Labbe. 2010. Management Recommendations for Washington's Priority Species: Western Gray Squirrel. Washington Department of Fish and Wildlife, Olympia, Washington.

Lutz, R. S., and J. A. Crawford. 1987. Seasonal use of roost sites by Merriam's wild turkey hens and hen-poult flocks in Oregon. Northwest Science 61:174-178

Rocchio, F.J. and R.C. Crawford. 2015. Ecological Systems of Washington State. A Guide to Identification. Washington State Department of Natural Resources, Washington Natural Heritage Program. Natural Heritage Report 2015-04. Olympia, WA.

Tetra Tech. 2022a. 2022 Botanical and Vegetation Communities Survey Report for the Carriger Solar Project. Prepared for Cypress Creek Renewables, LLC. October 2022.

Tetra Tech. 2022b. 2022 Raptor Nest Survey Report for the Carriger Solar Project. Prepared for Cypress Creek Renewables, LLC. October 2022.

Tetra Tech. 2022c. 2022 Amendment to the 2020 and 2022 Cariger Solar and Wetland and Waterbodies Delineation Reports. Prepared for Cypress Creek Renewables, LLC. October 2022.

TRC Environmental. 2018. Critical Issues Analysis, Carriger Solar LLC. Prepared for Cypress Creek Renewables, LLC. August 2018.

USFWS (United States Fish and Wildlife Service). 2016. Programmatic Environmental Impact Statement for the Eagle Rule Revision. United States Department of the Interior. December 2016. Available online at: https://www.fws.gov/sites/default/files/documents/programmatic-environmental-impact-statement-permits-to-incidentally-take-eagles.pdf

USFWS. 2021. Birds of Conservation Concern. United States Department of Interior, Fish and Wildlife Service, Migratory Birds Program, Arlington, Virginia. 48 pp. Available online at: https://www.fws.gov/sites/default/files/documents/birds-of-conservation-concern-2021.pdf. Accessed July 2022.

USFWS. 2022a. IPaC – Information for Planning and Consultation Resource List for the Project location in Klickitat County, Washington. Available online at: https://ipac.ecosphere.fws.gov/location/M3M3PGK56RHRVJVV5RCEHU3VQM/resources. Accessed March 2022.

USFWS. 2022b. IPaC – Information for Planning and Consultation Resource List for Klickitat County, Washington. Available online at: https://ipac.ecosphere.fws.gov/location/YRHG23KESVDEFJAKBCNDMERQ24/resources. Accessed March 2022.

USFWS. 2022c. United States Fish and Wildlife Service. Cervus Canadensis. Available online at: https://www.fws.gov/species/cervus-canadensis-cervus-canadensis/map

WDFW (Washington Department of Fish and Wildlife). 2008. Priority Habitats and Species List. Revised March 2022. Available online at: https://wdfw.wa.gov/sites/default/files/publications/00165/wdfw00165.pdf. Accessed March 2022.

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

WDFW. 2016. Washington State Mule Deer Management Plan, Wildlife Program, Washington Department of Fish and Wildlife, Olympia, WA, USA. 144 p.

WDFW. 2021. Priority Habitat and Species Database. Provided by WDFW December 22, 2021.

WDFW. 2022a. State Listed Species and State Candidate Species, Revised March 2022. Available online at: https://wdfw.wa.gov/sites/default/files/2022-04/StateListed%26amp%3BCandidateSpecies28Mar2022.pdf Accessed July 2022.

WDFW. 2022b. Priority Habitat and Species Shrub-steppe – Klickitat County. Available online at: https://geo.wa.gov/search?source=%20wa%20dept%20of%20fish%20and%20wildlife&tags=environment%2Cbiota%2Cecology. Accessed March 2022.

WDFW. 2022c. 2022 Priority Habitat and Species Distribution by County Spreadsheet. Available online at: https://wdfw.wa.gov/publications/00165. Accessed July 12, 2022.

WDFW. 2022d. Threatened and Endangered Species Profiles. Available online at: https://wdfw.wa.gov/species-habitats/at-risk/listed. Accessed July 2022.

WDNR (Washington Department of Natural Resources). 2022. Washington Large Fires 1973-2020. Washington Geospatial Open Data Portal. Available online at: https://geo.wa.gov/datasets/6f31b076628d4f8ca5a964cbefd2cccc/explore?location=47.336967%2C-120.225150%2C8.20. Accessed March 2022.

WHCWG (Washington Wildlife Habitat Connectivity Working Group). 2010. Washington Connected Landscapes Project: Statewide Analysis. Washington Departments of Fish and Wildlife, and Transportation, Olympia, WA.

WHCWG. 2012. Washington Connected Landscapes Project: Analysis of the Columbia Plateau Ecoregion. Washington's Department of Fish and Wildlife, and Department of Transportation, Olympia, WA.

WSDOT (Washington State Department of Transportation). 2008. An Analysis of Deer and Elk-Vehicle Collision Sites along State Highways in Washington State. Available online at https://wsdot.wa.gov/sites/default/files/2021-10/701.1.pdf. Accessed July 2022.

WSDOT. 2022. Washington State Geospatial Open Data Portal. WSDOT - Habitat Connectivity Investment Priorities. https://geo.wa.gov/. Accessed July 2022.

WSP USA. 2022. Wetland and Waterbodies Delineation Report Carriger Solar, LLC, Klickitat County, Washington. January 20, 2022.

