Appendix C: Habitat, Vegetation, Fish, and Wildlife Assessment Report

HABITAT, VEGETATION, FISH, AND WILDLIFE ASSESSMENT REPORT FOR FIVE PROPOSED TUUSSO SOLAR PROJECT SITES, KITTITAS COUNTY, WASHINGTON

July 10, 2017

SWCA ENVIRONMENTAL CONSULTANTS
SEATTLE, WASHINGTON

HABITAT, VEGETATION, FISH, AND WILDLIFE ASSESSMENT REPORT FOR FIVE PROPOSED TUUSSO SOLAR PROJECT SITES, KITTITAS COUNTY, WASHINGTON

Report Prepared for

TUUSSO Energy, LLC

July 10, 2017

Project Number 38727.05

SWCA Environmental Consultants
221 1st Ave W, Suite 205
Seattle, Washington 98119

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 Project Description 1
1.1.1 Camas Solar Project 1
1.1.2 Fumaria Solar Project 1
1.1.3 Penstemon Solar Project 1
1.1.4 Typha Solar Project 3
1.1.5 Urtica Solar Project 3
1.2 Proposed Schedule 3
1.3 Project Setting 3
1.4 Regulatory Framework 4
1.4.1 Federal Approvals 4
1.4.2 State Guidelines 4
2 METHODS 4
2.1 Analysis Areas 4
2.1.1 Project-scale Analysis Area 5
2.1.2 Landscape-scale Analysis Area 5
2.2 Review of Existing Information 5
2.3 Field Investigation 5
3 VEGETATION AND HABITAT 8
3.1 Habitat Types 8
3.1.1 Agricultural Production 8
3.1.2 Developed 8
3.1.3 Fallow 9
3.1.4 Open Water 11
3.1.5 Riparian Corridor 13
3.1.6 Sagebrush-bitter-brush Scrub 15
3.1.7 Wetlands 15
3.1.8 Willow–rose Shrub Thicket 15
3.1.9 Other 17
3.2 Available Habitat within the Analysis Areas 17
3.3 Special-status Plants 26
4 FISH AND WILDLIFE 27
4.1 Special-status Species 33
4.1.1 Bald Eagle 34
4.1.2 Greater Sage-grouse 34
4.1.3 Sandhill Crane 34
4.1.4 Bull Trout 34
4.1.5 Chinook Salmon and Steelhead 35

4.1.6 Columbia Spotted Frog 35
4.1.7 Sharp-Tailed Snake 35
4.1.8 Giant Palouse Earthworm 36
4.2 Site-specific Observations 36
4.2.1 Camas Solar Project Site 36
4.2.2 Fumaria Solar Project Site 38
4.2.3 Penstemon Solar Project Site 40
4.2.4 Typha Solar Project Site 41
4.2.5 Urtica Solar Project Site 43
5 RECOMMENDED ENVIRONMENTAL COMMITMENTS FOR TUUSSO'S CONSIDERATION 43
5.1 Buffers and Seasonal Timing 44
5.1.1 Migratory Birds and Bald and Golden Eagles 44
5.1.2 Riparian Corridors 44
5.2 Noise 45
5.3 Other Measures 45
6 CONCLUSIONS 47
6.1 Habitat Impacts 47
6.2 Special-status Species Impacts 47
7 LITERATURE CITED 48
8 LIST OF PREPARERS 50
APPENDIX A: USFWS IPAC TRUST RESOURCES REPORT FOR FIVE TUUSSO SOLAR PROJECT SITES A-1
APPENDIX B: WASHINGTON STATE PRIORITY HABITATS AND SPECIES LIST FOR FIVE TUUSSO SOLAR PROJECT SITES B-1
APPENDIX C: BIRD OBSERVATION LIST FOR FIVE TUUSSO SOLAR PROJECT SITES C-1
APPENDIX D: CORRESPONDENCE TO-DATE WITH WDFW REGARDING THE FIVE TUUSSO SOLAR PROJECT SITES D-1

LIST OF TABLES

Table 1. Available Habitat Types within the Analysis Areas 18
Table 2. Noxious Weeds Documented in the Project-scale Analysis Areas 26
Table 3. Representative Species Observed or Likely to Occur in the Analysis Areas 28
Table 4. Special-status Species with Potential to Occur in the Project-scale Analysis Areas 33
Table 5. Nesting Seasons for Raptor Species Likely to Occur in the Analysis Areas 44
Table 6. Surface Waters in the Project-scale Analysis Areas and Applicable Buffers 45
Table 7. List of Preparers 50

LIST OF FIGURES

Figure 1. Project locations. 2
Figure 2. Project-scale analysis areas. 6
Figure 3. Landscape-scale analysis area. 7
Figure 4. Example of agricultural production (alfalfa) at the Camas Solar Project. 9
Figure 5. Example of the fallow–native vegetation habitat type at the Fumaria Solar Project. 10
Figure 6. Example of the fallow–recently grazed habitat type at the Typha Solar Project. 11
Figure 7. The Yakima River with a great blue heron rookery in the cottonwoods east of the river, east of the Typha Solar Project. 12
Figure 8. McCarl Creek, a stream flowing through the Urtica Solar Project, from west to east. 12
Figure 9. One of two ponds in the southwest corner of the Urtica Solar Project. 13
Figure 10. A riparian corridor along a ditch southwest of the Fumaria Solar Project. 14
Figure 11. A riparian corridor along a ditch southwest of the Fumaria Solar Project. 14
Figure 12. Example of sagebrush-bitter-brush scrub habitat type east of the Fumaria Solar Project. 15
Figure 13. A willow–rose shrub thicket in the southeast corner of the Fumaria Solar Project. 16
Figure 14. A rose shrub thicket along the northwest boundary of the Fumaria Solar Project. 16
Figure 15. Habitat types within the project-scale analysis area for the Camas Solar Project. 19
Figure 16. Habitat types within the project-scale analysis area for the Fumaria Solar Project. 20
Figure 17. Habitat types within the project-scale analysis area along the north half of the Fumaria generation tie line corridor. 21
Figure 18. Habitat types within the project-scale analysis area along the south half of the Fumaria generation tie line corridor. 22
Figure 19. Habitat types within the project-scale analysis area for the Penstemon Solar Project. 23
Figure 20. Habitat types within the project-scale analysis area for the Typha Solar Project. 24
Figure 21. Habitat types within the project-scale analysis area for the Urtica Solar Project. 25
Figure 22. Red-tailed hawk nest in willows along the Little Naneum Creek riparian corridor. 37
Figure 23. Barn in the northwest corner of the Camas Solar Project that provides owl roosting habitat. 37
Figure 24. Pacific treefrog observed in the fallow–native vegetation at the Fumaria Solar Project. 38
Figure 25. Pacific treefrog observed in the ditch along the west boundary of the Fumaria Solar Project. 39
Figure 26. Willows near the Fumaria generation tie line crossing of Reecer Creek, where a bald eagle was observed perching downstream (south) of the crossing. 39
Figure 27. Red-tailed hawk nest to the left (north) and great horned owl nest to the right (south), observed east of the Fumaria generation tie line along North Faust Road. 40
Figure 28. Red-tailed hawk nest in cottonwoods along the Coleman Creek riparian corridor. 41
Figure 29. Columbia spotted frog egg masses in a ditch south of the Pentsemon Solar Project. 41
Figure 30. Columbia spotted frog egg masses in a TW01, a wetland along the southern boundary of the Typha Solar Project. 42
Figure 31. Great blue heron rookery along the Yakima River, located east of the Typha Solar Project. 42
Figure 32. Barn south of the southwest corner of the Typha Solar Project that provides owl roosting habitat. 43

1 INTRODUCTION

This Habitat Assessment Report identifies and assesses the biological resources that could potentially be affected by the five proposed TUUSSO Energy, LLC (TUUSSO), solar photovoltaic projects. The project sites are defined as the footprint of the five proposed solar projects, and also the generation tie line corridors associated with two of the sites (Figure 1). Surveys were conducted April 3 to 12, 2017, to document flora and fauna at the project sites, as well as different vegetation communities and habitat. Prior to the surveys, biologists reviewed the potential for any federal- or state-listed threatened or endangered species to occur on the sites, and evaluated sites for appropriate habitat. This report summarizes the findings of the biological resources survey and discusses environmental commitments that could avoid or reduce impacts for TUUSSO's consideration.

1.1 Project Description

TUUSSO is proposing to construct five solar photovoltaic projects near Ellensburg, in Kittitas County, Washington. Each photovoltaic project site would be located in the Kittitas Valley, east of the Cascade Range, and would generate up to 5 MW alternating current (MW_{AC}). The names and locations of each of the projects are described below. See Figure 1 for the location of each project.

1.1.1 Camas Solar Project

The Camas Solar Project would include the installation of a photovoltaic solar facility on 52.6 acres of private agricultural land, and the construction of a switchyard with a short generation tie line into an existing on-site Puget Sound Energy (PSE) distribution transmission line. The project site is composed of actively farmed alfalfa agricultural land, associated irrigation lines and ditches, an underground natural gas pipeline in the northwest portion of the site crossing from northeast to southwest, and Little Naneum Creek forming the eastern property boundary. The project site is located southeast of the city of Ellensburg. It is in Sections 18 and 19, Township (T) 17 North (N), Range (R) 19 East (E), Willamette Meridian, and in the southeast corner of where the Tjossem Road overpass crosses Interstate 82 (I-82).

1.1.2 Fumaria Solar Project

The Fumaria Solar Project would include the installation of a photovoltaic solar facility on 41.6 acres of private agricultural land, and the construction of a switchyard and an approximately 2.5-mile-long generation tie line (25.4 acres) into an existing PSE substation and distribution transmission line. The project site is composed of agricultural land and a ditch along the western boundary. It is located northwest of the city of Ellensburg. It is in the southeast portion of Section 9, T 18 N, R 18 E, north of Hungry Junction Road and east of Lower Green Canyon Road. The associated 2.5-mile generation tie line would exit the southwest portion of the project site in Section 9, run west along the border of Sections 9 and 16, then south through the central portion of Section 16, west along the borders of Sections 16 and 21 and then Sections 17 and 20, and terminate in the northeast portion of Section 20.

1.1.3 Penstemon Solar Project

The Penstemon Solar Project would include the installation of a photovoltaic solar facility on 37.0 acres of private agricultural land, and the construction of a switchyard with a short generation tie line into an existing PSE distribution transmission line. The project site is composed of actively farmed alfalfa or hay agricultural land, associated irrigation lines and ditches, and Coleman Creek forming the eastern property boundary. The project site is located southeast of the city of Ellensburg. It is in Section 17, T 17 N, R 19 E, at the corner of the intersection of Tjossem Road and Moe Road.

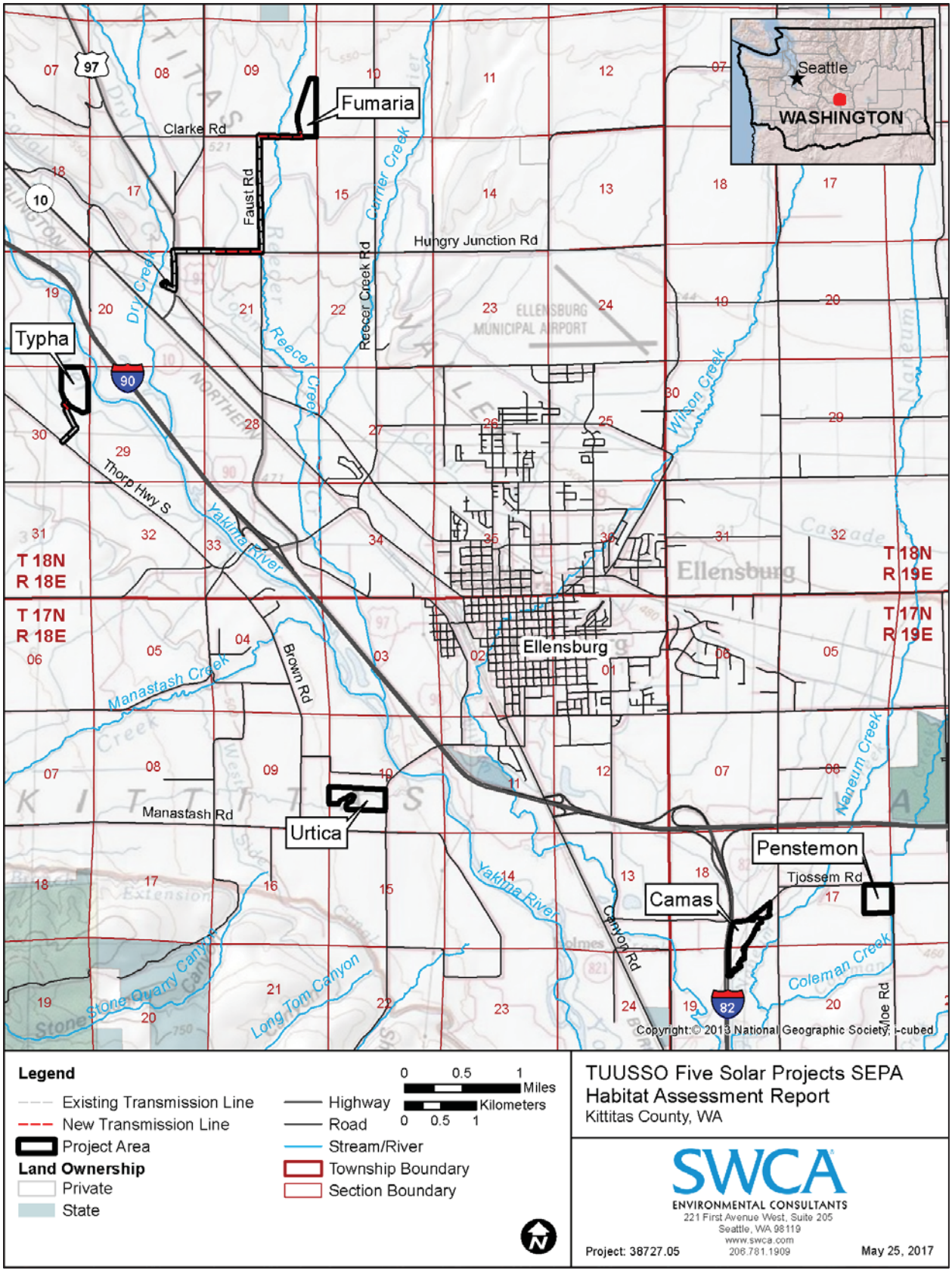


Figure 1. Project locations.

1.1.4 Typha Solar Project

The Typha Solar Project Site would include the installation of a photovoltaic solar facility on 49.7 acres of private agricultural land, and the construction of a switchyard with a short generation tie line (4.4 acres) into an existing PSE distribution transmission line. The site is composed of fallow agricultural land, associated irrigation ditches and a circular irrigator, and small wetlands. The site is located northwest of the city of Ellensburg. It is in Section 30, T 18 N, R 18 E, with the Yakima River running near the northeast border of the site, a wetland along the southern border, I-90 to the northeast, and Thorp Highway South to the southwest.

1.1.5 Urtica Solar Project

The Urtica Solar Project would include the installation of a photovoltaic solar facility on 51.1 acres of private agricultural land, and the construction of a switchyard with a short generation tie line into an existing PSE distribution transmission line. The project site is composed of actively farmed hay agricultural land, associated irrigation lines and ditches, and McCarl Creek running through the center of the site. The project site is located southwest of the city of Ellensburg. It is in Section 10, T 17 N, R 18 E, bordered on the west side by Umptanum Road and located north of Manastash Road.

1.2 Proposed Schedule

The projects are currently planned to begin construction in the second quarter of 2018 and begin operation in in the fourth quarter of 2018. This schedule is contingent upon completion of outstanding technical studies required to interconnect the projects to the local utility grid, but minimal schedule impacts are anticipated. The schedule also depends on the ability and timing of obtaining permits, as well as local weather conditions.

The projects would be built out in a single phase and are anticipated to take roughly 6 to 8 months, in total, to complete. Anticipated implementation dates are:

- Engineering and Permitting: February 2017 through April 2018
- Construction: spring through summer 2018
- Operation: fourth quarter 2018

1.3 Project Setting

U.S. Geological Survey topographic maps of the region indicate that the projects are located within the Kittitas Valley, just east of the Cascade Range and south of the Wenatchee Mountains. The valley drains centrally toward the Yakima River, which then flows to the southeast and leaves the valley through a gap in Manastash Ridge. Terrain on each site is generally flat, at an elevation of about 1,540 feet above mean sea level. Annual precipitation in the area is approximately 9 inches.

The projects are located in the Columbia Plateau Level III ecoregion area made up of arid sagebrush steppe and grassland, and surrounded on all sides by mountainous regions dominated by ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) forests. The Columbia Plateau is underlain by basalt up to 2 miles thick, and is covered in some places by loess soils that have been extensively cultivated for wheat, particularly in the eastern portions of the region that receive more precipitation. Aromatic shrubs such as sagebrush (*Artemisia* spp.) and bitter-bush (*Purshia tridentata*) dominate the shrub-steppe habitat, while native grasslands consist of forbs and bunchgrasses, which are

being increasingly displaced by downy cheat grass (*Bromus tectorum*) and other invasive species. Aquatic plants, rushes, and thickets of shrubs are present in herbaceous wetlands found throughout the Columbia Plateau (LandScope America 2017).

1.4 Regulatory Framework

1.4.1 Federal Approvals

Section 7 of the federal Endangered Species Act (ESA) of 1973 (as amended) requires an analysis of the effects of major construction projects on any federally listed or proposed threatened or endangered species that may use the project sites, if there is a federal nexus. Consultation with the U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) Fisheries is necessary if any threatened or endangered species would be affected by a project. Applicable regulations are found in the Code of Federal Regulations (50 CFR 17).

The Migratory Bird Treaty Act (MBTA) (16 USC 703-711) prohibits the taking, killing, or possession of migratory birds, except as allowed by the Secretary of the Interior. The list of migratory birds is found in 50 CFR 10, and permit regulations are found in 50 CFR 21.

The federal Bald Eagle Protection Act (BGEPA) (16 CFR 668-668c) prohibits the taking, possession, purchase, sale, barter, transport, export, or import of any bald or golden eagle or any part, nest, or egg of a bald or golden eagle, except for certain scientific, exhibition, and religious purposes. Eagle permit regulations are found in 50 CFR 22.

1.4.2 State Guidelines

The State of Washington regulates fish and wildlife with Title 77 of the Revised Code of Washington (RCW) and Title 220 of the Washington Administrative Code (WAC). State and protected species regulations are defined in WAC 220-610, which includes provisions for endangered, threatened, and sensitive wildlife species, ESA-listed fish, and bald eagle protection rules. Fish and aquatic habitats are protected under RCW 77.55, commonly referred to as the Hydraulic Code. Any environmental impacts that could occur in waters of the state below the ordinary high water mark would need to be addressed in a Hydraulic Project Approval process.