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Figures

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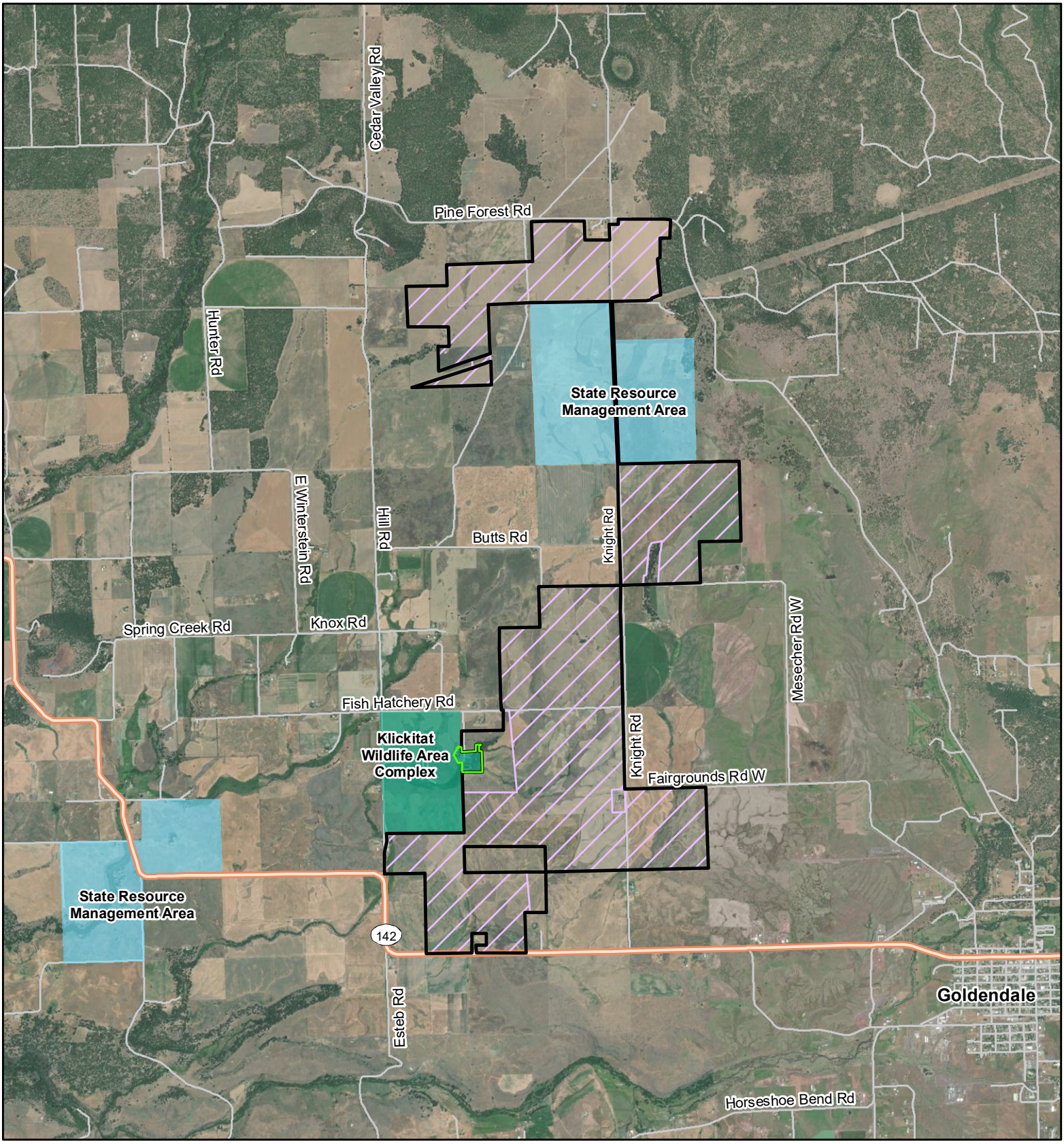

Project Lease Boundary
Project Survey Area
Public and Protected Lands
WDFW
WDNR
Goldendale Fish Hatchery
State Route
Local Road

N

0 0.5 1
Miles

Figure 1a
Project Location
(Aerial Photograph)

Carriger Solar, LLC Project
Klickitat County, WA

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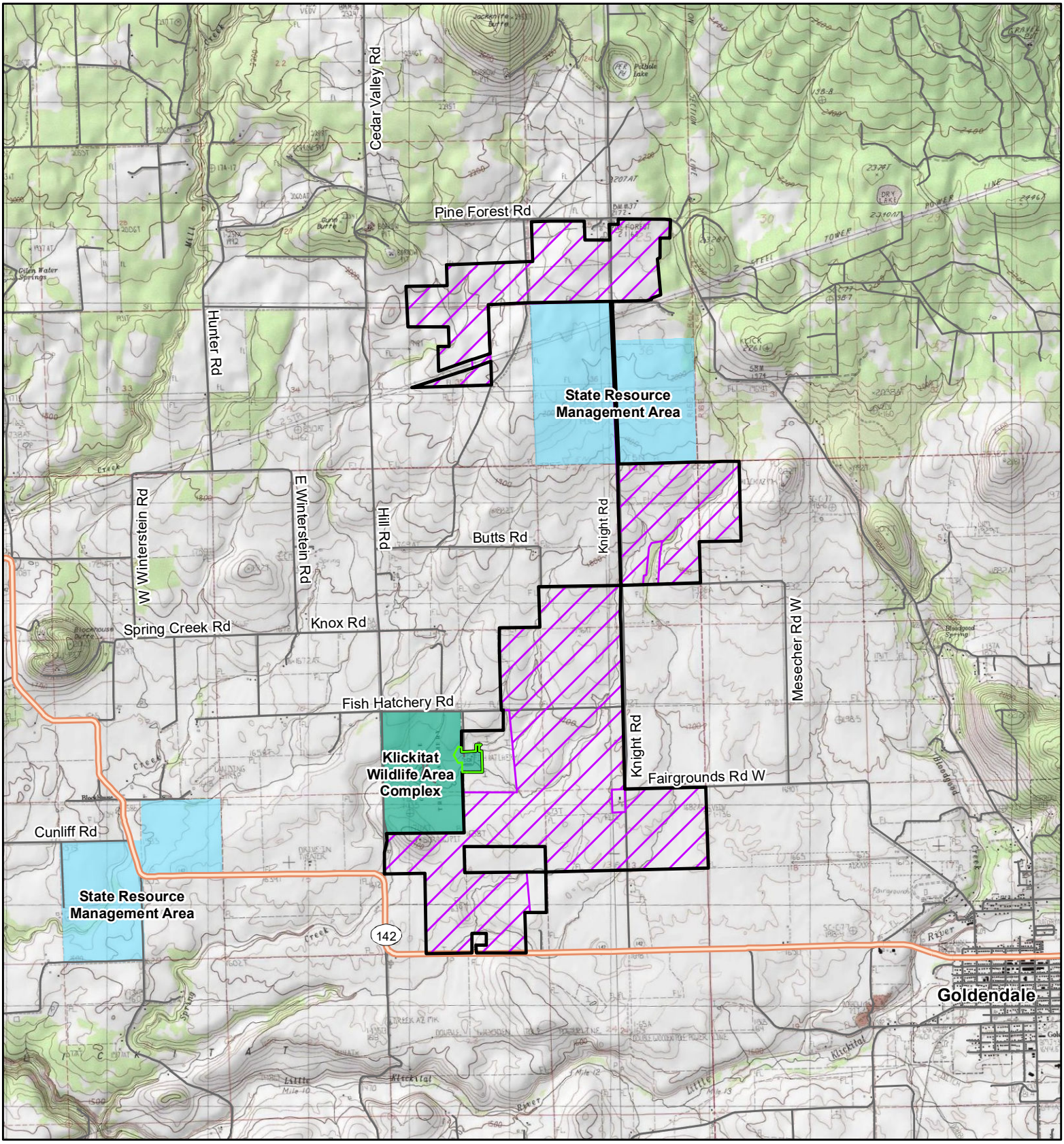

Figure 1b
Project Location
(Topographic Map)

Carriger Solar, LLC Project
Klickitat County, WA

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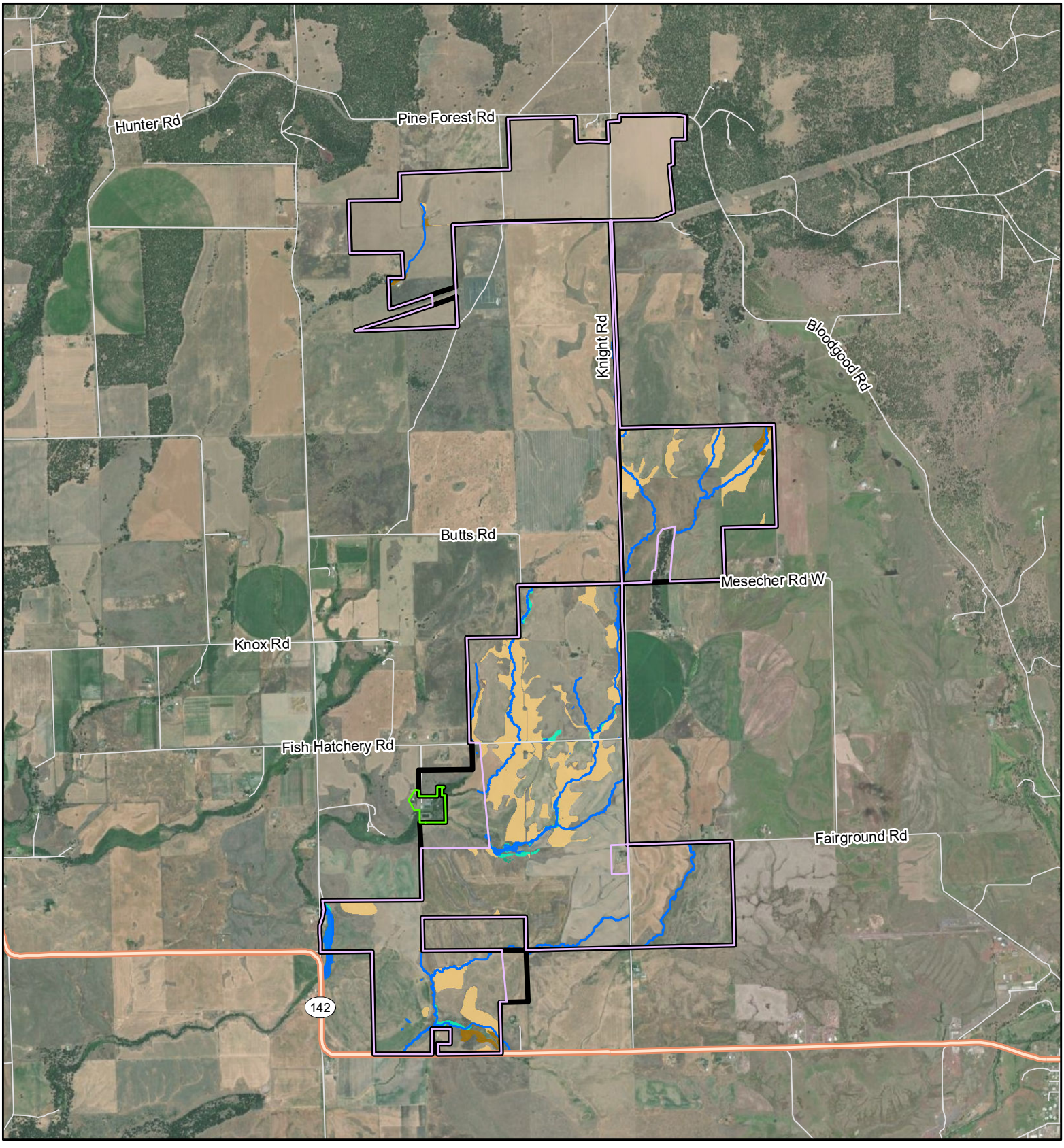

Project Lease Boundary
Project Survey Area
Goldendale Fish Hatchery
State Route
Local Roads

Wildlife Corridors
Dwarf shrub-steppe
Eastside (Interior) Grasslands

Eastside (Interior) Riparian-Wetlands
Open Water
Ponderosa Pine Forest and Woodlands (includes Eastside Oak)
Stream/Wetland/Vernal Pool

N

0 2,000 4,000
Feet

Figure 4
Wildlife Movement Corridors within the Project Survey Area

Carriger Solar, LLC Project
Klickitat County, WA

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Appendix A. WDFW Meeting Notes

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TETRA TECH

Agenda

To:	Michael Ritter / Washington Department of Fish and Wildlife (WDFW), Statewide Field Lead for Wind and Solar Projects Amber Johnson / WDFW, Southwest Region
Cc:	Julie Alpert / Cypress Creek Renewables (CCR), Environmental Manager – Western Region Dave McClure / Klickitat County, Director, Natural Resources & Economic Development
From:	Alex Shin / Tetra Tech, Project Manager Rich Young / Tetra Tech, Senior Biologist Karen Brimacombe / Tetra Tech, Botanist/Ecologist
Date:	March 30, 2022
Subject:	Carriger Solar Project Introduction

Meeting Purpose: Introduce the proposed Carriger Solar Project (Project) to the Washington Department of Fish and Wildlife.