Washington's State Wildlife Action Plan (SWAP) is a comprehensive plan for conserving the state's fish and wildlife and their habitats. The purposes of the SWAP are to inform conservation priorities and to guide conservation actions statewide.

2 METHODS

2.1 Analysis Areas

The project sites are defined as the footprint of the five proposed solar projects, and the generation tie line corridors associated with two of the sites (see Figure 1). To provide a baseline for future analysis of potential impacts to biological resources from the proposed solar projects, this habitat assessment report evaluates two analysis areas, at a project-scale and at a landscape-scale. These areas are further described below.

2.1.1 Project-scale Analysis Area

The project-scale analysis areas include each project site and an associated surrounding 500-m buffer (Figure 2). These analysis areas include the habitat that would be directly impacted from construction and operation of each project, through ground disturbance, noise, and habitat alteration. A project-scale analysis area is appropriate for evaluating the potential impacts on species with small home ranges or territories, such as small birds, rodents, mammals, and amphibians.

2.1.2 Landscape-scale Analysis Area

The landscape-scale analysis area includes all five of the project-scale analysis areas, as well as the surrounding sub-watersheds (Figure 3). This analysis area is intended to evaluate the indirect impacts of project construction and operation on habitat in the region, and is appropriate for evaluating the potential impacts on migratory species or those species with larger home ranges such as raptors and larger mammals. Although biotic effects could occur outside of the selected sub-watersheds, they become more difficult to accurately predict with increased distance from the source of the impact.

2.2 Review of Existing Information

Prior to conducting field surveys, available scientific and technical literature regarding floral and faunal resources was reviewed for the project sites and the surrounding vicinity. Background research was also conducted to determine the potential occurrence, distribution, abundance, and life history of state or federally listed threatened and endangered species.

The USFWS Information, Planning, and Consultation system (IPaC) was queried to provide a list of federally proposed, candidate, threatened, and endangered species with potential to occur in and near the project-scale analysis areas (Appendix A). Additionally, the Washington Department of Fish and Wildlife's (WDFW's) Priority Habitats and Species (PHS) database was reviewed to determine whether any federal or state special-status species were documented as occurring in and near the project-scale analysis areas (Appendix B).

2.3 Field Investigation

Field surveys were conducted April 3 to 12, 2017, to document flora and fauna in the vicinity of the project sites, as well as different vegetation communities and habitat. Visual observations were recorded within 200 feet of each project site, and included wildlife and habitat data. A Trimble Geo XT global positioning system (GPS) unit was used by the biologist field team to assist in identifying the site boundaries and to record site spatial data. This device is capable of submeter accuracy. The full extent of each solar site was covered by the biologist field team. Photographs were taken and wildlife observations and vegetation characteristics were documented. The spatial location of some features observed outside of a project sites were approximated using field observations and aerial imagery to determine their extent. Geographic information system (GIS) software was used to analyze data and to produce the following habitat map figures.

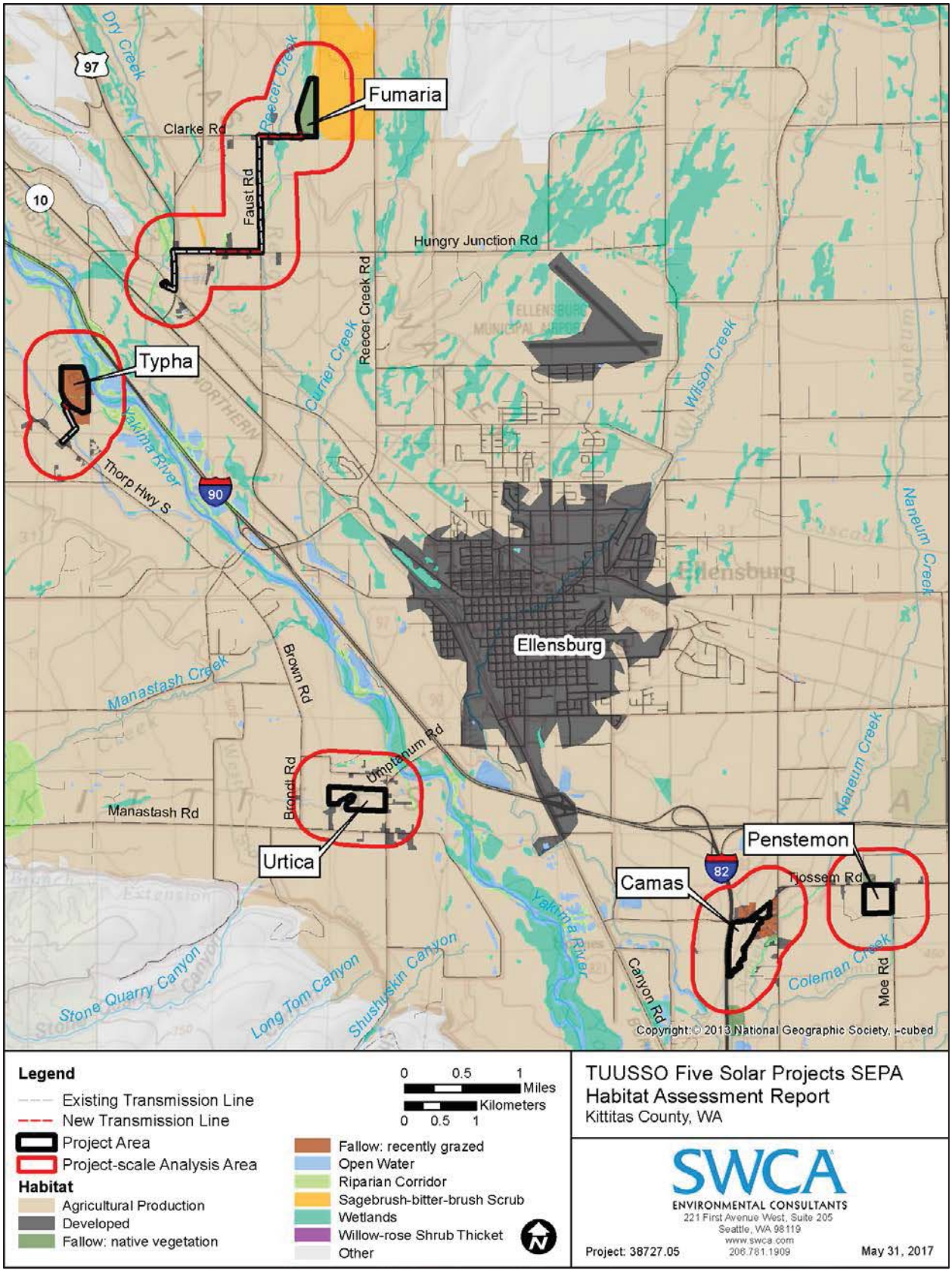


Figure 2. Project-scale analysis areas.

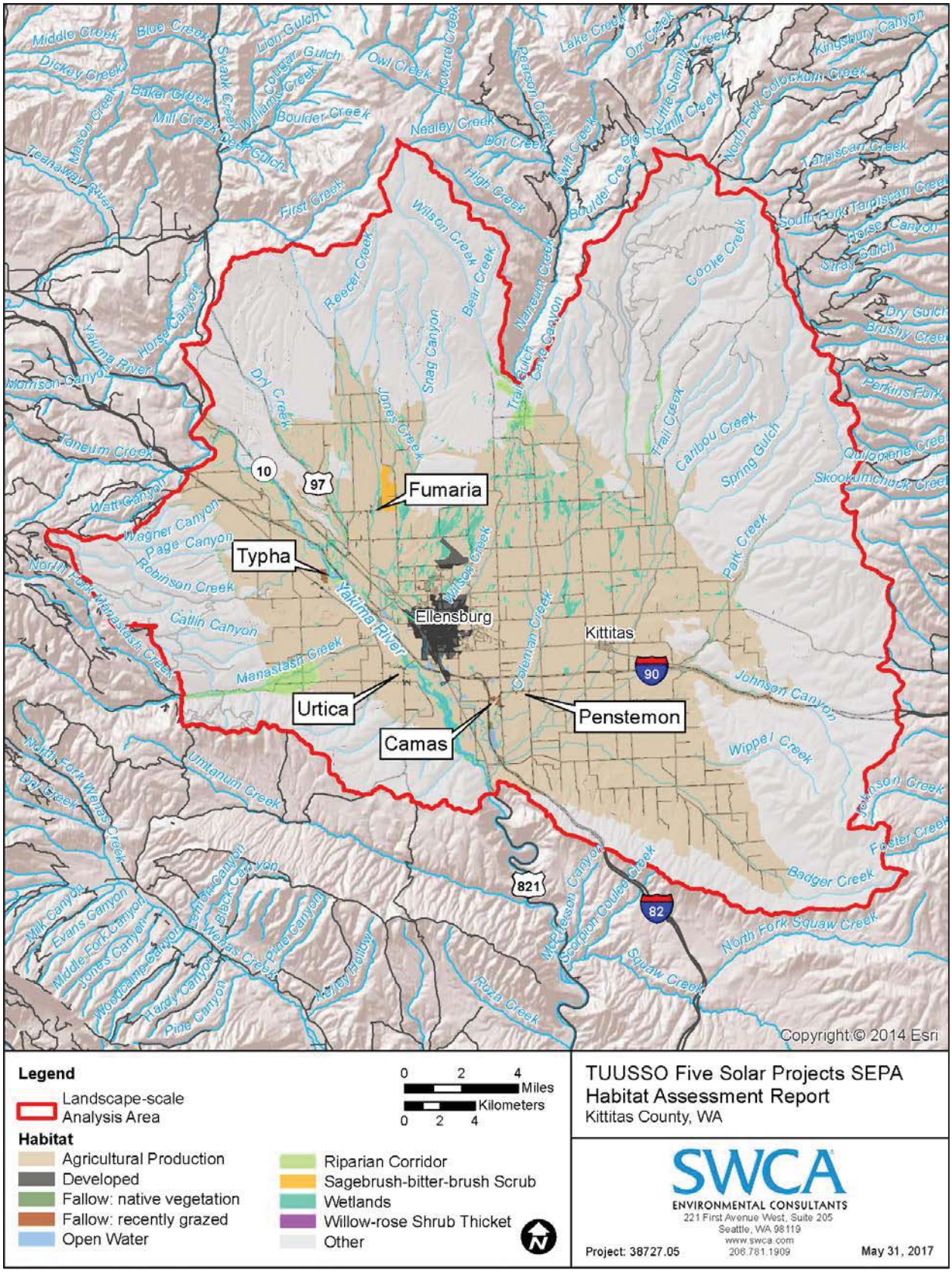


Figure 3. Landscape-scale analysis area.

3 VEGETATION AND HABITAT

Available habitats within the analysis areas were mapped based on dominant vegetation type as well as past and present land use, and habitat maps were used to determine the potential impacts from the proposed project activities. Site-specific descriptions of habitat and vegetation species documented during the April 3 to 12, 2017, field survey are provided to characterize the general habitat, and are considered representative of similar habitats found throughout the landscape-scale analysis area. Areas not surveyed were characterized using vegetation data from the Gap Analysis Project (GAP) (University of Washington, Washington Cooperative Fish and Wildlife Research Unit 1997).

3.1 Habitat Types

The majority of the project-scale analysis areas were made up of productive agricultural areas, fallow fields, recently grazed areas, and natural vegetation with several riparian, wetland, and open-water areas present. Wetlands and open-water areas have been described in detail in separate critical areas reports, and are not anticipated to be affected by the proposed solar projects. Developed areas were mostly located outside or adjacent to the project sites, but are common in the landscape-scale analysis area. Other habitats not observed during the field visit are found in the landscape-scale analysis area, but are not represented in the project-scale analysis areas, and do not provide habitat that is similar to areas potentially impacted by the projects.

The following sections provide detailed descriptions of the habitat types found in the analysis areas.

3.1.1 Agricultural Production

Three of the proposed solar project sites are primarily utilized for agricultural production (shown in Figure 4), including the production of alfalfa (*Medicago sativa*) on the Camas Solar Project site, Sudangrass (*Sorghum bicolor*) on the Penstemon site, and the production of common timothy (*Phleum pratense*) for hay on the Urtica site. These sites are dominated by the crop being produced, but often have other species encroaching into the crops in the space between plantings, which usually include bluegrass (*Poa* spp.), tall false rye grass (*Schedonorus arundinaceus*), hairy cat's-ear (*Hypochaeris radicata*), and common dandelion (*Taraxacum officinale*). In addition, these areas may go through periods during the production lifecycle in which they are unvegetated with exposed soil. Along the edges of these areas, more weedy species usually dominate, including garden yellow-rocket (*Barbarea vulgaris*), downy cheat grass, sticky-willy (*Galium aparine*), prickly lettuce (*Lactuca serriola*), great mullein (*Verbascum thapsus*), and Canadian thistle (*Cirsium arvense*).

3.1.2 Developed

This habitat type occurs throughout the landscape-scale analysis area, borders most of the solar project sites, and is composed of buildings, roads, and driveways (see Figure 2). Vegetation in this habitat is comprised mostly of ruderal species (species that colonize and thrive in disturbed areas), such as the noxious weeds documented in Section 3.3.1.

Figure 4. Example of agricultural production (alfalfa) at the Camas Solar Project.

Many areas near the proposed sites are partially developed or heavily manicured. The vegetation communities in these areas are either planted ornamental trees and shrubs or routinely mowed grass, and include rural residential landscaping, road rights-of-way (ROWs), and manicured golf course areas. Planted trees observed near the proposed sites include quaking aspen (*Populus tremuloides*), ponderosa pine, and grand fir (*Abies grandis*). The maintained lawns and golf course areas are dominated by a mix of grass species likely to include tall false rye grass, bluegrass, and creeping wild rye (*Elymus repens*). In addition, various weeds and non-native species could dominate roadside areas.

3.1.3 Fallow

Fallow fields are areas that were previously under agricultural production, or were regularly grazed, that have had these management practices removed for a period of time, long enough to allow other non-native, invasive, and native species to become dominant. This habitat type is dominant at the Fumaria and Typha Solar Project sites.

Native Vegetation

At the Fumaria Solar Project (shown in Figure 5), the majority of the vegetation community is returning to the native vegetation of the surrounding area and is partially dominated by native species, including common spring-gold (*Crocidium multicaule*), spring draba (*Draba verna*), Gorman's desert-parsley (*Lomatium gormanii*), and bitter-brush, and partially dominated by weedy species, including downy cheat grass, garden yellow-rocket, shepherd's-purse (*Capsella bursa-pastoris*), chicory (*Cichorium intybus*), common dandelion, prickly lettuce, and yellow salsify (*Tragopogon dubius*).

Figure 5. Example of the fallow–native vegetation habitat type at the Fumaria Solar Project.

Recently Grazed

At the Typha Solar Project (shown in Figure 6), the vegetation community is dominated by mostly low-growing weedy species, including tall false rye grass, remnant common timothy, hairy cat's-ear, common dandelion, and bluegrass, with patches of Canadian thistle and scotch thistle (*Onopordum acanthium*) scattered throughout the site, as well as Baltic rush (*Juncus balticus*), curly dock (*Rumex crispus*), and Rocky Mountain iris (*Iris missouriensis*) in the lower elevation areas.

Figure 6. Example of the fallow–recently grazed habitat type at the Typha Solar Project.

3.1.4 Open Water

The open water habitats found in the project-scale analysis areas are the Yakima River, streams, canals or ditches, and ponds. Representative photographs are provided below in Figures 7 to 9. For more information about the open-water areas documented during the April 3 to 12, 2017, field survey, refer to each project site's critical areas report.

Figure 7. The Yakima River with a great blue heron rookery in the cottonwoods east of the river, east of the Typha Solar Project.

Figure 8. McCarl Creek, a stream flowing through the Urtica Solar Project, from west to east.

Figure 9. One of two ponds in the southwest corner of the Urtica Solar Project.

3.1.5 Riparian Corridor

Riparian corridors generally occur along every river, stream, and some ditches and canals, in and adjacent to the proposed sites. Some of these areas are lacking mature trees, but where present the dominant trees typically include crack willow (*Salix* X *fragilis*), quaking aspen, balsam poplar (*Populus balsamifera*), and occasionally ponderosa pine. The herbaceous species that often accompany these riparian corridors include reed canary grass (*Phalaris arundinacea*), Fuller's teasel (*Dipsacus fullonum*), Canadian thistle, stinging nettle (*Urtica dioica*), tall scouring-rush (*Equisetum hyemale*), true forget-me-not (*Myosotis scorpioides*), curly dock, and great mullein. Figures 7 through 11 and 14 provide examples of this habitat type.

Figure 10. A riparian corridor along a ditch southwest of the Fumaria Solar Project.

Figure 11. A riparian corridor along a ditch southwest of the Fumaria Solar Project.

3.1.6 Sagebrush-bitter-brush Scrub

The upland sagebrush-bitter-brush scrub community (shown in Figure 12) is dominant to the east of the Fumaria Solar Project site and is beginning to return to that site. This community is characterized by the dominance of native shrubs, including bitter-brush and big sagebrush (*Artemisia tridentata*), and a low growing herbaceous community, including common spring-gold, spring draba, yellow bell (*Fritillaria pudica*), and various small bunchgrasses.

Figure 12. Example of sagebrush-bitter-brush scrub habitat type east of the Fumaria Solar Project.

3.1.7 Wetlands

Wetlands surveyed within the project-scale analysis areas ranged from <0.01 to 8.45 acres. The wetlands inventoried were depressional, riverine, and slope. Wetland ratings, based on the *Washington State Wetland Rating System for Eastern Washington – Revised*, were typically II, III, or IV (Hruby 2014). For more information about the wetlands documented during the April 3 to 12, 2017, field survey, refer to the each project site's critical areas report.

3.1.8 Willow–rose Shrub Thicket

Shrub thickets are often found along smaller drainages (i.e., small streams and ditches) and are dominated by narrow-leaf willow (*Salix exigua*) and rose (*Rosa* spp.), with occasional inclusions of red osier dogwood (*Cornus alba*) and black hawthorn (*Crataegus douglasii*). This vegetation community often lacks an herbaceous layer because the shrubs are too thick to allow adequate light penetration to the understory. Willow–rose shrub thickets occur in the southeast corner of the Fumaria Solar Project site, as well as along this site's northwest boundary (shown in Figures 13 and 14), and just outside of the northeast corner of the Typha Solar Project site and along the Ellensburg Power Canal.

Figure 13. A willow–rose shrub thicket in the southeast corner of the Fumaria Solar Project.

Figure 14. A rose shrub thicket along the northwest boundary of the Fumaria Solar Project.

3.1.9 Other

The habitat types grouped into the “other” category in this report are located within the landscape-scale analysis area, but were not observed during the field survey. These types include 1) conifer forest; 2) areas that are non-forested, but are apparently natural, parkland meadows with scattered trees; and 3) areas that are non-forested because they’ve been logged, and are in various stages of regrowth to herbs or small shrubs. Some of this habitat category is likely sagebrush-bitter-brush scrub, but because SWCA did not field survey these areas, we did not alter their mapping.

3.2 Available Habitat within the Analysis Areas

The acreage for each habitat type and the percent of the total available habitat has been calculated for both the landscape-scale and project-scale analysis areas, and are presented in Table 1. As shown in Table 1, the majority of the landscape-scale analysis area contains the “other” habitat category (60%) and agricultural production (36%). The majority of the project-scale analysis areas are a mix of agricultural production and developed areas, interspersed with a variety of the remaining habitat types. Available habitat types in the project-scale analysis areas are shown in Figures 15 to 21.

Table 1. Available Habitat Types within the Analysis Areas

Habitat Type	Landscape-scale Analysis Area		Project-scale Analysis Areas (500-meter buffer surrounding each solar site)									
			Camas		Fumaria		Penstemon		Typha		Urtica	
	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total
Agricultural Production	115,057	36%	469	82%	1,098	76%	393	93%	345	59%	431	84%
Developed	4,805	1%	51	9%	56	4%	19	5%	33	6%	48	9%
Fallow: native vegetation	72	<1%	6	1%	41	3%	5	1%	-	-	-	-
Fallow: recently grazed	94	<1%	29	5%	-	-	-	-	64	11%	-	-
Open Water	1,247	<1%	4	1%	12	1%	2	<1%	68	12%	13	3%
Riparian Corridor	2,801	1%	13	2%	41	3%	3	1%	53	9%	13	3%
Sagebrush-bitter-brush Scrub	442	<1%	-	-	158	11%	-	-	-	-	-	-
Wetlands	5,315	2%	2	<1%	42	3%	<1	<1%	18	3%	9	2%
Willow-rose Shrub Thicket	4	<1%	-	-	4	<1%	-	-	<1	<1%	-	-
Other	193,188	60%	-	-	-	-	-	-	-	-	-	-
Total Acres	**323,025**		**574**		**1,452**		**422**		**583**		**513**	

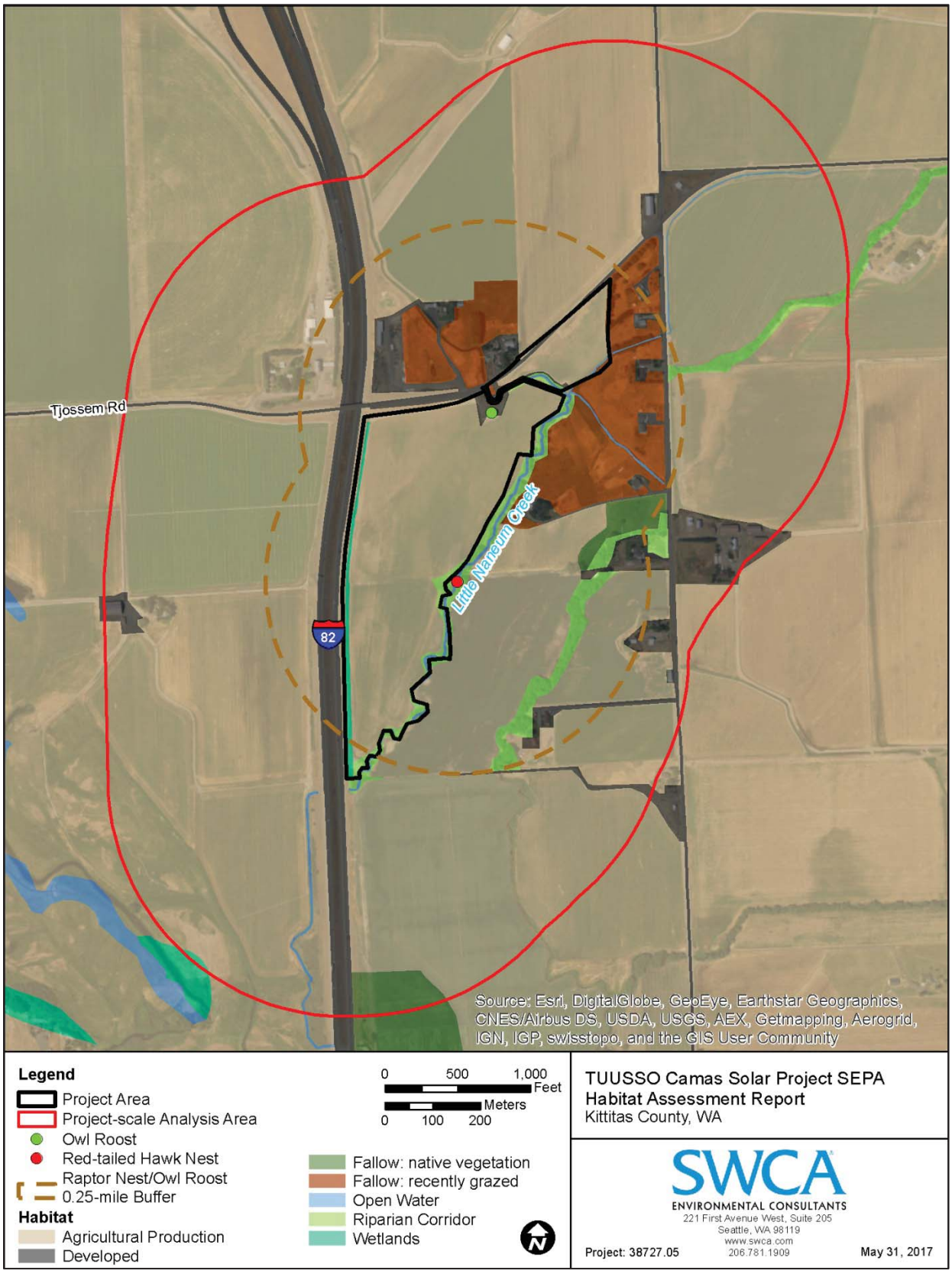


Figure 15. Habitat types within the project-scale analysis area for the Camas Solar Project.

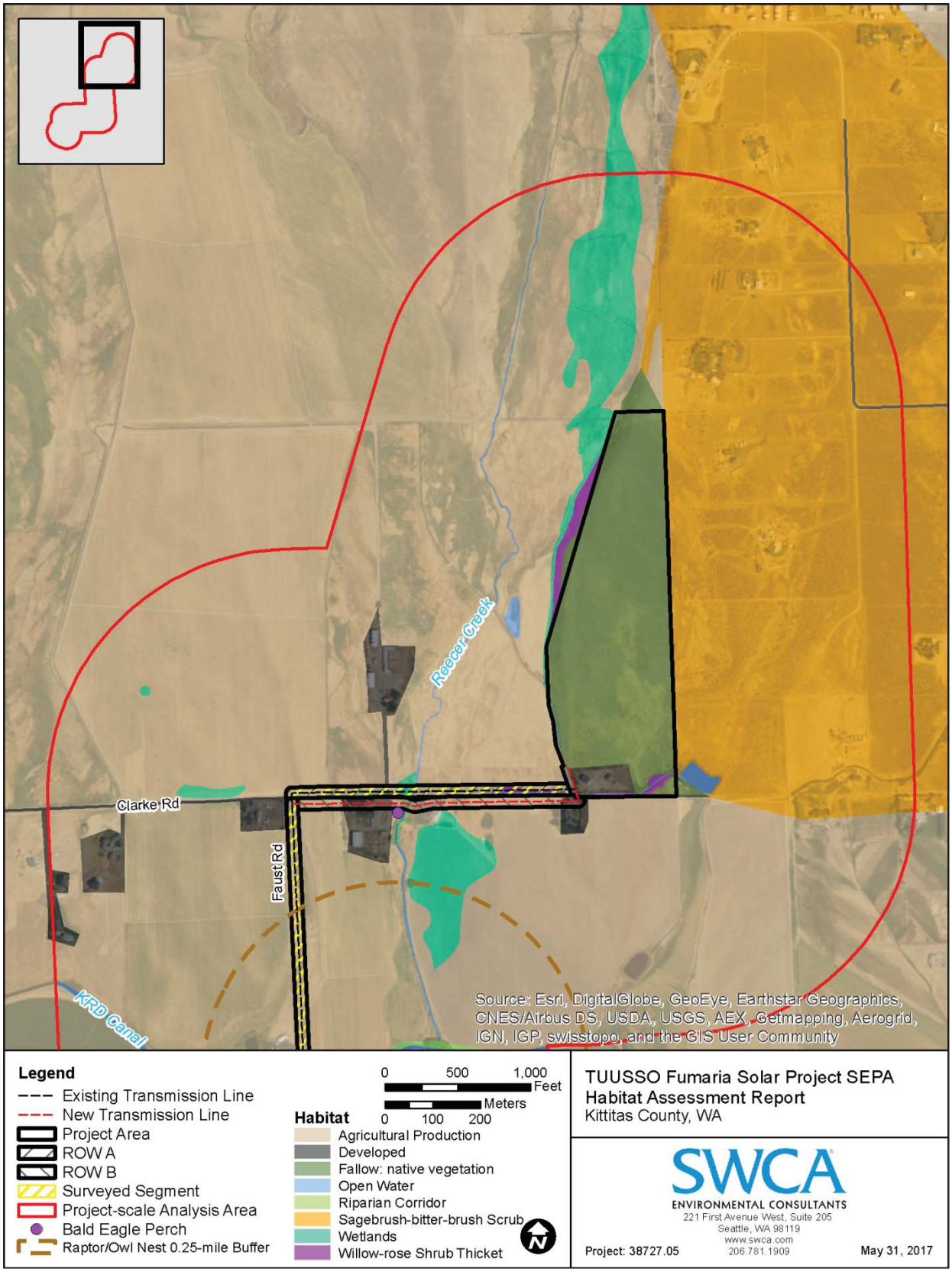


Figure 16. Habitat types within the project-scale analysis area for the Fumaria Solar Project.

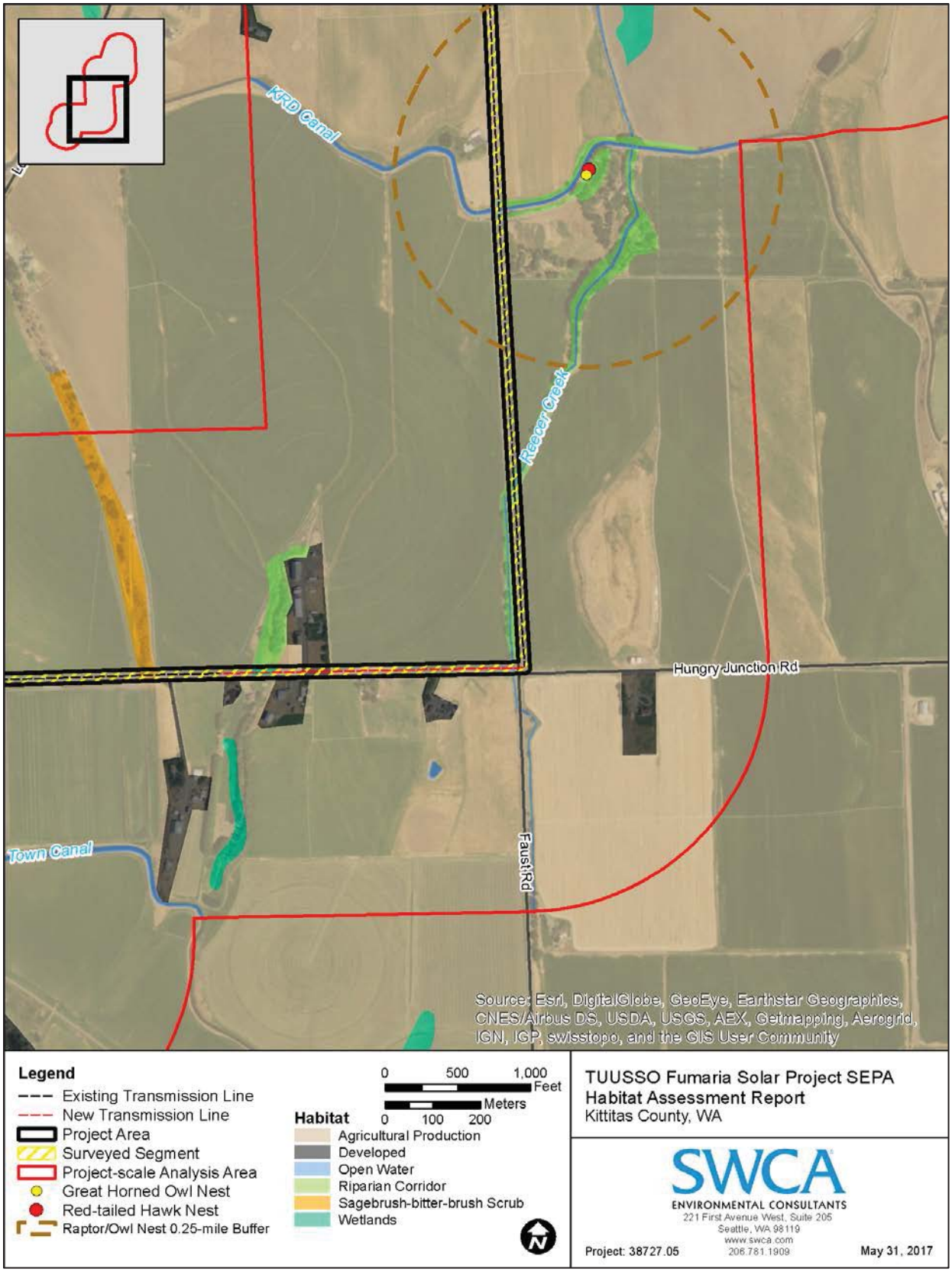


Figure 17. Habitat types within the project-scale analysis area along the north half of the Fumaria generation tie line corridor.

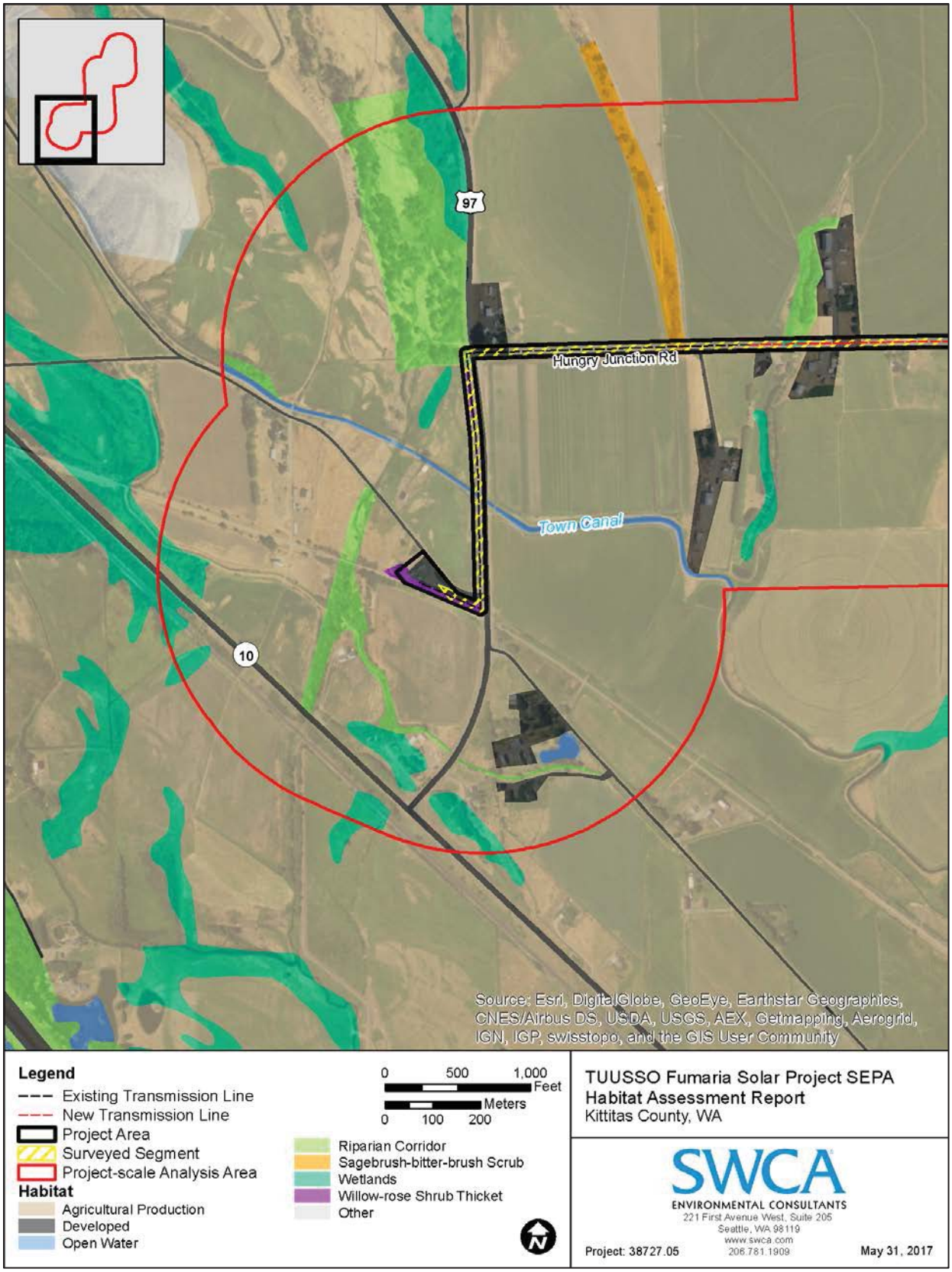


Figure 18. Habitat types within the project-scale analysis area along the south half of the Fumaria generation tie line corridor.