Project: Cypress Creek Renewables is in the process of planning for studies that will be required in the application for either a Conditional Use Permit from the County or a Site Certification Agreement from Washington's Energy Facility Site Evaluation Council. The Project is a proposed solar photovoltaic (PV) electric generating facility that includes 160 megawatts (MW) of solar energy and 63 MW of battery energy storage. The Project components would include a solar array comprised of PV modules, pile-driven racking equipment, power inverters and transformers mounted on concrete pads, a collection system of cables, battery energy storage system, Project substation, and interconnection with the regional electric transmission system.

The Project Lease Boundary consists of 2,110 acres of private lands under an option to purchase or lease by CCR. Within the Project Lease Boundary, an approximately 1,448-acre solar siting area has been identified for development of the Project. Following completion of required studies and identification of resource constraints, as well as detailed engineering and design, it is anticipated that the final Project layout would occupy less than the 1,448-acre solar siting area.

The Project's survey area for the Spring 2022 biological surveys and WDFW PHS data are shown in the attached figure.

Tetra Tech, Inc.
1750 S Harbor Way, Suite 400, Portland, OR 97201
Tel 503.221.8636 Fax 503.227.1287 www.tetratech.com

Agenda:

Item	Description	Duration (minutes)	Lead
1	Introductions	5	All
2	Project Overview	10	CCR
3	Completed Biological Studies • Critical Issues Assessment and Limited NEPA Report (Desktop Assessment) • Wetlands and Waters Delineations • Critical Areas Report	5	CCR / Tetra Tech
4	Planned Biological Surveys – Spring 2022 • Habitat and General Wildlife • Botanical and Vegetation Communities • Raptor Nest Surveys	20	Tetra Tech
5	Discussion	25	All

Notes:

Alex and Julie provided an overview of the Project:

- Solar arrays located in two groupings on private land parcels, one southern grouping and one northern grouping.
    - WDFW requested information on acreages of the two groups of parcels:
        - Northern Group: ~454 acres
        - Southern Group: ~1,654 acres
    - WDFW noted that project parcels should be confirmed against the WDFW parcels for the Goldendale Fish Hatchery; Amber noted in the meeting that the County parcels are correct, the WDFW property is the hatchery and just west of hatchery.
- An overhead collection line that connects the Southern Group with the Northern Group of parcels will be constructed within an existing Klickitat County ROW along Knight Road. The parcel where this ROW is located is a Washington Department of Natural Resources (DNR) parcel; CCR understands that another company is looking at a solar development on this parcel.
- The project will interconnect with the BPA Knight Substation. The project's substation and battery storage will be located in the northwest corner of the project near the BPA Knight Substation.
- Construction is anticipated to start in Q1 2024 and would take 12-24 months to complete.

Alex and Julie provide a summary of completed studies for the Project:

- Critical Issues Assessment and Limited NEPA Report completed for the project, these focused on desktop assessments and regulatory requirements
- Wetlands and Waters Delineations
    - Two surveys were done, one in 2020 and one in 2022
    - Two fish bearing streams were located in the southern parcels, these areas will be avoided by the project
    - CCR will coordinate with the Department of Ecology WSP, Inc in May/June of this year on the wetland delineation reports

- Critical Areas Report
    - Draft report prepared per Klickitat County CAO requirement
- A Phase 1 ESA and preliminary geotechnical assessments have also been completed

Rich and Karen reviewed the planned biological surveys for the spring of 2022:

- Raptor Nest Surveys
    - Ground-based surveys within 0.5-miles of the Project Lease Boundary, with two survey rounds: one in late March and one in May
    - PHS data shows no raptor nests in 2-mile buffer

- Habitat and General Wildlife
    - Survey in April or May
    - PHS Data shown in Figure 1: mule and black-tailed deer, wild turkey, western gray squirrel
    - Desktop assessment for federally listed species: gray wolf, yellow-billed cuckoo, bull trout, and monarch butterfly

- Botanical and Vegetation Communities Survey
    - Two survey rounds, one in early April and one in mid-June. A third survey in mid-May will be conducted if determined necessary during surveys in early April.
    - Desktop research indicates no documented occurrences of WNHP-listed rare vascular plant species within the Project Lease Boundary. The closest documented occurrences are over 5 miles from the Project Lease Boundary.
    - NLCD land cover types show in Table 1

Habitat, general wildlife, and rare plant surveys will consist of the following:

- Habitat will be mapped and characterized consistent with the WDFW wind power guidelines and Johnson & O'Neil (2001).
- Surveyors will document special status species if observed (e.g., burrowing owl, ferruginous hawk, ground squirrel) as well as wildlife in general (e.g., elk) and sign, rare plants, and noxious weeds (as identifiable during the survey period).
- Surveyors will use intuitive meander transect methods.