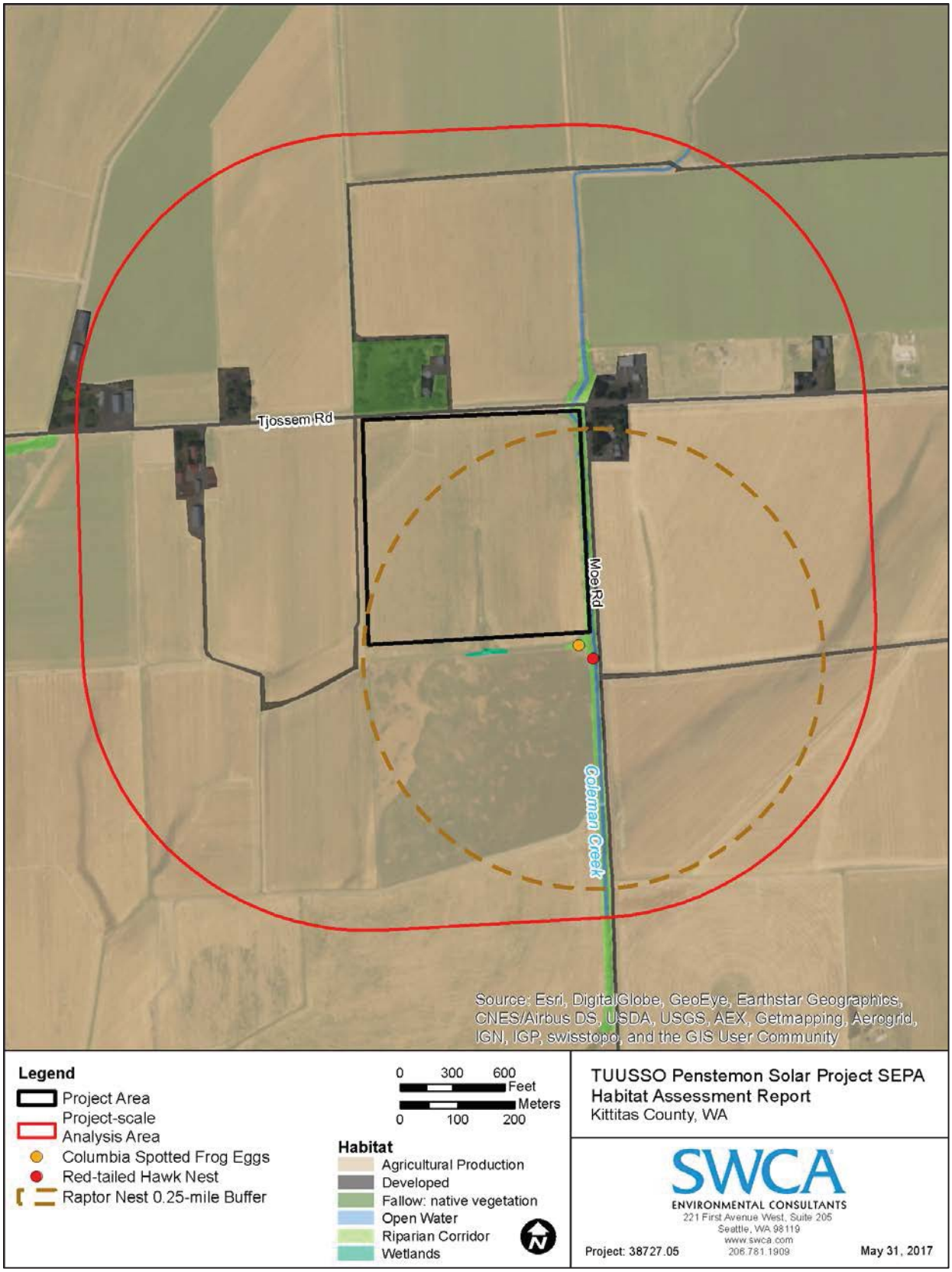


Figure 19. Habitat types within the project-scale analysis area for the Penstemon Solar Project.

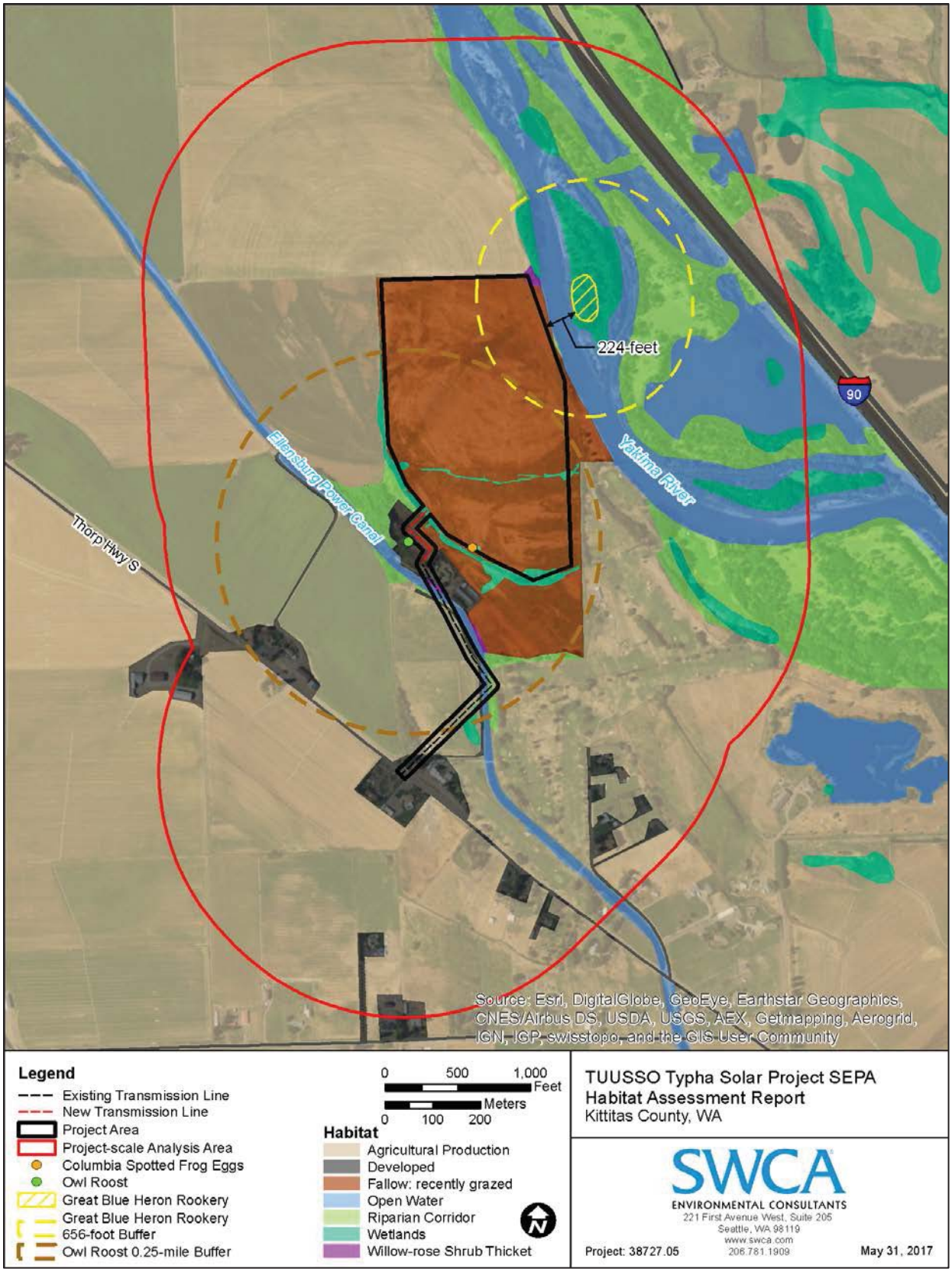


Figure 20. Habitat types within the project-scale analysis area for the Typha Solar Project.

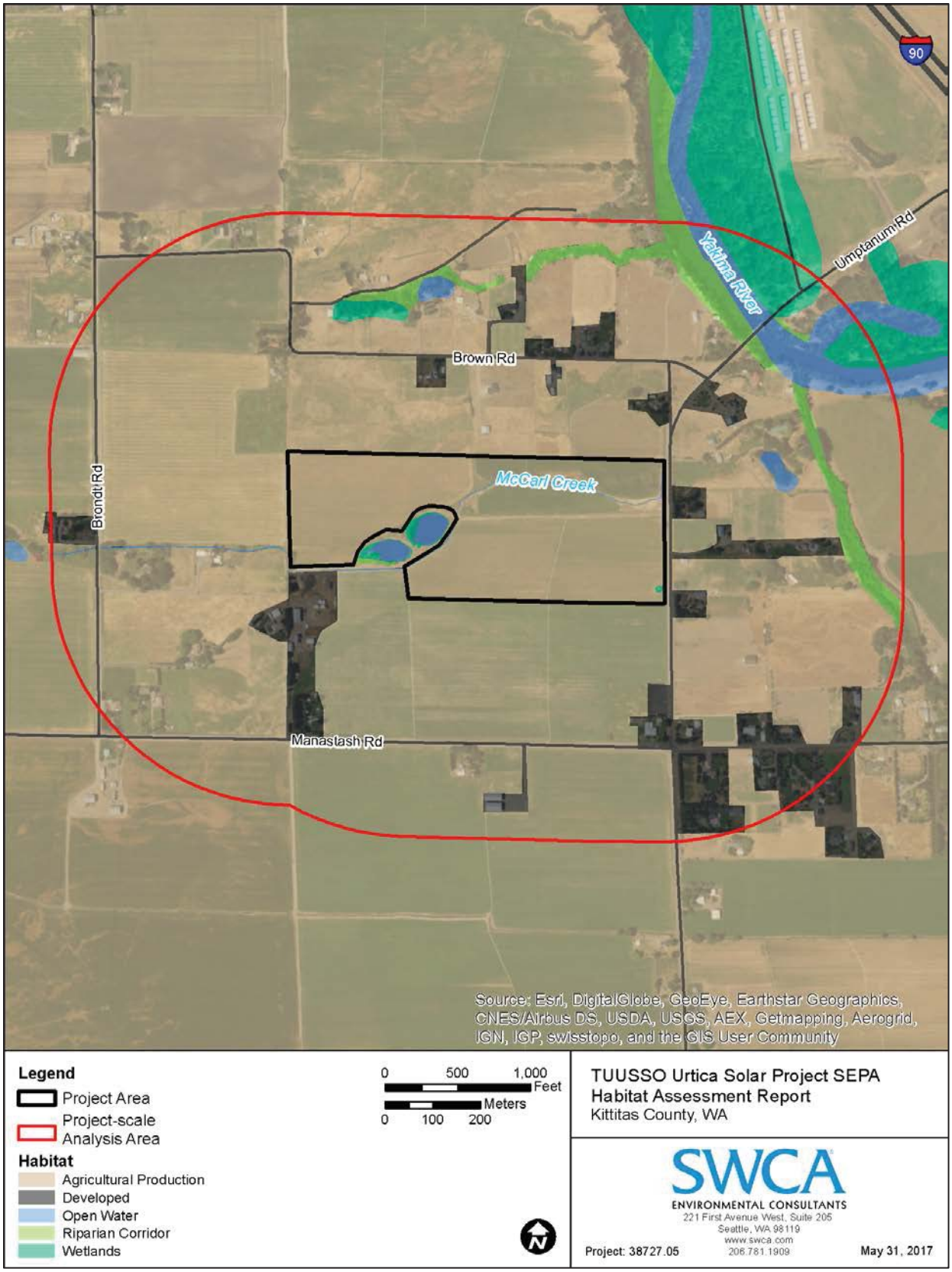


Figure 21. Habitat types within the project-scale analysis area for the Urtica Solar Project.

3.3 Special-status Plants

No sensitive or special-status plant species occur on any of the solar project sites. The plant species typically observed in each habitat type are discussed in Section 3.1. TUUSSO will prepare a Vegetation Management Plan through coordination with the landowners, WDFW, and Kittitas County.

The Washington State (WA) Noxious Weed Control Board has produced a noxious weed list for the state that categorizes weeds into three classes: A, B, and C (WA Noxious Weed Control Board 2017). A-Listed species are non-native species whose distribution in Washington State is still limited. B-Listed species are non-native species whose distribution is limited to portions of Washington State. C-Listed noxious weeds are widespread in Washington or are of special interest to the agricultural industry. Eleven noxious weeds have been identified in the project scale analysis areas, all B- or C-Listed species. A list of noxious weeds identified in the project-scale analysis areas, and a ranking of their relative prevalence at each site, is provided in Table 2.

Table 2. Noxious Weeds Documented in the Project-scale Analysis Areas

Common Name	Scientific Name	Status[1]	Weed Class[2]	Weed Relative Prevalence at Each Solar Project Site (1 = low, 5 = high)				
				Camas	Fumaria	Penstemon	Typha	Urtica
Canadian thistle	*Cirsium arvense*	Invasive, noxious	C	2	1	2	3	1
Chufa (yellow nutsedge)	*Cyperus esculentus*	Native, noxious	B		1		1	
False mayweed	*Tripleurospermum maritimum*	Non-native, noxious	C	1			1	
Field sow-thistle	*Sonchus arvensis*	Non-native, noxious	C		1			
Fuller's teasel	*Dipsacus fullonum*	Invasive, noxious	C	1	1	1	1	2
Hairy cat's-ear	*Hypochaeris radicata*	Non-native, noxious	C	3	3	1	3	3
Pale-yellow iris	*Iris pseudacorus*	Noxious	C	2				
Queen Anne's lace	*Daucus carota*	Non-native	C					1
Reed canary grass	*Phalaris arundinacea*	Invasive, noxious	C	3	1	2	2	3
Scotch thistle	*Onopordum acanthium*	Noxious	B	1			3	1
Spotted knapweed	*Centaurea stoebe*	Noxious	B		1			1

Sources:
1. Native per Hitchcock and Cronquist 1973 and USDA 2017; Noxious per WA Noxious Weed Control Board 2017
2. WA Noxious Weed Control Board 2017

4 FISH AND WILDLIFE

In all, 39 bird species were documented in the project-scale analysis areas during field surveys conducted from April 3 to 12, 2017, including raptors, passerines, near-passerines, and water birds (Appendix C). The list of documented bird species is not comprehensive and only includes those that were readily identifiable. Of the 39 bird species documented in the project-scale analysis areas, 35 are protected under the MBTA. Signs of several mammals, including of mule deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and Virginia opossum (*Didelphis virginiana*), were observed throughout the project-scale analysis areas. Several burrows that were likely associated with American badger (*Taxidea taxus*) were observed at the Camas and Fumaria Solar Project sites, but the exact source of the burrows could not be identified. Columbia spotted frog (*Rana lutreveinus*) egg masses and Pacific tree frogs (*Pseudacris regilla*) were documented in the project-scale analysis areas.

No state- or federally-listed threatened or endangered species were observed in the project-scale analysis areas, but bald eagles (*Haliaeetus leucocephalus*) were observed at the Fumaria and Penstemon Solar Project sites and are a federal species of concern. Of the bird species documented in the project-scale analysis areas, four are currently being monitored by the State of Washington: great blue heron, prairie falcon, osprey, and turkey vulture. The American badger is also being monitored by the State of Washington, and the Columbia spotted frog is a state candidate for listing.

To evaluate the potential project impacts on fish and wildlife habitat, a list of representative species known or suspected to occur in the analysis areas was compiled and their preferred habitat was compared to the habitat types available in the analysis areas. The results of this evaluation are shown in Table 3.

Table 3. Representative Species Observed or Likely to Occur in the Analysis Areas

Common Name	Scientific Name	Management Category	Habitat Description	Habitat Types Used[1]									
				AP	DEV	FG	FN	RIP	SBB	WRS	OW	WET	OTH
Birds													
Bald eagle	*Haliaeetus leucocephalus*	MBTA, BGEPA, and Federal Species of Concern	Habitat generalist, associated with most aquatic habitats. Prefer rivers, lakes, and reservoirs with lots of fish and surrounding forests.					X				X	X
Canada goose	*Branta canadensis*	MBTA	Habitat generalists that occur near water, grassy fields, and grain fields. Always nests near water and winters where feeding areas are within short distances of water.	X	X	X	X	X		X	X	X	X
Great blue heron	*Ardea herodias*	MBTA, State Monitored	Found in a wide variety of habitats, including sheltered, shallow bays and inlets, sloughs, marshes, wet meadows, shores of lakes, and rivers. Nesting colonies are typically found in mature forests, on islands, or near mudflats, and do best when they are free of human disturbance and have foraging areas close by.					X			X	X	X
Great horned owl	*Bubo virginianus*	MBTA	Prefers secondary-growth woodlands, swamps, orchards, and agricultural areas, but are found in a wide variety of deciduous, coniferous, or mixed forests. Home range usually includes some open habitats, such as fields, wetlands, pastures, or croplands, in addition to forested areas.	X		X	X					X	X
Killdeer	*Charadrius vociferus*	MBTA	Inhabits open areas such as sandbars, mudflats, and grazed fields with vegetation generally no taller than 1 inch. Often found near water, but also common in dry areas.			X		X	X		X	X	

Table 3. Representative Species Observed or Likely to Occur in the Analysis Areas

Common Name	Scientific Name	Management Category	Habitat Description	Habitat Types Used[1]									
				AP	DEV	FG	FN	RIP	SBB	WRS	OW	WET	OTH
Northern Harrier	*Circus cyaneus*	MBTA	Breeds in freshwater and brackish marshes, lightly grazed meadows, old fields, tundra, dry upland prairies, drained marshlands, high-desert shrub-steppe, and riverside woodlands. Winter habitat includes areas with low vegetation, including deserts, coastal sand dunes, pasturelands, croplands, dry plains, grasslands, old fields, estuaries, open floodplains, and marshes.	X		X	X	X	X			X	X
Red-tailed hawk	*Buteo jamaicensis*	MBTA	Occupy most open habitat, including desert, scrublands, grasslands, roadsides, fields and pastures, parks, broken woodland, and (in Mexico) tropical rainforest.	X	X	X	X		X				X
Sandhill Crane	*Grus canadensis*	MBTA, State Endangered	Prefers open shallow waters along river channels, on alluvial islands of braided rivers, or in natural basin wetlands, but can sometimes occur in fields and agricultural lands during feeding and resting. They typically avoid visual obstructions, such as houses and bridges, and paved or gravel roads.	X		X	X	X			X	X	
Herptiles													
Columbia spotted frog	*Rana luteiventris*	State Candidate	Occurs in a variety of still-water habitats, as well as in some streams and creeks. Breeding habitat includes seasonally flooded margins of wetlands, ponds, and lakes, and even some flooded pools and still-water edges of creeks. Most often found in association with wetland plant communities consisting primarily of non-woody plants, such as sedges, rushes, and grasses.					X			X	X	

Table 3. Representative Species Observed or Likely to Occur in the Analysis Areas

Common Name	Scientific Name	Management Category	Habitat Description	Habitat Types Used[1]									
				AP	DEV	FG	FN	RIP	SBB	WRS	OW	WET	OTH
Pacific treefrog	*Pseudacris regilla*	None	Found in wetlands, meadows, woodlands, and brushy areas. Breed in shallow ponds, slow moving streams, seasonal pools, watering tanks, and roadside ditches, and spend the rest of the year in surrounding upland areas.	X				X		X	X	X	
Sharp-tailed snake	*Contia tenuis*	State Candidate	Prefers forest openings dominated by Garry oak, particularly with rock accumulations, and riparian deciduous woodlands with accumulations of decaying down woody logs within ponderosa pine, oak, or shrub-steppe.					X				X	X
Fish													
Bull trout	*Salvelinus confluentus*	Federal Threatened; State Candidate	Both resident or migratory varieties, with migratory bull trout spawning in tributary streams where juvenile fish rear for 1 to 4 years before migrating to either a larger river (fluvial) or lake (adfluvial) as adults. Successful egg incubation and survival requires very cold, clear, well-oxygenated waters, as found in pristine headwater stream habitats.								X		
Spring chinook (Upper Columbia River)	*Oncorhynchus tshawytscha*	Federal Endangered; State Candidate	Require sufficient invertebrate organisms for food; cool, flowing waters free of pollutants; high dissolved oxygen concentrations in rearing and incubation habitats; water of low sediment content during the growing season (for visual feeding); clean gravel substrate for reproduction; and unimpeded migratory access to and from spawning and rearing areas.								X		