Table 1. Acres and Percent of NLCD Land Cover Type within the Project Lease Boundary.*

Land cover type	Acres	Percent of Project Lease Boundary
Developed, Open Space	36.8	1.7
Developed, Low Intensity	33.4	1.6
Developed, Medium Intensity	1.5	0.1
Shrub/Scrub	614.2	29.1
Grassland/Herbaceous	94.2	4.5
Cultivated Crops	1320.3	62.6
Emergent Herbaceous Wetland	7.9	0.4
Total	***2,108.3***	***100***

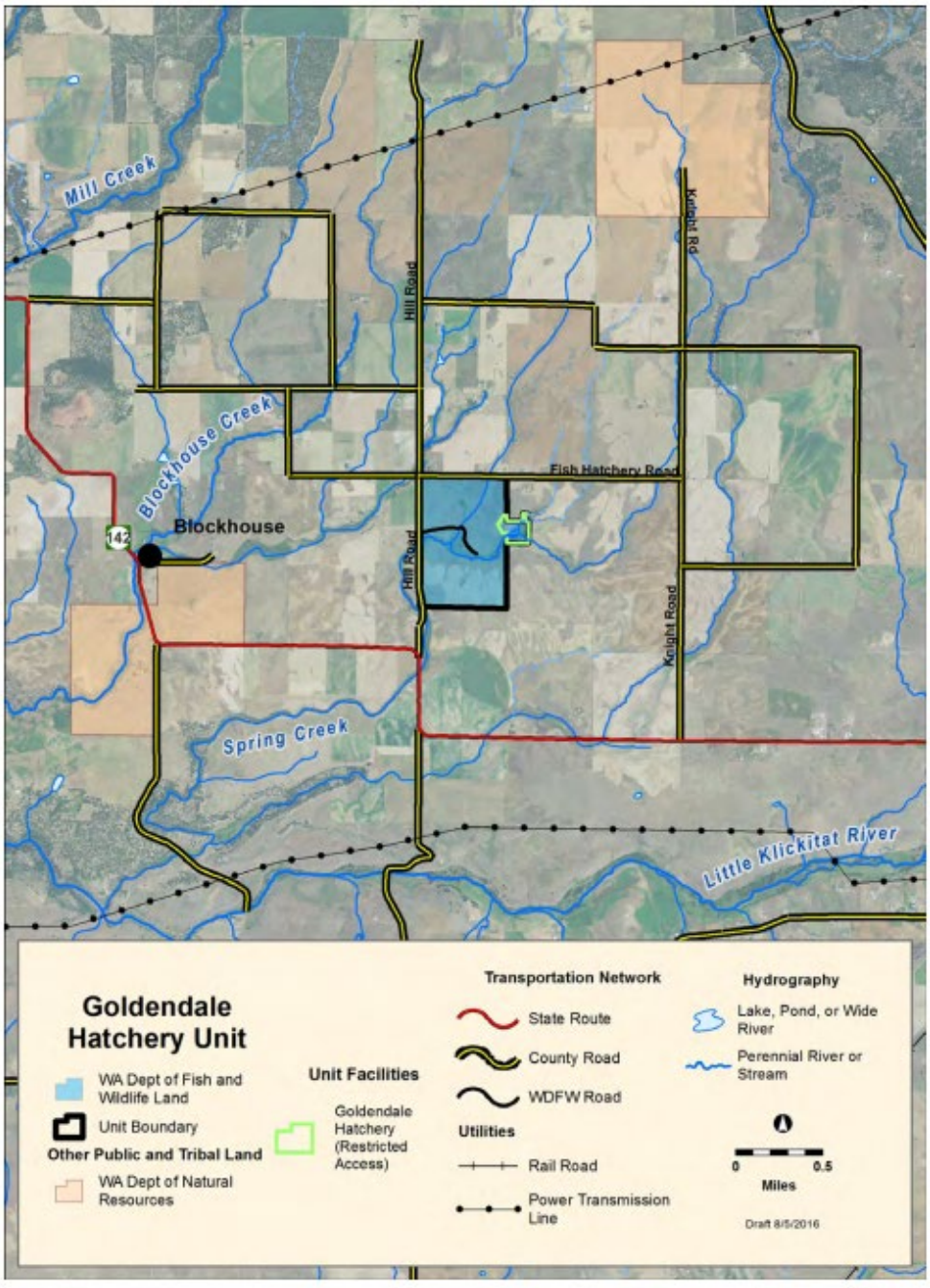
*to be confirmed during field studies and GIS analysis.

WDFW provided the following general discussion topics:

- No comments on the general survey plan or survey methods.
- Mike confirmed with Jim Watson (WDFW) that there are no raptor issues of note in this area, maybe a few red-tail hawks around.
- Cautioned that the November 2021 PHS data should be treated as a screening tool only; it does not assess private lands where there has been no access.
- WDFW has a new shrub-steppe and eastside steppe vegetation layer that we should review for the project area. WDFW will use this data in their evaluation. Mike will provide the data link for those files.
- Julie asked if WDFW has more information on wildlife corridors for the project area or vicinity (other than PHS data or looking at vehicle strike data on SR 142). WDFW completed some deer movement surveys recently and is currently doing elk aerial surveys. WDFW will review their data and share relevant information. WDFW is interested in potential project impacts to mule deer, especially migration corridors. Mule deer migration corridors would be primarily located in draws or canyons.
- WDFW shared that the fish hatchery has concerns about project impacts to groundwater quantity and quality. The hatchery relies on the aquifer for its operations. Mike and Amber will pass on the project information to the hatchery operations.
- There is a WDFW hunting area and a 240-acre pheasant release area (Goldendale Hatchery Unit) located near the fish hatchery and appears to partially overlap with the project area. WDFW is concerned about potential impacts to recreational hunting opportunities in this area, as well as other private lands in the project area. Each year pheasants are released from this area (presumably in the fall).
    - Alex noted that this area overlaps with private lands and appears to coincide with areas that have already been excluded from the project area.
    - Julie requested that WDFW provide information on hunting use in this area.
    - CCR will also follow up with the private landowners about hunting use.
    - Following the call, Tetra Tech confirmed that the Goldendale Hatchery Unit is located outside of the Project Lease Boundary (see figures below)
- Fishing may also occur in the streams. Dave was unsure about fishing near the hatchery, but fishing does occur downstream from the hatchery. WDFW will ask the fish hatchery if they have any information on fishing in the area.
- Rich ask about recommended spatial buffers for active raptor nests. Mike said he would provide a copy of WDFWs construction buffers.

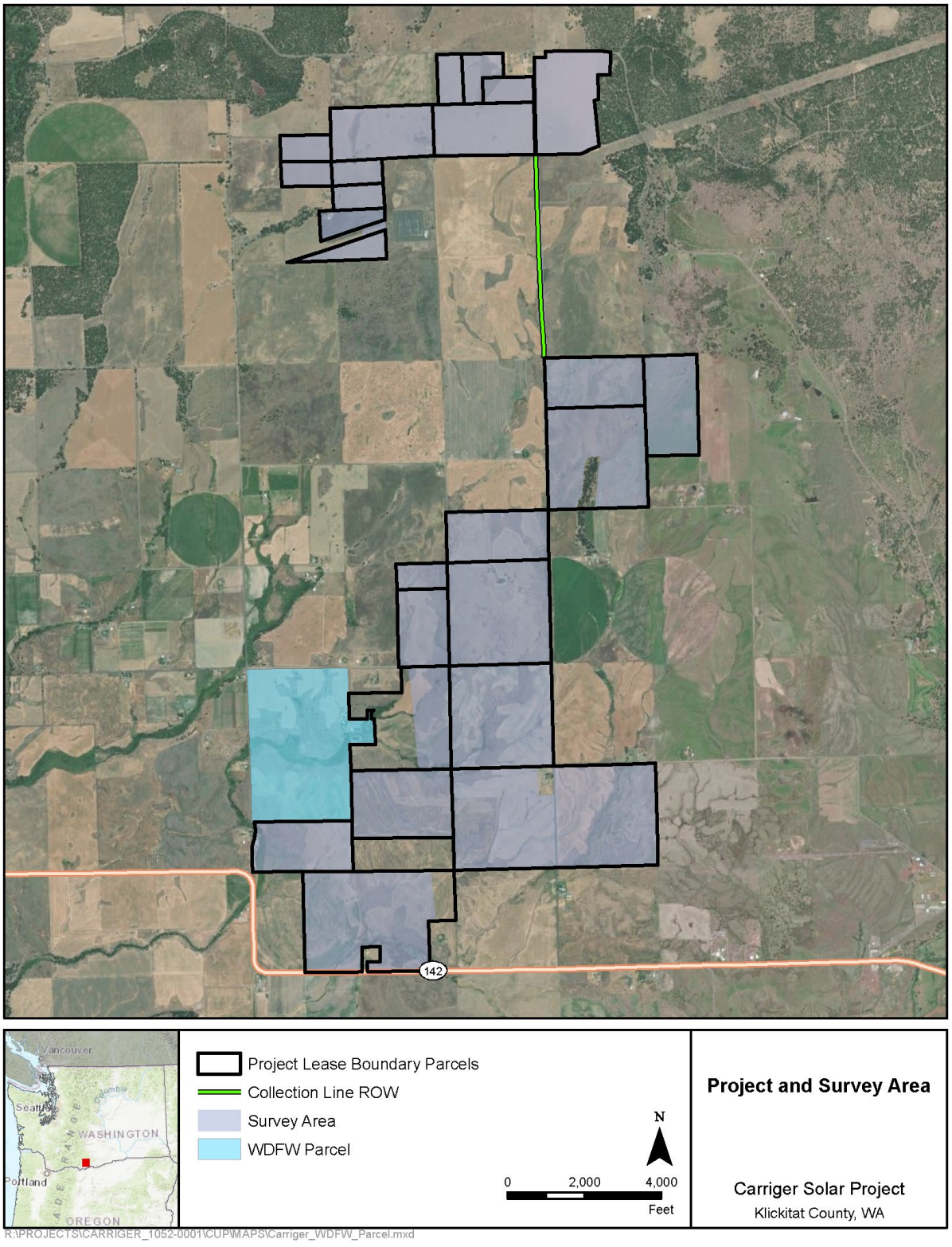
Map 6 from the Klickitat Wildlife Area Management Plan (August 2016)

Map 6. Goldendale Hatchery Unit



16 Washington Department of Fish and Wildlife Lands Division

Carriger Solar Project – WDFW Parcels



Appendix B. Special Status Wildlife Species with Potential to Occur at the Project

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Special Status Wildlife Species with Potential to Occur at the Carriger Solar, LLC Project, Klickitat County, WA

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Likelihood of Occurrence in Project Survey Area[3]
Birds				
bald eagle	*Haliaeetus leucocephalus*	BGEPA, BCC	-	Low
black-backed woodpecker	*Picoides arcticus*	-	C, PS	Moderate
black swift	*Cypseloides niger*	BCC	-	Not Likely
burrowing owl	*Athene cunicularia*	BCC	C, PS	Low
California gull	*Larus californicus*	BCC	-	High
Cassin's finch	*Carpodacus cassinii*	BCC	-	High
chukar	*Alectoris chukar*	-	PS	Low
ferruginous hawk	*Buteo regalis*	BCC (BCR 9)	E, PS	Observed
Franklin's gull	*Leucophaeus pipixcan*	BCC	-	Low
evening grosbeak	*Coccothraustes vespertinus*	BCC	-	High
golden eagle	*Aquila chrysaetos*	BGEPA. BCC	C, PS	Low
lesser yellowlegs	*Tringa flavipes*	BCC (CON)	-	Moderate
Lewis's woodpecker	*Melanerpes lewis*	BCC	-	Observed
loggerhead shrike	*Lanius ludovicianus*	BCC	C, PS	High
long-eared owl	*Asio otus*	BCC	-	Moderate
northern harrier	*Circus hudsonius*	BCC	-	Moderate
northern goshawk	*Accipiter gentilis*	-	E, PS	Low
northern spotted owl	*Coccyzus americanus*	T	E	Not Likely
prairie falcon	*Falco mexicanus*	BCC	PS	High
ring-necked pheasant	*Phasianus colchicus*	-	PS	High
rufous hummingbird	*Selasphorus rufus*	BCC	-	Low
sage thrasher	*Oreoscoptes montanus*	BCC	C, PS	Low
short-eared owl	*Asio flammeus*	BCC (CON)	-	Moderate
wild turkey	*Meleagris gallopavo*	-	PS	Observed
white-headed woodpecker	*Leuconotopicus albolarvatus*	BCC (BCR 9)	C, PS	Not Likely
yellow-billed cuckoo	*Coccyzus americanus*	T	E, PS	Not Likely
Fish				
bull trout	*Salvelinus confluentus*	T	C	Not Likely