Table 3. Representative Species Observed or Likely to Occur in the Analysis Areas

Common Name	Scientific Name	Management Category	Habitat Description	Habitat Types Used[1]									
				AP	DEV	FG	FN	RIP	SBB	WRS	OW	WET	OTH
Steelhead (Middle Columbia River	*Oncorhynchus mykiss*	Federal Threatened; State Candidate	Require sufficient invertebrate organisms for food; cool, flowing waters free of pollutants; high dissolved oxygen concentrations in rearing and incubation habitats; water of low sediment content during the growing season (for visual feeding); clean gravel substrate for reproduction; and unimpeded migratory access to and from spawning and rearing areas.								X		
Summer steelhead (Upper Columbia River)	*Oncorhynchus mykiss*	Federal Threatened; State Candidate	Require sufficient invertebrate organisms for food; cool, flowing waters free of pollutants; high dissolved oxygen concentrations in rearing and incubation habitats; water of low sediment content during the growing season (for visual feeding); clean gravel substrate for reproduction; and unimpeded migratory access to and from spawning and rearing areas.								X		
Mammals													
American badger	*Taxidea taxus*	State Monitored	Found in open habitats including semi-desert, sagebrush, grasslands, and meadows. Also found in forested areas with grassy cover.	X		X	X		X				X
Coyote	*Canis latrans*	None	Habitat generalists found in desert, scrub, grassland, foothills, populated neighborhoods, and urban environments.	X	X	X	X	X	X				X
Mule deer	*Odocoileus hemionus*	Big game	Use dense conifer forests with sufficient cover for thermal regulation and resting. Also may be found in pockets of dense brush or trees and rugged, broken terrain. Seasonal migration occurs.				X	X		X			X

Table 3. Representative Species Observed or Likely to Occur in the Analysis Areas

Common Name	Scientific Name	Management Category	Habitat Description	Habitat Types Used[1]									
				AP	DEV	FG	FN	RIP	SBB	WRS	OW	WET	OTH
Raccoon	*Procyon lotor*	None	Habitat generalists that traditionally prefer heavily wooded areas with access to trees, water, and vegetation. Often found in urban and suburban environments.		X			X		X		X	X
Small rodents (mice, voles, etc.)	Various	None	Large group of small mammals that are habitat generalists and provide prey for other species such as raptors, great blue heron, and badger.	X	X	X	X	X	X	X		X	X
Striped skunk	*Mephitis mephitis*	None	Habitat generalists, particularly associated with open areas with a mix of habitats such as wooded areas, grasslands, or meadows. Usually in close proximity to a source of water.		X		X	X		X			X
Virginia opossum	*Didelphis virginiana*	None	Habitat generalist, ranging from wooded areas to open fields. Prefer environments near streams or wetlands. Shelter in burrows of other animals, tree cavities, brush piles, or other cover.		X			X		X		X	X

1. AP = Agricultural production; DEV = Developed; FG = Fallow, recently grazed; FN = Fallow, native vegetation; RIP = Riparian corridor; SBB = Sagebrush-bitter-brush shrub; WRS = Willow–rose shrub thicket; OW = Open water; WET = Wetlands; OTH = Other

4.1 Special-status Species

Federal and state online databases were accessed to obtain current lists of sensitive species that may occur in or near the project-scale analysis areas, including the USFWS IPaC system (see Appendix A). The USFWS IPaC database provides county-level lists of Endangered Species Act (ESA) listed species, including species proposed or candidates for listing, and designated critical habitat within a defined project area. No ESA-listed species are anticipated to be affected by the proposed solar projects.

The WDFW PHS mapper, which lists sensitive wildlife species and habitats within the proposed solar project sites, was also accessed (Appendix B). Table 4 lists state-listed species that have the potential to occur in the proposed solar sites, and is followed by a brief discussion of each one. As the PHS mapper is dependent on existing records of species, other sensitive species may occur in the vicinity of the solar project sites, if suitable habitat is present. Based on the existing condition of the sites as developed agricultural lands, it is unlikely that other sensitive species occur in the project-scale analysis areas.

Table 4. Special-status Species with Potential to Occur in the Project-scale Analysis Areas

Common Name	Scientific Name	Status	Sites with Potential Occurrence	Likelihood to Occur in Project-scale Analysis Areas
Birds				
Bald Eagle	*Haliaeetus leucocephalus*	Federal Candidate; MBTA and BGEPA Protected	Fumaria	High
Greater sage-grouse	*Centrocercus urophasianus*	Federal Candidate, State Threatened	Camas, Penstemon	Low
Sandhill Crane	*Grus canadensis*	State Endangered	Camas, Fumaria, Penstemon, Urtica	Low
Fish				
Bull trout	*Salvelinus confluentus*	Federal Threatened	Typha	None
Spring Chinook salmon (Upper Columbia River)	*Oncorhynchus tshawytscha*	Federal Endangered	Penstemon	None
Steelhead (Middle Columbia River)	*Oncorhynchus mykiss*	Federal Threatened	Typha	None
Summer Steelhead (Upper Columbia River)	*Oncorhynchus mykiss*	Federal Threatened	Penstemon	None
Herptiles				
Columbia spotted frog	*Rana luteiventris*	State Candidate	Camas, Penstemon	High
Sharp-tailed snake	*Contia tenuis*	State Candidate	Camas, Fumaria	Low
Invertebrates				
Giant Palouse earthworm	*Driloleirus americanus*	State Candidate		Low

4.1.1 Bald Eagle

The bald eagle is a Federal Species of Concern, in addition to being BGEPA- and MBTA-protected. They are habitat generalists, typically associated with aquatic habitats, preferring forested areas that surround fish-bearing lakes and rivers.

The PHS mapper did not document any bald eagle occurrences in the analysis areas, but eagles were observed during the field survey at the Fumaria and Penstemon sites. Both sites are within 3 miles of the Yakima River (potential nesting habitat). Bald eagles are also scavengers, and calves were observed near both sites; it is likely that the observed eagles were scavenging afterbirth in the vicinity of these sites.

4.1.2 Greater Sage-grouse

The greater sage-grouse (*Centrocercus urophasianus*) is classified as a Federal Candidate by USFWS and a State Threatened species by WDFW. This species lives only on the sagebrush steppe of western North America, and uses several types of sagebrush habitat during different parts of year (Sage Grouse Initiative 2017). Leks, or breeding areas, are located in clear areas such as grassy swales or dry lakebeds. Nesting habitats are usually made up of areas with dense cover from big sagebrush (*Artemisia tridentate*), but can also occur in areas with rabbitbrush, greasewood, and grassy areas (Cornell 2017).

According to the PHS mapper, an occurrence of this species was recorded within the township that includes the entire area of the proposed Camas and Penstemon Solar Project sites (WDFW 2017b). However, the proposed sites do not fit the description for this species' preferred habitat. Therefore, it is unlikely that this species occurs within these two sites.

4.1.3 Sandhill Crane

The sandhill crane (*Grus canadensis*) is classified as a State Endangered species by WDFW. Klickitat and Yakima Counties hold the primary breeding grounds within the State of Washington for sandhill cranes. This species prefers open shallow waters along river channels, on alluvial islands of braided rivers, or in natural basin wetlands, but can sometimes occur in fields and agricultural lands during feeding and resting (California Department of Fish and Game 1990). They typically avoid visual obstructions, such as houses, bridges, and paved or gravel roads (Norling et al. 1992).

4.1.4 Bull Trout

The bull trout is classified as a Federally Threatened species by USFWS. Bull trout exhibit a number of life history strategies. Stream-resident bull trout complete their entire life cycle in the tributary streams where they spawn and rear. Most bull trout are migratory, however, spawning in tributary streams where juvenile fish usually rear for 1 to 4 years before migrating to either a larger river (fluvial) or lake (adfluvial) where they spend their adult life, returning to the tributary stream to spawn (Fraley and Shepard 1989). Successful egg incubation and survival requires very cold, clear, well-oxygenated waters as found in pristine headwater stream habitats (Wydoski and Whitney 2003). Bull trout in fresh water feed primarily on whitefish, sculpins, and young salmonids, although they also consume insects, amphibians, crayfish, and other available food (Kraemer 1994). The bull trout has been documented in the Yakima River by PHS, SalmonScape, and StreamNet (Pacific States Marine Fisheries Commission 2016; WDFW 2017a, 2017b). In addition, the part of the Yakima River that is adjacent to the Typha Solar Project site contains designated critical habitat for bull trout (see Appendix A).

4.1.5 Chinook Salmon and Steelhead

The Upper Columbia River Spring Chinook and Summer Steelhead are classified as Federally Endangered and Federally Threatened, respectively, by NMFS. All salmonids require sufficient invertebrate organisms for food; cool, flowing waters free of pollutants; high dissolved oxygen concentrations in rearing and incubation habitats; water of low sediment content during the growing season (for visual feeding); clean gravel substrate for reproduction; and unimpeded migratory access to and from spawning and rearing areas (Spence et al. 1996). Both the Upper Columbia River Spring Chinook and Upper Columbia River Summer Steelhead have been documented in Coleman Creek along the eastern boundary of the Penstemon Solar Project site, by PHS, SalmonScape, and StreamNet (Pacific States Marine Fisheries Commission 2016; WDFW 2017a, 2017b). In addition, the part of Coleman Creek adjacent to the Penstemon site contains designated critical habitat for the Upper Columbia River Steelhead (see Appendix A). The Middle Columbia River steelhead has been documented in the Yakima River by PHS, SalmonScape, and StreamNet (Pacific States Marine Fisheries Commission 2016; WDFW 2017a, 2017b). In addition, the part of the Yakima River that is adjacent to the Typha Solar Project site contains designated critical habitat for Middle Columbia River steelhead (see Appendix A).

4.1.6 Columbia Spotted Frog

The Columbia spotted frog (*Rana luteiventris*) is classified as a State Candidate species by WDFW. This species is rarely found far from water and occurs in a variety of still-water habitats, as well as in some streams and creeks. Their breeding habitat includes seasonally flooded margins of wetlands, ponds, and lakes, and even some flooded pools and still-water edges of creeks. They are most often found in association with wetland plant communities consisting primarily of non-woody plants, such as sedges, rushes, and grasses (Leonard et al. 1993). The egg masses are typically laid in shallow water with little or no shading from vegetation. They are most active in lowland habitats from February through October and hibernate in muddy bottoms near their breeding site in the winter (Licht 1974). Spotted frog tadpoles have been shown to be very sensitive to chemical fertilizers, which may have contributed to the species' decline (Marco 1997).

According to the PHS mapper, an occurrence of this species was recorded within 300 feet of the proposed Camas Solar Project site in a waterway to the northeast, and within 1 mile of the proposed Penstemon Solar Project site in a waterway to the southeast (WDFW 2017b). Egg masses from this species were observed at the Typha and Penstemon Solar Project sites during the April 3 to 12, 2017, field survey. A preconstruction clearance survey may be recommended by WDFW for developments in or near potential spotted frog habitat, but since current plans are to buffer and avoid water bodies, this is unlikely to be necessary.

4.1.7 Sharp-Tailed Snake

The sharp-tailed snake is classified as a State Candidate species by WDFW. This species prefers forest openings dominated by Garry oak (*Quercus garryana*), particularly with rock accumulations, and riparian deciduous woodlands with accumulations of decaying woody logs within ponderosa pine (*Pinus ponderosa*), oak, or shrub-steppe (Hallock 2009).

According to the PHS mapper, an occurrence of this species was recorded within the quarter-township that includes the entire area of the proposed Camas and Fumaria Solar Project sites (WDFW 2017b). However, the proposed sites do not fit the description for this species' preferred habitat. Therefore, it is unlikely that this species occurs within these two project sites.

4.1.8 Giant Palouse Earthworm

The only special-status invertebrate species known to occur in Kittitas County is the giant Palouse earthworm (*Driloleirus americanus*), a state candidate species. Known habitats for this species include deep, loamy soils characteristic of the Palouse bunchgrass prairies, and gravelley sandy loam or other rocky soils in forested areas. They have been observed in open forest, shrub-steppe, and prairie habitats and are typically associated with native vegetation (WDFW 2015).

4.2 Site-specific Observations

4.2.1 Camas Solar Project Site

A review of the PHS database showed that the Camas Solar Project site has historically provided habitat for Columbia spotted frog (*Rana luteiventris*), a State Candidate species. A Pacific treefrog was observed at this site. This site is also located within a township known to support greater sage-grouse (*Centrocercus urophasianus*), a State Threatened and Federal Candidate species. Greater sage-grouse are closely associated with large uninterrupted areas of sagebrush, native bunchgrasses, wildflowers, and wet meadows. Because the Camas site does not provide this type of habitat, greater sage-grouse are unlikely to occur in this project-scale analysis area.

During field surveys, an active red-tailed hawk nest was observed in a large willow along Little Naneum Creek (see Figures 15 and 22). Additionally, the floor of the barn in the northeast part of the site was littered with owl pellets and the rafters contained whitewash (see Figures 15 and 23). This barn would remain in place following solar project construction, based on current design plans. If nesting activity is observed at the nest and barn, then a 0.25-mile seasonal construction avoidance buffer may be requested by WDFW until the young have fledged (see Section 5.1.1 and Appendix D).

During a site visit on April 12, 2017, WDFW biologists stated that Little Naneum Creek is likely fish-bearing. Dace (*Leuciscus* spp.) were observed during the site visit in the irrigation ditch that flows north to south along the west side of the solar site, into Little Naneum Creek.

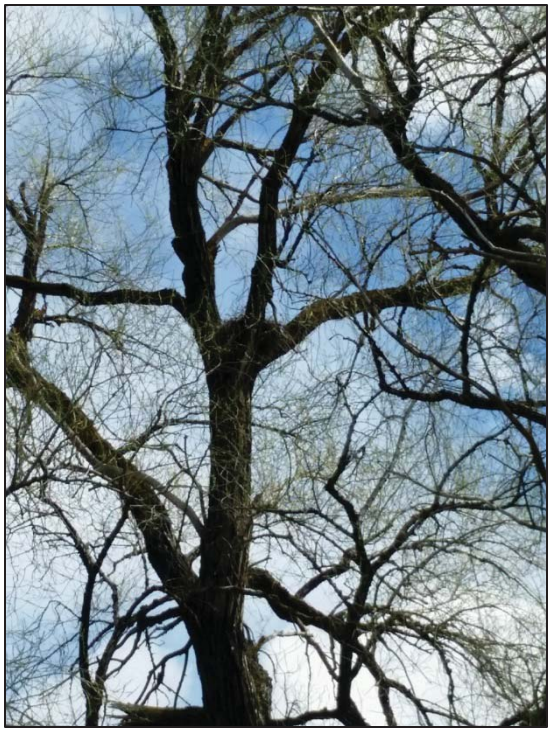


Figure 22. Red-tailed hawk nest in willows along the Little Naneum Creek riparian corridor.

Figure 23. Barn in the northwest corner of the Camas Solar Project that provides owl roosting habitat.

4.2.2 Fumaria Solar Project Site

A review of the PHS database showed that the Fumaria Solar Project site is located within a quarter-township known to support sharp-tailed snake (*Contia tenuis*) a State Candidate species. Sharp-tailed snake can occur in a wide variety of habitats, but are most commonly associated with wetter soils in coniferous or mixed woodland forests. Because this site does not provide this type of habitat, sharp-tailed snake are unlikely to occur in this project-scale analysis area.

Pacific treefrogs were observed at this site (see Figures 24 and 25). A bald eagle was seen perching in the willows near the northernmost Reecer Creek road crossing along the Fumaria generation tie line (see Figures 16 and 26). East of Fumaria's generation tie line (along North Faust Road), two active raptor nests were observed: a red-tailed hawk and great horned owl (see Figures 17 and 27). If nesting activity is observed at the nests, then a 0.25-mile seasonal construction avoidance buffer may be requested by WDFW until the young have fledged (see Section 5.1.1 and Appendix D).

During the field surveys, dace were observed in the irrigation ditches that are south of the site and are connected to Reecer Creek. Reecer Creek is known to be fish-bearing, containing rainbow trout (*O. mykiss*), a non-anadromous form of steelhead. In the past, the landowner has stocked the ponds (southeast of the site) with triploid rainbow trout.

Figure 24. Pacific treefrog observed in the fallow–native vegetation at the Fumaria Solar Project.

Figure 25. Pacific treefrog observed in the ditch along the west boundary of the Fumaria Solar Project.

Figure 26. Willows near the Fumaria generation tie line crossing of Reecer Creek, where a bald eagle was observed perching downstream (south) of the crossing.

Figure 27. Red-tailed hawk nest to the left (north) and great horned owl nest to the right (south), observed east of the Fumaria generation tie line along North Faust Road.

4.2.3 Penstemon Solar Project Site

A review of the PHS database showed that the Penstemon Solar Project site is located within a township known to support greater sage-grouse, a State Threatened and Federal Candidate species. Greater sage grouse are closely associated with large uninterrupted areas of sagebrush, native bunchgrasses, wildflowers and wet meadows. Because the site does not provide adequate greater sage-grouse habitat, they are unlikely to occur in this project-scale analysis area.

An active red-tailed hawk nest was observed southeast of the southeast site corner, in a cottonwood tree along Coleman Creek (Figure 28). If nesting activity is observed at the nest, then a 0.25-mile seasonal construction avoidance buffer may be requested by WDFW until the young have fledged (see Section 5.1.1 and Appendix D). Several egg masses, thought to be from Columbia spotted frog, were observed in an irrigation ditch that connects with Coleman Creek south of the southeast corner of the site (Figure 29). Additionally, Coleman Creek is known to be fish-bearing, containing steelhead, Chinook, and rainbow trout.

Figure 28. Red-tailed hawk nest in cottonwoods along the Coleman Creek riparian corridor.

Figure 29. Columbia spotted frog egg masses in a ditch south of the Pentsemon Solar Project.

4.2.4 Typha Solar Project Site

A review of the PHS database showed that no priority habitats or species are documented on the Typha Solar Project site. The Yakima River, located adjacent to the northeast corner of the site, is a fish bearing stream containing mountain sucker (*Catostomus platyrhyncus*), Coho (*O. kisutch*), Chinook, resident and anadromous bull trout (*Salvelinus malma*), Westslope cutthroat (*O. clarki lewisi*), and rainbow trout and summer steelhead. The portion of the Yakima River adjacent to the northeast corner is designated as a shoreline of the state based on the Washington Water Typing Criteria (WAC 222-16-030), and the Shoreline Management Act's list of streams and rivers constituting shorelines of the state for Kittitas County (WAC 173-18-230). Two egg masses, thought to be from Columbia spotted frog, were observed in TW04, a wetland located along the southern boundary of the site (see Figure 30).

A documented great blue heron (*Ardea herodias*) breeding area is 224 feet east of the site, on a landform within the Yakima River (see Figures 20 and 31). The great blue heron nesting season is February through September. WDFW may request a seasonal avoidance buffer during the first half of the season, i.e. February through May (Appendix D).