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Likelihood of Occurrence in Project Survey Area[3]
Invertebrates				
Juniper hairstreak (Columbia Basin segregate)	*(Callophrys gryneus)*	-	C, PS	Low
monarch butterfly	*Danaus plexippus*	C	-	Moderate
Mammals				
black-tailed jackrabbit	*Lepus californicus*	-	C, PS	Moderate
gray wolf	*Canis lupis*	E	E, PS	Low
Rocky Mountain elk	*Cervus canadensis nelsoni*	-	PS	Not Likely
mule deer	*Odocoileus hemionus hemionus*	-	PS	Observed
Townsend's big-eared bat	*Corynorhinus townsendii*	-	C, PS	Moderate
Townsend's ground squirrel	*Urocitellus townsendii nancyae*	-	C, PS	Moderate
western gray squirrel	*Sciurus griseus*	-	T, PS	Observed
white-tailed jackrabbit	*Lepus townsendii*	-	C, PS	Moderate
Reptiles and Amphibians				
Oregon spotted frog	*Rana pretiosa*	T	E. PS	Not Likely
striped whipsnake	*Masticophis taeniatus*	-	C, PS	Moderate
western pond turtle	*Actinemys marmorata*	C - under review	E, PS	Not Likely
western toad	*Anaxyrus boreas*	-	C, PS	Low

Sources: BirdWeb 2022, Cornell 2022, USFWS 2022a, USFWS 2022b, USFWS 2021, WDFW 2022c, WDFW 2022d, WNMP 2022

1. U.S. Fish and Wildlife Service: BGEPA = Bald and Golden Eagle Protection Act, BCC = Bird of Conservation Concern, BCC (BCR 9) = Listed as BCC but not in the Great Basin Bird Conservation Region (i.e. the Conservation Region the Project lies within), BCC (CON) = Listed as BCC at Continental Scale, E = Endangered, T = Threatened, C = Candidate species
2. Washington Department of Fish and Wildlife: E = Endangered, T = Threatened, C = Candidate, PS = Priority Species.
3. Likelihood of species to occur for breeding, nesting, spawning, nesting migration etc. based on species' range, habitat suitability, species' mobility, population size, and records of occurrence in the appropriate area (see Section 4.1.2).

Appendix C. Site Photographs

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Photo 1. View west of agriculture, pastures, and mixed environs habitat – cultivated cropland (wheat field); April 5, 2022.

Photo 2. View northeast of agriculture, pastures, and mixed environs habitat – improved pasture (hayfield); June 24, 2022.

Photo 3. View west of agriculture, pastures, and mixed environs habitat – unimproved pasture used for cattle grazing; April 7, 2022.

Photo 4. View south of agriculture, pastures, and mixed environs habitat – modified grassland dominated by non-native grasses and forbs; June 24, 2022.

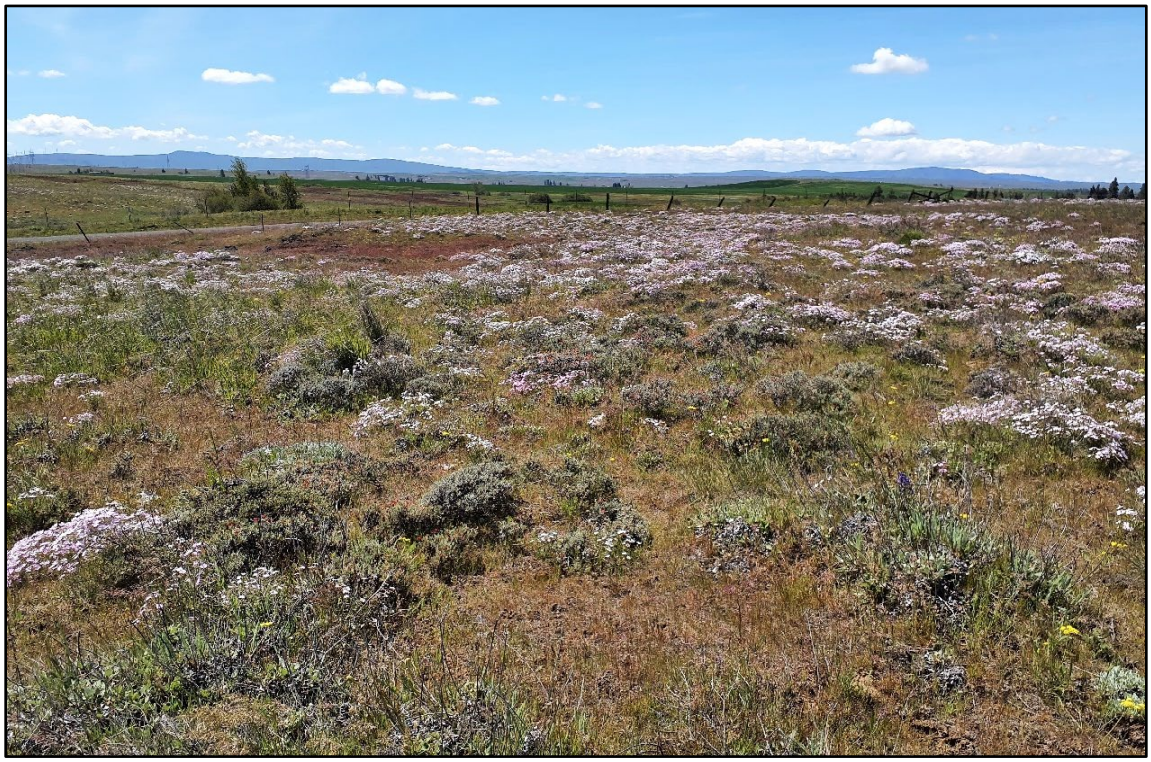

Photo 5. View south of dwarf shrub-steppe habitat in the central-western portion of Project Survey Area; May 11, 2022.