Figure 30. Columbia spotted frog egg masses in a TW01, a wetland along the southern boundary of the Typha Solar Project.

Figure 31. Great blue heron rookery along the Yakima River, located east of the Typha Solar Project.

The floor of the barn, located south of the southwest corner of the site, was littered with owl pellets and the rafters contained whitewash (see Figures 20 and 32). Current project plans include leaving this barn in-place. If nesting activity is observed at the barn, then a 0.25-mile seasonal construction avoidance buffer may be requested by WDFW until the young have fledged (see Section 5.1.1 and Appendix D).

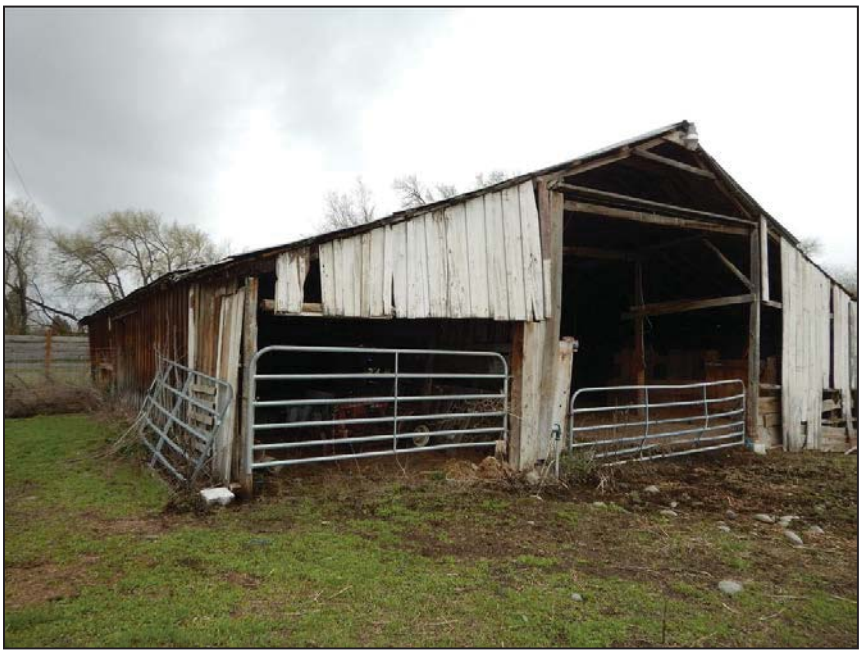


Figure 32. Barn south of the southwest corner of the Typha Solar Project that provides owl roosting habitat.

4.2.5 Urtica Solar Project Site

A review of the PHS database showed that no priority habitats or species are known to occur on the Utica Solar Project site. During an April 12 site visit, WDFW biologists stated that McCarl Creek is likely fish-bearing. In the past, the landowner has stocked the ponds with triploid rainbow trout. A Canada goose was observed nesting near the ponds.

5 RECOMMENDED ENVIRONMENTAL COMMITMENTS FOR TUUSSO'S CONSIDERATION

The proposed solar projects have the potential to negatively affect the vegetation communities and plant species in the project-scale analysis areas where ground disturbance would occur for construction of the solar sites, including a reduction in the size of the vegetation communities. Vegetation clearing or grubbing activities could also increase or introduce noxious plant populations in undisturbed habitat, contribute to soil erosion, lead to slope destabilization, or result in movement of material beyond the grading activities. Soil erosion from ground-disturbing activities may result in a negative effect on streams in the project-scale analysis areas, by increasing sedimentation into the streams.

Potential impacts to fish and wildlife may result from construction and operation of the solar projects. Ground disturbance, vegetation clearing, and noise could result in temporary impacts on wildlife species present in the project-scale analysis areas during construction. Long-term effects of the solar projects would be limited to the long-term modification of habitat in each project-scale analysis area.

The following sections describe potential best management practices (BMPs) and mitigation measures that could reduce or minimize the impacts on vegetation, fish, and wildlife.

5.1 Buffers and Seasonal Timing

5.1.1 Migratory Birds and Bald and Golden Eagles

To ensure compliance with MBTA, vegetation clearing would ideally be undertaken from August 1 through the end of February. If construction or vegetation clearing is required between March 1 and August 1, nest surveys would be required in the proposed area of disturbance. If active migratory bird nests are encountered during the surveys, land-disturbing construction activities should be avoided while the birds are allowed to fledge. An appropriate species avoidance buffer, as determined in conjunction with WDFW and local agencies, would apply to all active nests for migratory bird species.

As discussed in Section 4, the project-scale analysis areas have the potential to provide nesting habitat to raptors and bald and golden eagles. All raptor species are protected under the MBTA, and bald and golden eagles are additionally protected under the BGEPA. If active raptor nests occur within 0.25 mile of the solar project construction activities, noise and construction activities could disturb nesting and fledgling raptors, potentially causing nest abandonment. Based on WDFW guidance (Appendix D), a nest survey within 0.25-mile of construction activities would be conducted within the same year that construction is scheduled, to determine whether nests could be occupied during construction. The nesting seasons vary by species as shown in Table 5. WDFW's 0.25-mile buffer is inclusive of the distance recommended by the National Bald Eagle Management Guidelines (USFWS 2007), which specifies a 660 foot (0.125 mile) buffer of active eagle nests. If active raptor nests are observed, then TUUSSO would coordinate with WDFW to determine approaches to minimize disturbance to the nesting raptors. Buffer distances and timing restrictions would collaboratively be developed by WDFW and TUUSSO, dependent upon the sound levels produced by the construction equipment and the sensitivity of the nesting raptors.

Table 5. Nesting Seasons for Raptor Species Likely to Occur in the Analysis Areas

Species	Nesting Season
Bald eagle	January 1–August 31
Golden eagle	January 1–August 31
Red-tailed hawk	March 15–June 30
Great horned owl	February 1–May 15
Swainson's hawk	April 15–July 31

Source: Personal Communication with Scott Downes, WDFW Habitat Biologist, 2017 (see Appendix D)

5.1.2 Riparian Corridors

Rivers and streams in Kittitas County are classified according to the Washington State stream typing system, as defined in Chapter 222-16-030 WAC. The Department of Ecology and the Washington DNR recognize the WAC stream typing system. Kittitas County has established riparian habitat buffer ranges for each stream type to reflect the impact of certain intense land uses on riparian habitat functions and values. The performance standard buffers are defined in KCC 17A.070.010.

Table 6 shows the surface waters that were identified in the project-scale analysis areas, their DNR stream type, and the applicable buffers. See also each project site's critical areas report for recommended buffer and setback distances from the wetlands identified within the sites.

Table 6. Surface Waters in the Project-scale Analysis Areas and Applicable Buffers

Stream ID	Water Type	Flow Type	DNR Stream Type[a]	Kittitas County Buffers (feet)	
				Minimum	Maximum
Yakima River	River	Perennial	S	40	200
Ellensburg Power Canal (TS01)	Canal	Perennial	N/A	-	-
FS01	Ditch	Ephemeral	N/A	-	-
FS02	Ditch	Ephemeral	N/A	-	-
Reecer Creek	Stream	Perennial	F	20	100
Kittitas Reclamation District Canal (FS03)	Canal	Perennial	N/A	-	-
FS04	Stream	Intermittent	Ns	0	15
Town Canal (FS05)	Canal	Perennial	N/A	-	-
US01	Stream	Intermittent	F	20	100
Little Naneum Creek (CS01)	Stream	Perennial	F	20	100
Bull Ditch (CS02)	Ditch	Perennial	N/A	-	-
Coleman Creek	Stream	Perennial	F	20	100

[a] As defined in WAC 222-16-030: S = shoreline of the state, F = fish-bearing, Ns = non-fish-bearing. N/A = not applicable, due to ditches and canals being excluded from the WAC typing system.

To additionally protect riparian corridors and habitats, it is recommended that peak construction activities be conducted during the dry season as much as possible, to minimize erosion, sedimentation, and soil compaction. If any in-water work is required for construction of access roads, construction in fish bearing streams would need to occur during the agency-approved work windows.

5.2 Noise

Most construction activities would take place during the normal business hours of 8 a.m. to 6 p.m. and be conducted in accordance with local bylaws and noise ordinances, including but not limited to Kittitas County Code Section 9.45.010: Public Disturbance noises. Additionally, all noise generating construction activities would be conducted between the hours of 7 a.m. and 10 p.m., in accordance with WAC 173-60-050. These practices would avoid night-time noise disturbances to wildlife species.

5.3 Other Measures

Additional mitigation measures and BMPs to protect fish and wildlife in the project-scale analysis areas could include the following:

Design and Construction Techniques

- Avoid, when possible, construction in sensitive areas such as riparian zones and wetlands.
- Flag sensitive habitat areas (e.g., raptor nests, wetlands, etc.) near proposed areas of construction activity, and designate such areas as “off limits” to all construction personnel.
- During the nesting season, monitor raptor nests within 0.25-mile of the sites for nesting activity; coordinate construction timing and activities with WDFW to avoid impacts to nesting raptors.
- Minimize new road construction by improving and using existing roads and trails, instead of constructing new roads.

- Develop and implement a Fire Control plan, in coordination with local fire districts, to minimize the risk of accidental fires during construction, and respond effectively to any fire that does occur.
- Designate an environmental monitor during construction to monitor construction activities and ensure compliance with mitigation measures.
- Implement a trenching protocol during the installation of underground electrical facilities, to allow for conservation of surface soils.
- Require construction personnel to avoid driving over or otherwise disturbing areas outside of the designated construction areas.
- Properly store and manage all wastes generated during construction.
- Use certified "weed free" straw bales during construction to avoid introduction of noxious or invasive weeds.
- For poles installed by TUUSSO, when feasible:
    - equip overhead power lines with raptor perch guards to minimize risks to raptors; and
    - space overhead power line conductors to minimize potential for raptor electrocution.

Erosion and Sediment Control

- Use BMPs to minimize construction-related surface water runoff and soil erosion.
- Implement temporary erosion and sediment control measures, as appropriate, both during and after construction.
- Flag sensitive habitat areas (e.g., riparian zones, wetlands, etc.) near proposed areas of construction activity, and designate such areas as "off limits" to all construction personnel.
- Limit disturbances to the minimum necessary when working in or near waterbodies and install stakes or flagging to restrict vehicles and equipment to designated routes and areas.
- Delineate construction limits within 200 feet of waterbodies, as specified in the stormwater pollution prevention plan (SWPPP), with a sediment fence, straw wattles, or similarly approved methods to eliminate sediment discharge into waterways and wetlands, minimize the size of construction disturbance areas, and minimize removal of vegetation, to the greatest extent possible.

Post-construction Restoration and Noxious Weed Control

- Quickly revegetate habitats temporarily disturbed during construction with native species.
- Reseed all temporarily disturbed areas with an appropriate mix of native plant species as soon as possible after construction is completed, to accelerate the revegetation of these areas and to prevent the spread of noxious weeds.
- Consult with WDFW regarding the appropriate seed mixes to include in the Vegetation Management Plan for revegetation of the project sites.
- As further detailed in the Vegetation Management Plan, implement noxious weed control measures.
    - Develop a noxious weed control plan prior to construction, and implement the plan over the life of the project as mitigation. Herbicide application could be a noxious weed control method used.

6 CONCLUSIONS

6.1 Habitat Impacts

As shown in Table 1, habitat similar to the types available in the project-scale analysis areas is readily available in the landscape-scale analysis area. Long-term modification of vegetation communities would not result in a significant change to the overall habitat available to species in the analysis areas. Some species, such as small rodents, snakes, and insects, could be affected by the ground-disturbing activities due to temporary habitat alteration and could suffer mortalities from direct contact with construction equipment. More commonly, wildlife would be displaced to adjacent habitat areas. The effects from ground disturbance during construction would be considered low with respect to common wildlife species, all of which can be expected to have robust populations that would be minimally affected by the temporary and localized construction activities associated with the solar projects.

6.2 Special-status Species Impacts

No special-status plant species are known to occur within the construction areas. The proposed solar projects have the potential to affect the following special-status species:

- Bald eagle (BGEPA- and MBTA-protected; Federal Species of Concern)
- Columbia spotted frog (Washington State Candidate)

Bald eagles were observed near the Fumaria and Penstemon Solar Project sites, and are likely present throughout the project-scale analysis areas. If nests are present in the project vicinity, they have the potential to be affected by noise and visual disturbances during construction. No bald eagle nests have been identified near the solar project sites; if nests are identified near the sites, construction outside of the critical use period (January 1 – May 31) is recommended. If construction near active bald eagle nests might occur during the critical use period, local USFWS biologists would be consulted.

Columbia spotted frog is known to occur near the Typha, Camas, and Penstemon Solar Project sites, and could be affected by construction and operation in and around ponds and canals that provide breeding habitat. To avoid impacts to aquatic and semi-aquatic species, setback distances from aquatic habitats will be incorporated into site layouts, and appropriate erosion and sediment control measures would be implemented to protect wetlands and streams from sediment and other contaminants.

Recommended mitigation measures for special-status species are described in Section 5.0.

7 LITERATURE CITED

California Department of Fish and Game (CDFG). 1990. 1989 Annual Report on the Status of California's State Listed Threatened and Endangered Plants and Animals. California Department of Fish and Game, Sacramento, California.

Cornell Lab of Ornithology (Cornell). 2017. All About Birds - Greater Sage-Grouse https://www.allaboutbirds.org/guide/greater_sage-grouse/lifehistory. Accessed May 19, 2017.

Hitchcock, C. Leo and Arthur Cronquist. 1973. Flora of the Pacific Northwest, An Illustrated Manual. University of Washington Press; Fifth Printing edition (1973).

Hruby, T. 2014. Washington State Wetland Rating System for Eastern Washington – Revised. Washington State Department of Ecology Publication No. 14-06-030. Olympia, Washington: Department of Ecology. Available at: https://fortress.wa.gov/ecy/publications/ SummaryPages/1406030.html. Accessed March 10, 2017.

LandScope America. 2017. Columbia Plateau Vegetation. http://www.landscope.org/washington/natural_geography/ecoregions/columbia_plateau/vegetation/. Accessed May 19, 2017.

Leonard, W. P., H. A. Brown, L. L. C. Jones, K. R. McAllister, and R. M. Storm. 1993. *Amphibians of Washington and Oregon*. Seattle Audubon Society, Seattle, Washington.

Licht, L. E. 1974. Survival of embryos, tadpoles, and adults of the frogs *Rana aurora aurora* and *Rana pretiosa pretiosa* sympatric in southwestern British Columbia. Canadian Journal of Zoology 52:613–627.

Marco, A. 1997. Effects of nitrate and nitrite in the Oregon spotted frog and other amphibians. Conference Proceedings: The spotted frogs of Oregon. Oregon Chapter, Wildlife Society, Corvallis, Oregon.

Norling, Bradley S., Stanley H. Anderson, and Wayne A. Huber 1992 Roost sites used by sandhill crane staging along the Platte River, Nebraska. The Great Basin Naturalist 52(3):253–261.

Hallock, L. 2009. Conservation assessment for the sharp-tailed snake in Washington and Oregon. Prepared for U.S. Forest Service, Region 6 and Bureau of Land Management, Portland, Oregon. Washington Natural Heritage Program, Department of Natural Resources, Olympia, Washington.

Sage Grouse Initiative. 2017. The Habitat. https://www.sagegrouseinitiative.com/sagebrush-community/the-habitat/. Accessed May 19, 2017.

Spence, B.C., G.A. Lomnicky, R.M. Hughes, and R.P. Novitzki 1996 An Ecosystem Approach to Salmonid Conservation. TR-4501-96-6057. ManTech Environmental Research Services Corp, Corvallis, Oregon. Kraemer, C. 1994. Some observations on the life history and behavior of the native char, Dolly Varden (Salvelinus malma) and bull trout (Salvelinus confluentus) of the North Puget Sound Region. Draft.

Washington Department of Wildlife (WDFW). 2015. State Wildlife Action Plan Update. Appendix A-5. Species of Greatest Conservation Need Fact Sheets – Invertebrates. http://wdfw.wa.gov/publications/01742/14_A5_Invertebrates.pdf. Accessed May 18, 2017.

———. 2017a SalmonScape. Available at: http://apps.wdfw.wa.gov/salmonscape/. Accessed January 11, 2017.

———. 2017b Priority Habitats and Species on the Web. Available at: http://wdfw.wa.gov/mapping/phs/. Accessed January 11, 2017.

Washington State Noxious Weed Control Board. 2017. Printable Noxious Weed List. http://www.nwcb.wa.gov/printable-noxious-weed-list. Accessed May 19, 2017.

Wydoski, R. S., and R. R. Whitney. 2003. Inland Fishes of Washington. The University of Washington Press, Seattle, Washington.

University of Washington, Washington Cooperative Fish and Wildlife Research Unit. 1997. Washington Gap Project 1991 Land Cover for Washington State. Available at: ftp://ftp.dfw.wa.gov/pub/gapdata/lcv6. Accessed May 3, 2017.

U.S. Department of Agriculture. 2017. Natural Resources Conservation Service. Plants Database. http://plants.usda.gov/. Accessed May 19, 2017

United States Fish and Wildlife Service (USFWS). 2007. National Bald Eagle Management Guidelines. May 2007. Available at: https://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf. Accessed May 19, 2017.

8 LIST OF PREPARERS

Table 7. List of Preparers

Name	Title	Role
Jamie Young	Biologist	Report author
Sara Twitchell	Biologist	Report author
Evan Dulin	Biologist	Report author
Greg Poremba	Senior Energy Project Manager	QA/QC Review
Catherine Smith	GIS Specialist	GIS and mapping
Rhiannon Held	Technical Editor	Edit and format report

APPENDIX A: USFWS IPAC TRUST RESOURCES REPORT FOR FIVE TUUSSO SOLAR PROJECT SITES

IPaC resource list

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

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

Location

Kittitas County, Washington

Not for consultation

Local office

Washington Fish And Wildlife Office

(360) 753-9440
(360) 753-9405

510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263

http://www.fws.gov/wafwo/

Endangered species

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

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

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

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

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

5. Click REQUEST SPECIES LIST.

Listed species[1] are managed by the Endangered Species Program of the U.S. Fish and Wildlife Service.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.