Photo 6. View south of unimproved pasture habitat in the central portion of Project Survey Area; April 5, 2022.

Photo 7. View west of eastside (interior) riparian - wetland habitat dominated by black hawthorn, willow, and golden currant. Also a wildlife corridor with deer tracks, trails, and bedding areas; May 11, 2022.

Photo 8. View south of eastside (interior) riparian - wetland habitat dominated by herbaceous species including common camas, northern mule's ears, two-spike larkspur, bulbous bluegrass, and medusahead; May 12, 2022.

Photo 9. View southeast of ponderosa pine forest and woodlands (includes eastside oak) habitat in the southern portion of Project Survey Area; planted shrubs in foreground; June 24, 2022.

Photo 10. View east of ponderosa pine forest and woodlands (includes eastside oak) habitat in the northwestern portion of the Project Survey Area; April 7. 2022.

Photo 11. View southwest of sparse cover of ponderosa pine and Oregon white oak in ponderosa pine forest and woodlands (includes eastside oak) habitat in the northeastern portion of the Project Survey Area; June 22, 2022.

Photo 12. View northeast of dense cover of ponderosa pine and Oregon white oak in ponderosa pine forest and woodlands (includes eastside oak) habitat adjacent to but outside of the northeast portion of the Project Survey Area; June 22, 2022.

Photo 13. View west of eastside (interior) grasslands habitat in the southern portion of the Project Survey Area; June 23, 2022.

Photo 14. View northeast of Lewis's Woodpecker in Oregon white oak tree in the central-eastern portion of the Project Survey Area.

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Appendix D. Wildlife Species and Sign Observed During 2022 Field Surveys

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Wildlife Species and Sign Observed for the Carriger Solar, LLC Project, Klickitat County, WA

Common Name	Scientific Name	Individual Observed	Sign Observed	Federal Status[1]	State Status[2]
Birds					
American crow	*Corvus brachyrhynchos*	X	-	-	-
American goldfinch	*Spinus tristis*	X	-	-	-
American kestrel	*Falco sparverius*	X	-	-	-
American robin	*Turdus migratorious*	X	-	-	-
barn swallow	*Hirundo rustica*	X	-	-	-
black-billed magpie	*Pica hudsonia*	X	X[3]	-	-
Brewer's blackbird	*Euphagus cyanocephalus*	X	-	-	-
California quail	*Callipepla californica*	X	-	-	-
California scrub jay	*Aphelocoma californica*	X	-	-	-
Canada goose	*Branta canadensis*	X	-	-	-
cliff swallow	*Petrochelidon pyrrhonota*	X	-	-	-
common raven	*Corvus corax*	X	-	-	-
downy woodpecker	*Picoides pubescens*	X	-	-	-
European starling	*Sturnus vulgaris*	X	-	-	-
great blue heron	*Ardea herodias*	X	-	-	-
ferruginous hawk[4]	*Buteo regalis*	X			
great horned owl[4]	*Bubo virginianus*	X	-	-	-
hermit thrush	*Catharus guttatus*	X			
horned lark	*Eremophila alpestris*	X	-	-	-
house finch	*Haemorhous mexicanus*	X	-	-	-
house sparrow	*Passer domesticus*	X	-	-	-
juniper titmouse	*Baeolophus ridgwayi*	X	-	-	-
killdeer	*Charadrius vociferus*	X	-	-	-
lark sparrow	*Chondestes grammacus*	X	-	-	-
Lewis's woodpecker	*Melanerpes lewis*	X	-	BCC	-
long-billed curlew	*Numenius americanus*	X	-	-	-
Mallard	*Anas platyrhynchos*	X	-	-	-
mountain bluebird	*Sialia currucoides*	X	-	-	-
mourning dove	*Zenaida macroura*	X	-	-	-
northern flicker	*Colaptes auratus*	X	-	-	-
orange-crowned warbler	*ermivora celata*	X	-	-	-
red-breasted nuthatch	*Sitta canadensis*	X	-	-	-
red-tailed hawk	*Buteo jamaicensis*	X	-	-	-
red-winged blackbird	*Agelaius phoeniceus*	X	-	-	-

Common Name	Scientific Name	Individual Observed	Sign Observed	Federal Status[1]	State Status[2]
rough-winged hawk[4]	*Buteo lagopus*	X	-	-	-
Swainson's hawk[4]	*Buteo swainsoni*	X	-	-	-
turkey vulture	*Cathartes aura*	X	-	-	-
western bluebird	*Sialia mexicana*	X	-	-	-
western kingbird	*Tyrannus verticalis*	X	-	-	-
western meadowlark	*Sturnella neglecta*	X	-	-	-
western wood-pewee	*Contopus sordidulus*	X	-	-	
wild turkey	*Meleagris gallopavo*	X	-	-	PS
yellow-rumped warbler	*Dendroica coronata*	X	-	-	-
yellow warbler	*Setophaga petechia*	X	-	-	-
Mammals					
American badger	*Taxidea taxus*	X	X[5]	-	-
California ground squirrel	*Otospermophilus beecheyi*	X	X[5]		
coyote	*Canis latrans*	X	X[5]	-	-
mule deer	*Odocoileus hemionus*	X	X[5]	-	PS
western gray squirrel	*Sciurus griseus*	X	-	-	T, PS

Sources: USFWS 2021, USFWS 2022a, USFWS 2022b, WDFW 2022c, WDFW 2022d

1. U.S. Fish and Wildlife Service: BCC = Bird of Conservation Concern
2. Washington Department of Fish and Wildlife: T = Threatened, PS = Priority Species.
3. Magpie sign observed included nests in trees and large shrubs adjacent to the Knight Road Right-of-Way.
4. Raptors observed during raptor nest surveys (Tetra Tech 2022b).
5. Observed sign of mammals: American badger = individual and burrow observed during survey, California ground squirrel = individuals and burrow observed during survey, coyote = individual and scat observed during survey, mule deer = individuals, scat, and tracks observed during survey.