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

Birds

NAME	STATUS
Marbled Murrelet Brachyramphus marmoratus There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/4467	Threatened
Yellow-billed Cuckoo Coccyzus americanus There is a **proposed** critical habitat for this species. Your location is outside the proposed critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

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

Mammals

NAME	STATUS
Canada Lynx Lynx canadensis There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/3652	Threatened
Gray Wolf Canis lupus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4488	Endangered
North American Wolverine Gulo gulo luscus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Not for consultation

Critical habitats

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

This location overlaps the critical habitat for the following species:

NAME	TYPE
Bull Trout Salvelinus confluentus https://ecos.fws.gov/ecp/species/8212#crithab	Final designated
Steelhead Oncorhynchus (=Salmo) mykiss https://ecos.fws.gov/ecp/species/1007#crithab	Final designated
Steelhead Oncorhynchus (=Salmo) mykiss https://ecos.fws.gov/ecp/species/1007#crithab	Final designated
Steelhead Oncorhynchus (=Salmo) mykiss https://ecos.fws.gov/ecp/species/1007#crithab	Final designated

Steelhead Oncorhynchus (=Salmo) mykiss https://ecos.fws.gov/ecp/species/1007#crithab	Final designated
Steelhead Oncorhynchus (=Salmo) mykiss https://ecos.fws.gov/ecp/species/1007#crithab	Final designated

Migratory birds

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

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service[3]. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Conservation measures for birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Year-round bird occurrence data http://www.birdscanada.org/birdmon/default/datasummaries.jsp

Not for consultation

The migratory birds species listed below are species of particular conservation concern (e.g. Birds of Conservation Concern) that may be potentially affected by activities in this location. It is not a list of every bird species you may find in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the AKN Histogram Tools and Other Bird Data Resources. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

NAME	SEASON(S)
Bald Eagle Haliaeetus leucocephalus https://ecos.fws.gov/ecp/species/1626	Year-round
Black Swift Cypseloides niger https://ecos.fws.gov/ecp/species/8878	Breeding
Brewer's Sparrow Spizella breweri https://ecos.fws.gov/ecp/species/9291	Breeding
Calliope Hummingbird Stellula calliope https://ecos.fws.gov/ecp/species/9526	Breeding, Migrating
Cassin's Finch Carpodacus cassinii https://ecos.fws.gov/ecp/species/9462	Year-round
Eared Grebe Podiceps nigricollis	Breeding
Ferruginous Hawk Buteo regalis https://ecos.fws.gov/ecp/species/6038	Breeding
Flammulated Owl Otus flammeolus https://ecos.fws.gov/ecp/species/7728	Breeding
Fox Sparrow Passerella iliaca	Breeding

Greater Sage-grouse Centrocercus urophasianus https://ecos.fws.gov/ecp/species/8159	Year-round
Lewis's Woodpecker Melanerpes lewis https://ecos.fws.gov/ecp/species/9408	Breeding
Loggerhead Shrike Lanius ludovicianus https://ecos.fws.gov/ecp/species/8833	Breeding
Long-billed Curlew Numenius americanus https://ecos.fws.gov/ecp/species/5511	Breeding
Peregrine Falcon Falco peregrinus https://ecos.fws.gov/ecp/species/8831	Breeding
Rufous Hummingbird selasphorus rufus https://ecos.fws.gov/ecp/species/8002	Breeding
Sage Thrasher Oreoscoptes montanus https://ecos.fws.gov/ecp/species/9433	Breeding
Short-eared Owl Asio flammeus https://ecos.fws.gov/ecp/species/9295	Year-round
Swainson's Hawk Buteo swainsoni https://ecos.fws.gov/ecp/species/1098	Breeding
Western Grebe aechmophorus occidentalis https://ecos.fws.gov/ecp/species/6743	Breeding
White Headed Woodpecker Picoides albolarvatus https://ecos.fws.gov/ecp/species/9411	Year-round
Williamson's Sapsucker Sphyrapicus thyroideus https://ecos.fws.gov/ecp/species/8832	Breeding
Willow Flycatcher Empidonax traillii https://ecos.fws.gov/ecp/species/3482	Breeding

Not for consultation

What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAANCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the Northeast Ocean Data Portal. The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAANCCOS models: the models were developed as part of the NOAANCCOS project: Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf. The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the Northeast Ocean Data Portal, which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?

Landbirds:

The Avian Knowledge Network (AKN) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest,survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the Migratory Bird Programs AKN Histogram Tools webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North, Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

Atlantic Seabirds:

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

Facilities

Wildlife refuges

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

THERE ARE NO REFUGES AT THIS LOCATION.

Not for consultation

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

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

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEMC
- PEMA
- PEM1/UBF
- PEM1C
- PEM1F
- PEM1/UBFx

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1A
- PFO/EM1A
- PSSC
- PFOA

FRESHWATER POND

- PUBHx
- PUBF
- PUBFx
- PUBFh

RIVERINE

R3UBH
R2UBHx
R3USC

A full description for each wetland code can be found at the National Wetlands Inventory website: https://ecos.fws.gov/ipac/wetlands/decoder

Data limitations

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

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

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

Data exclusions

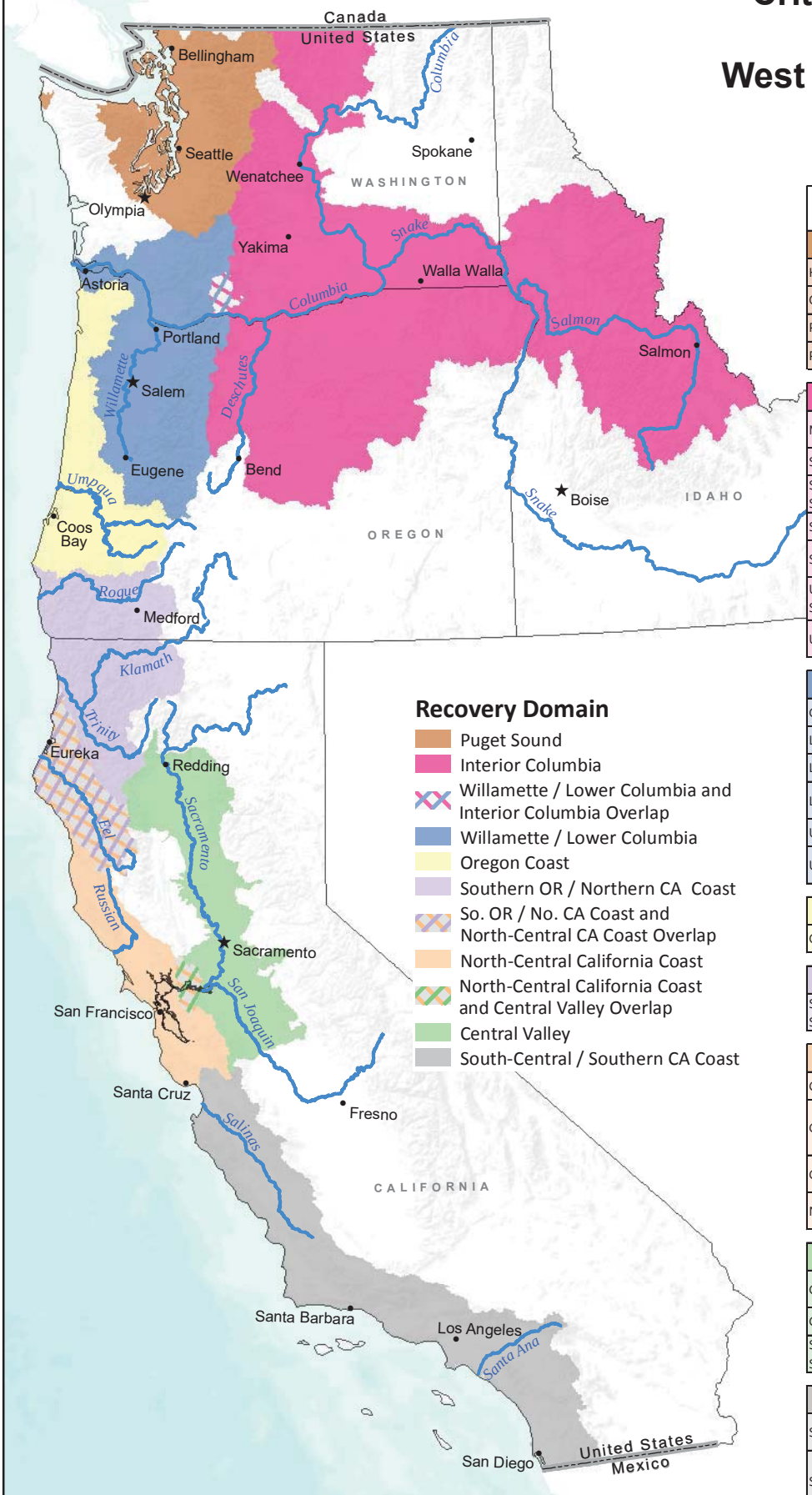
Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and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

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Not for consultation

Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead



Evolutionarily Significant Unit / Distinct Population Segment	ESA Status	Date of ESA Listing	Date of CH Designation
Puget Sound Recovery Domain			
Hood Canal Summer-run Chum Salmon	T	3/25/1999	9/2/2005
Ozette Lake Sockeye Salmon	T	3/25/1999	9/2/2005
Puget Sound Chinook Salmon	T	3/24/1999	9/2/2005
Puget Sound Steelhead	T	5/11/2007	2/24/2016
Interior Columbia Recovery Domain			
Middle Columbia River Steelhead	T	3/25/1999 1/5/2006	9/2/2005
Snake River Fall-run Chinook Salmon	T	4/22/1992	12/28/1993
Snake River Spring / Summer-run Chinook Salmon	T	4/22/1992	10/25/1999
Snake River Sockeye Salmon	E	11/20/1991	12/28/1993
Snake River Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Upper Columbia River Spring-run Chinook Salmon	E	3/24/1999	9/2/2005
Upper Columbia River Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Willamette / Lower Columbia Recovery Domain			
Columbia River Chum Salmon	T	3/25/1999	9/2/2005
Lower Columbia River Chinook Salmon	T	3/24/1999	9/2/2005
Lower Columbia River Coho Salmon	T	6/28/2005	2/24/2016
Lower Columbia River Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Upper Willamette River Chinook Salmon	T	3/24/1999	9/2/2005
Upper Willamette River Steelhead	T	3/25/1999 1/5/2006	9/2/2005
Oregon Coast Recovery Domain			
Oregon Coast Coho Salmon	T	2/11/2008	2/11/2008
Southern Oregon / Northern California Coast Recovery Domain			
Southern OR / Northern CA Coasts Coho Salmon	T	5/6/1997	5/5/1999
North-Central California Coast Recovery Domain			
California Coastal Chinook Salmon	T	9/16/1999	9/2/2005
Central California Coast Coho Salmon	E	10/31/1996 (T) 6/28/2005 (E) 4/2/2012 (RE)	5/5/1999
Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Northern California Steelhead	T	6/7/2000 1/5/2006	9/2/2005
Central Valley Recovery Domain			
California Central Valley Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Central Valley Spring-run Chinook Salmon	T	9/16/1999	9/2/2005
Sacramento River Winter-run Chinook Salmon	E	11/5/1990 (T) 1/4/1994 (E)	6/16/1993
South-Central / Southern California Coast Recovery Domain			
South-Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Southern California Steelhead	E	8/18/1997 5/1/2002 (RE) 1/5/2006	9/2/2005

ESA = Endangered Species Act, CH = Critical Habitat, RE = Range Extension
E = Endangered, T = Threatened,

Updated July 2016

Critical Habitat Rules Cited

- 2/24/2016 (81 FR 9252) Final Critical Habitat Designation for Puget Sound Steelhead and Lower Columbia River Coho Salmon
- 2/11/2008 (73 FR 7816) Final Critical Habitat Designation for Oregon Coast Coho Salmon
- 9/2/2005 (70 FR 52630) Final Critical Habitat Designation for 12 ESU's of Salmon and Steelhead in WA, OR, and ID
- 9/2/2005 (70 FR 52488) Final Critical Habitat Designation for 7 ESU's of Salmon and Steelhead in CA
- 10/25/1999 (64 FR 57399) Revised Critical Habitat Designation for Snake River Spring/Summer-run Chinook Salmon
- 5/5/1999 (64 FR 24049) Final Critical Habitat Designation for Central CA Coast and Southern OR/Northern CA Coast Coho Salmon
- 12/28/1993 (58 FR 68543) Final Critical Habitat Designation for Snake River Chinook and Sockeye Salmon
- 6/16/1993 (58 FR 33212) Final Critical Habitat Designation for Sacramento River Winter-run Chinook Salmon

ESA Listing Rules Cited

- 4/2/2012 (77 FR 19552) Final Range Extension for Endangered Central California Coast Coho Salmon
- 2/11/2008 (73 FR 7816) Final ESA Listing for Oregon Coast Coho Salmon
- 5/11/2007 (72 FR 26722) Final ESA Listing for Puget Sound Steelhead
- 1/5/2006 (71 FR 5248) Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead
- 6/28/2005 (70 FR 37160) Final ESA Listing for 16 ESU's of West Coast Salmon
- 5/1/2002 (67 FR 21586) Range Extension for Endangered Steelhead in Southern California
- 6/7/2000 (65 FR 36074) Final ESA Listing for Northern California Steelhead
- 9/16/1999 (64 FR 50394) Final ESA Listing for Two Chinook Salmon ESUs in California
- 3/25/1999 (64 FR 14508) Final ESA Listing for Hood River Canal Summer-run and Columbia River Chum Salmon
- 3/25/1999 (64 FR 14517) Final ESA Listing for Middle Columbia River and Upper Willamette River Steelhead
- 3/25/1999 (64 FR 14528) Final ESA Listing for Ozette Lake Sockeye Salmon
- 3/24/1999 (64 FR 14308) Final ESA Listing for 4 ESU's of Chinook Salmon
- 3/19/1998 (63 FR 13347) Final ESA Listing for Lower Columbia River and Central Valley Steelhead
- 8/18/1997 (62 FR 43937) Final ESA Listing for 5 ESU's of Steelhead
- 5/6/1997 (62 FR 24588) Final ESA Listing for Southern Oregon / Northern California Coast Coho Salmon
- 10/31/1996 (61 FR 56138) Final ESA Listing for Central California Coast Coho Salmon
- 1/4/1994 (59 FR 222) Final ESA Listing for Sacramento River Winter-run Chinook Salmon
- 4/22/1992 (57 FR 14653) Final ESA Listing for Snake River Spring/summer-run and Snake River Fall Chinook Salmon
- 11/20/1991 (56 FR 58619) Final ESA Listing for Snake River Sockeye Salmon
- 11/5/1990 (55 FR 46515) Final ESA Listing for Sacramento River Winter-run Chinook Salmon

APPENDIX B: WASHINGTON STATE PRIORITY HABITATS AND SPECIES LIST FOR FIVE TUUSSO SOLAR PROJECT SITES

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PRIORITY HABITATS AND SPECIES REPORT

SOURCE DATASET: PHSPlusPublic
REPORT DATE: 07/21/2016 9.17

Query ID: P160721091657

Common Name / Scientific Name / Notes	Site Name / Source Dataset / Source Record / Source Date	Priority Area / Occurrence Type / More Information (URL) / Mgmt Recommendations	Accuracy	Federal Status / State Status / PHS Listing Status	Sensitive Data / Resolution	Source Entity / Geometry Type
Columbia spotted frog Rana luteiventris	WS_OccurPoint 131595 October 16, 2013	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	GPS	N/A Candidate PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Points
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Greater Sage-grouse Centrocercus urophasianus	WS_OccurPoint 117172 April 01, 1994	Breeding Area Lek http://wdfw.wa.gov/publications/pub.php?	1/8 mile	Candidate Threatened PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Sharp-tailed Snake Contia tenuis	WS_OccurPoint 18950 January 01, 2003	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A Candidate PHS LISTED	Y QTR-TWP	WA Dept. of Fish and Wildlife Points

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necesssary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to vraition caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

WDFW Test Map

July 21, 2016

PHS Report Clip Area
PT
LN
AS MAPPED
SECTION
QTR-TWP
TOWNSHIP

1:19,842

0 0.15 0.3 0.6 mi
0 0.275 0.55 1.1 km

WDFW

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PRIORITY HABITATS AND SPECIES REPORT

SOURCE DATASET: PHSPlusPublic
REPORT DATE: 01/13/2017 1.56

Query ID: P170113135551

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Chinook Oncorhynchus tshawytscha	Dry Creek SASI 1747	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Not Warranted N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

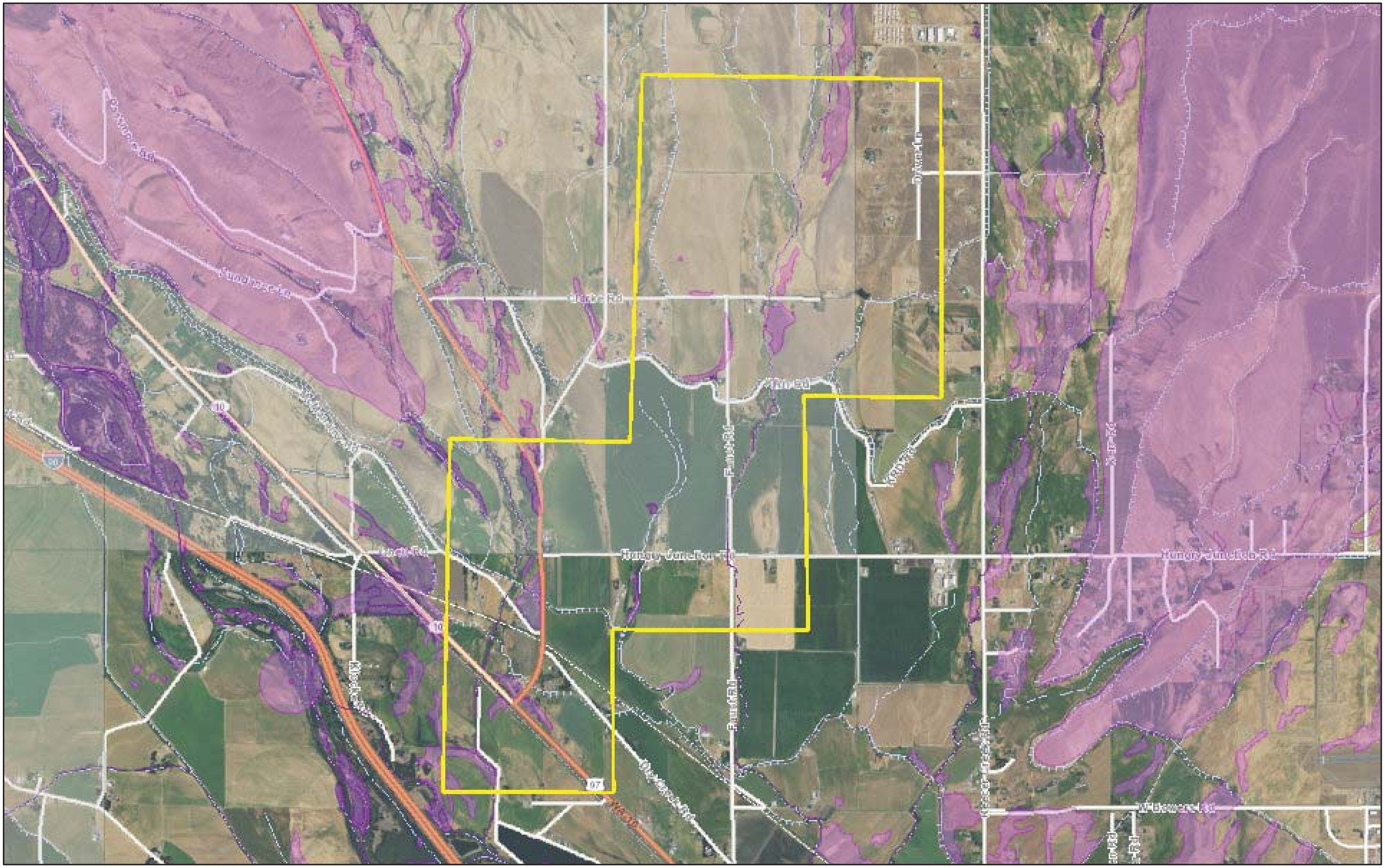
Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Rainbow Trout Oncorhynchus mykiss	Reecer Creek SWIFD 4396	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Rainbow Trout Oncorhynchus mykiss	Dry Creek SWIFD 4442	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Sharp-tailed Snake Contia tenuis	 WS_OccurPoint 110980 March 19, 2007	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	GPS	N/A Candidate PHS LISTED	Y QTR-TWP	WA Dept. of Fish and Wildlife Points
Spring Chinook Oncorhynchus tshawytscha	Dry Creek SWIFD 4439	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Steelhead Oncorhynchus mykiss	Dry Creek SASI 6894	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	Threatened N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Summer Steelhead Oncorhynchus mykiss	Dry Creek SWIFD 4443	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necesssary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to vraition caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

WDFW Test Map



January 13, 2017

PHS Report Clip Area

PT

LN

POLY

AS MAPPED

SECTION

QTR-TWP

TOWNSHIP

1:50,412

0 0.425 0.85 1.7 mi

0 0.5 1 2 km

Washington Fish and Wildlife
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PRIORITY HABITATS AND SPECIES REPORT

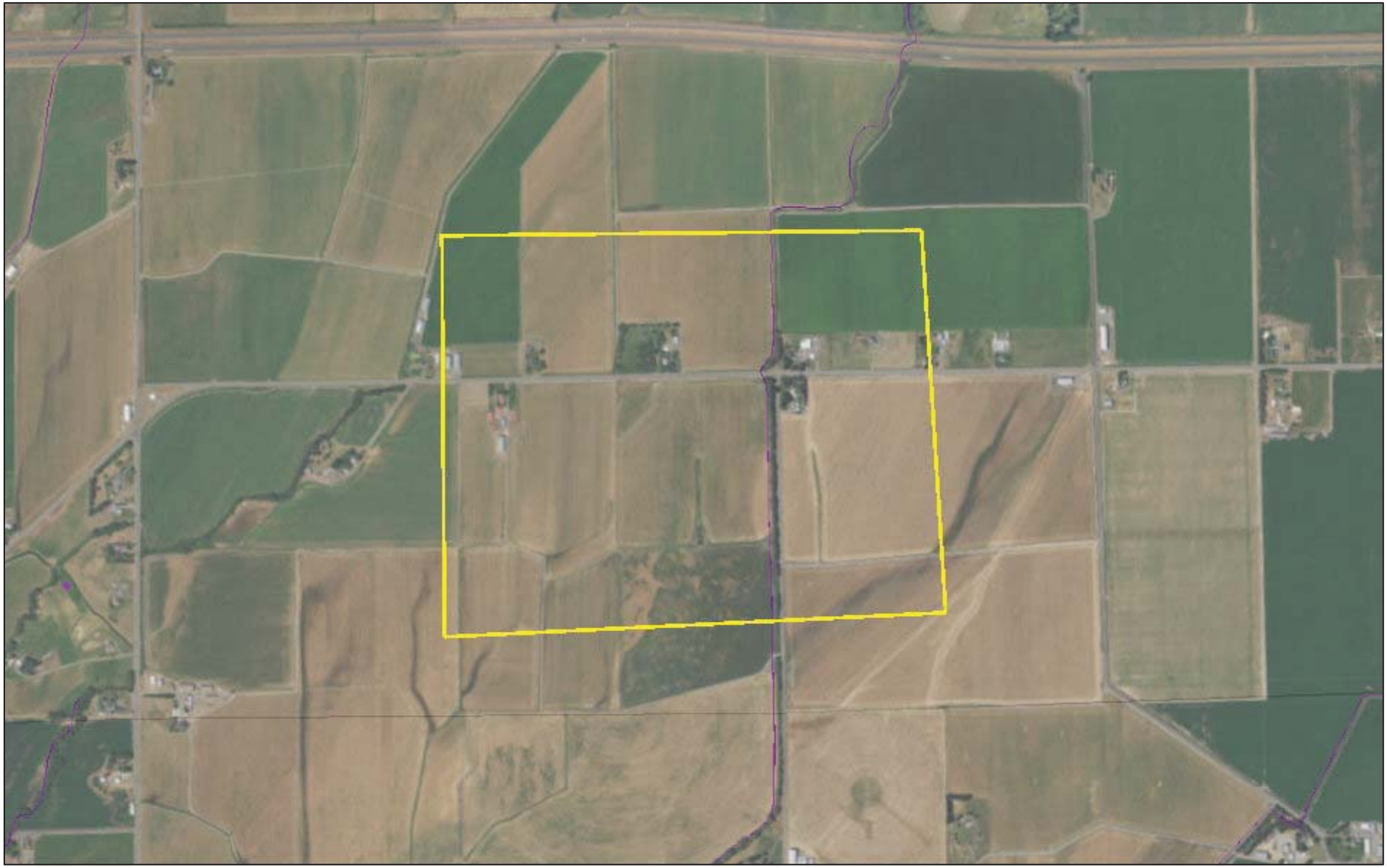
SOURCE DATASET: PHSPlusPublic
REPORT DATE: 07/26/2016 8.27

Query ID: P160726082724

Common Name / Scientific Name / Notes	Site Name / Source Dataset / Source Record / Source Date	Priority Area / Occurrence Type / More Information (URL) / Mgmt Recommendations	Accuracy	Federal Status / State Status / PHS Listing Status	Sensitive Data / Resolution	Source Entity / Geometry Type
Chinook Oncorhynchus tshawytscha	Coleman Creek SASI 1747	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Not Warranted N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Greater Sage-grouse Centrocercus urophasianus	WS_OccurPoint 117172 April 01, 1994	Breeding Area Lek http://wdfw.wa.gov/publications/pub.php?	1/8 mile	Candidate Threatened PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Rainbow Trout Oncorhynchus mykiss	Coleman Creek SWIFD 4096	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Rainbow Trout Oncorhynchus mykiss	Coleman Creek SWIFD 4097	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Spring Chinook Oncorhynchus tshawytscha	Coleman Creek SWIFD 4092	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Summer Steelhead Oncorhynchus mykiss	Coleman Creek SWIFD 4100	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necesssary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to vraition caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

WDFW Test Map



July 26, 2016

PHS Report Clip Area
PT
LN
AS MAPPED
SECTION
QTR-TWP
TOWNSHIP

1:19,842

0 0.15 0.3 0.6 mi
0 0.275 0.55 1.1 km

WDFW

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PRIORITY HABITATS AND SPECIES REPORT

SOURCE DATASET: PHSPlusPublic
REPORT DATE: 09/13/2016 3.50

Query ID: P160913155010

Common Name / Scientific Name / Notes	Site Name / Source Dataset / Source Record / Source Date	Priority Area / Occurrence Type / More Information (URL) / Mgmt Recommendations	Accuracy	Federal Status / State Status / PHS Listing Status	Sensitive Data / Resolution	Source Entity / Geometry Type
Bull Trout Salvelinus malma	Yakima River SASI 8468	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Threatened N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Chinook Oncorhynchus tshawytscha	Yakima River SASI 1747	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Not Warranted N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Coho Oncorhynchus kisutch	Yakima River SWIFD 2321	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Coho Oncorhynchus kisutch	SWIFD 4472	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Dolly Varden/ Bull Trout Salvelinus malma	Yakima River SWIFD 2324	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Dolly Varden/ Bull Trout Salvelinus malma	SWIFD 4473	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

C-80

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Great blue heron Ardea herodias	THORP WS_OccurPolygon 291 April 08, 2011	Breeding Area Colony http://wdfw.wa.gov/publications/pub.php?	Map 1:12,000 <= 33	N/A Monitored PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Osprey Pandion haliaetus	YAKIMA ISLAND WS_OccurPoint 69233 June 27, 1989	N/A Nest N/A	1/4 mile (Quarter	N/A Monitored NOT A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Points
Rainbow Trout Oncorhynchus mykiss	Yakima River SWIFD 2334	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Rainbow Trout Oncorhynchus mykiss	SWIFD 4435	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Rainbow Trout Oncorhynchus mykiss	SWIFD 4474	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Riverine	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Spring Chinook Oncorhynchus tshawytscha	Yakima River SWIFD 2318	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Spring Chinook Oncorhynchus tshawytscha	SWIFD 4471	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Steelhead Oncorhynchus mykiss	Yakima River SASI 6894	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	Threatened N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Summer Steelhead Oncorhynchus mykiss	Yakima River SWIFD 2337	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Summer Steelhead Oncorhynchus mykiss	SWIFD 4475	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Westslope Cutthroat Oncorhynchus clarki lewisi	Yakima River SWIFD 2342	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necesssary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to vraition caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

WDFW Test Map

September 13, 2016

PHS Report Clip Area
PT
LN
AS MAPPED
SECTION
QTR-TWP
TOWNSHIP

1:19,842

0 0.15 0.3 0.6 mi
0 0.275 0.55 1.1 km

WDFW

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PRIORITY HABITATS AND SPECIES REPORT

SOURCE DATASET: PHSPlusPublic
REPORT DATE: 01/11/2017 7.22

Query ID: P170111192202

Common Name / Scientific Name / Notes	Site Name / Source Dataset / Source Record / Source Date	Priority Area / Occurrence Type / More Information (URL) / Mgmt Recommendations	Accuracy	Federal Status / State Status / PHS Listing Status	Sensitive Data / Resolution	Source Entity / Geometry Type
Bull Trout Salvelinus malma	Yakima River SASI 8468	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Threatened N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Chinook Oncorhynchus tshawytscha	Yakima River SASI 1747	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Not Warranted N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Coho Oncorhynchus kisutch	Yakima River SWIFD 2321	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Dolly Varden/ Bull Trout Salvelinus malma	Yakima River SWIFD 2324	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Rainbow Trout Oncorhynchus mykiss	Yakima River SWIFD 2334	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Spring Chinook Oncorhynchus tshawytscha	Yakima River SWIFD 2318	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Steelhead Oncorhynchus mykiss	Yakima River SASI 6894	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	Threatened N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Summer Steelhead Oncorhynchus mykiss	Yakima River SWIFD 2337	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Waterfowl Concentrations	IRENE REINHART PARK PHSREGION 901735	Regular Concentration Regular concentration http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Westslope Cutthroat Oncorhynchus clarki lewisi	Yakima River SWIFD 2342	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necesssary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to vraition caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

WDFW Test Map

January 11, 2017

PHS Report Clip Area

PT

LN

POLY

AS MAPPED

SECTION

QTR-TWP

TOWNSHIP

1:19,842

0 0.15 0.3 0.6 mi

0 0.275 0.55 1.1 km

Washington Fish and Wildlife
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus

APPENDIX C: BIRD OBSERVATION LIST FOR FIVE TUUSSO SOLAR PROJECT SITES

Table C-1. Bird Observations

Common Name	Scientific Name	Solar Sites Where Observed				
		Camas	Fumaria	Penstemon	Typha	Urtica
American Crow	*Corvus brachyrhynchos*	x	x			x
American Kestrel	*Falco sparverius*					x
American Robin	*Turdus migratorius*		x	x	x	
Bald Eagle	*Haliaeetus leucocephalus*		x	x		
Belted Kingfisher	*Megaceryle alcyon*				x	x
Black-billed Magpie	*Pica hudsonia*	x	x		x	x
Black-capped Chickadee	*Poecile atricapillus*	x	x	x	x	
Brewer's Blackbird	*Euphagus cyanocephalus*	x	x			x
California Quail	*Callipepla californica*		x		x	
Canada Goose	*Branta canadensis*		x	x	x	x
Common Merganser	*Mergus merganser*				x	
Common Raven	*Corvus corax*		x	x	x	x
Downy Woodpecker	*Picoides pubescens*	x			x	
Eurasian Collared-Dove	*Streptopelia decaocto*		x		x	x
European Starling	*Sturnus vulgaris*					x
Great Blue Heron	*Ardea herodias*	x			x	x
Green-winged Teal	*Anas carolinensis*				x	
House Finch	*Haemorhous mexicanus*		x		x	
House Sparrow	*Passer domesticus*		x			
Killdeer	*Charadrius vociferus*	x	x	x	x	x
Mallard	*Anas platyrhynchos*		x		x	x
Mourning Dove	*Zenaida macroura*	x	x	x	x	
Northern Flicker	*Colaptes auratus*					x
Northern Harrier	*Circus cyaneus*		x	x	x	x
Olive-sided Flycatcher	*Contopus cooperi*		x			
Osprey	*Pandion haliaetus*	x				x
Prairie Falcon	*Falco mexicanus*		x			
Red-tailed Hawk	*Buteo jamaicensis*	x	x	x	x	
Red-winged Blackbird	*Agelaius phoeniceus*	x	x	x	x	x
Savannah Sparrow	*Passerculus sandwichensis*		x			

Common Name	Scientific Name	Solar Sites Where Observed				
		Camas	Fumaria	Penstemon	Typha	Urtica
Say's Phoebe	*Sayornis saya*				x	
Song Sparrow	*Melospiza melodia*		x			
Tree Swallow	*Tachycineta bicolor*	x		x	x	x
Turkey Vulture	*Cathartes aura*		x			
Western Meadowlark	*Sturnella neglecta*		x			
White-crowned Sparrow	*Zonotrichia leucophrys*	x				
Wilson's Snipe	*Gallinago delicata*		x		x	
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*		x			
Yellow-rumped Warbler	*Setophaga coronata*	x	x	x		

APPENDIX D: CORRESPONDENCE TO-DATE WITH WDFW REGARDING THE FIVE TUUSSO SOLAR PROJECT SITES

Jamie C. M. Young

From: Jamie C. M. Young
Sent: Wednesday, May 03, 2017 4:11 PM
To: 'Downes, Scott G (DFW)'; Renfrow, Brent D (DFW)
Cc: Evan Dulin; Joy Potter; Greg Poremba; Sara Twitchell; Catherine Smith
Subject: RE: TUUSSO solar sites visit in Kittitas County-raptor nest avoidance guidance

Thanks again, Scott ☺!

From: Downes, Scott G (DFW) [mailto:Scott.Downes@dfw.wa.gov]
Sent: Wednesday, May 03, 2017 3:59 PM
To: Jamie C. M. Young <jyoung@swca.com>; Renfrow, Brent D (DFW) <Brent.Renfrow@dfw.wa.gov>
Cc: Evan Dulin <EDulin@swca.com>; Joy Potter <pcg@fairpoint.net>; Greg Poremba <GPoremba@swca.com>; Sara Twitchell <STwitchell@swca.com>; Catherine Smith <CCSmith@swca.com>
Subject: RE: TUUSSO solar sites visit in Kittitas County-raptor nest avoidance guidance

Jamie,
Yes, there is a well-defined way for consultants to obtain the PHS data directly. Here is the link to that process:
http://wdfw.wa.gov/conservation/phs/maps_data/

It will involve sending in a request for the data and signing a confidentiality agreement with WDFW (not to display the information improperly). All of which is fairly straightforward (I used to do them frequently when I worked as a consultant). On that webpage is a link to how certain data should be displayed-i.e. certain status species cannot have their information precise locations shown on public maps or reports. There is a number if you need technical assistance on requesting the documents: (360) 902-2543.

Let me know if there are other things I can do to help.

Scott

Scott Downes
Fish & Wildlife Habitat Biologist
Washington Department of Fish and Wildlife
Region 3 Habitat Program
1701 South 24th Ave
Yakima, WA 98902-5720
Scott.Downes@dfw.wa.gov
Office-509-457-9307
Cell-509-607-3578

From: Jamie C. M. Young [mailto:jyoung@swca.com]
Sent: Wednesday, May 03, 2017 10:47 AM
To: Downes, Scott G (DFW); Renfrow, Brent D (DFW)
Cc: Evan Dulin; Joy Potter; Greg Poremba; Sara Twitchell; Catherine Smith
Subject: RE: TUUSSO solar sites visit in Kittitas County-raptor nest avoidance guidance

Thank you for this thorough response, Scott.

A separate question, do you know whether it is possible for us to obtain PHS mapper GIS data? Obtaining the GIS data directly from WDFW would be the most accurate and efficient way to include these data in our reports. If not possible to obtain the existing GIS data, then we will end up digitizing it.

Please let us know, if there's a way for us to request these data for Kittitas County, and who we should contact?

Thank you for your help! Sincerely, Jamie (208.262.9323)

From: Downes, Scott G (DFW) [mailto:Scott.Downes@dfw.wa.gov]
Sent: Monday, May 01, 2017 2:38 PM
To: Jamie C. M. Young <jyoung@swca.com>; Renfrow, Brent D (DFW) <Brent.Renfrow@dfw.wa.gov>
Cc: Evan Dulin <EDulin@swca.com>; Joy Potter <pcg@fairpoint.net>; Greg Poremba <GPoremba@swca.com>; Sara Twitchell <STwitchell@swca.com>
Subject: RE: TUUSSO solar sites visit in Kittitas County-raptor nest avoidance guidance

Jamie,
WDFW past guidance for project disturbance around raptor nests has been seasonal disturbance restrictions within 0.25 mile of non-listed raptor nests (red-tailed hawk and great horned owl are both non-listed).

Steps that WDFW would recommend:

1. As raptors can change their nesting locations slightly from year to year (though they often do have site fidelity to the same tree in multiple years), a nest survey of the trees near the project boundary (all possible nesting structures within 0.25 mile of the construction boundary) should be conducted the year of construction before construction begins to determine current occupancy.
2. Active raptor nests should get a seasonal no-construction buffer (personnel stay out of this area during the seasonal restriction) on 0.25 mile from the nest until the nest has either failed or young have fledged (left the nest). This is due to noise/activity disturbance which could cause the nest to be abandoned.
3. Exact timing varies by species. Red-tailed hawks typically start nesting by mid to late March (depending on the weather and the year) and are often completed by end of June. Great horned owls typically start in February and are completed by mid-May. A third species that often uses the valley is Swainson's hawk. They arrive later and start nesting later, typically late April for start of nesting. Swainson's often do not finish nesting until late July. Because of this varied time, it would be recommended that, if possible, a biologist monitor the nests to determine when the nest finishes and construction is cleared to enter the seasonal buffer.
4. Construction could start before birds initiate nesting for the year and then there would be one year of displacement as birds go elsewhere to nest that year, but this would not cause nest failure. In the Kittitas Valley, that may be tough to do as you would likely need to start construction to a degree to discourage birds by March for hawks and February for owls. If this was planned, we'd also want to review to ensure that we aren't causing sediment issues near the creeks by working in this late-winter/early-spring period.

Let me know if you have any further questions.

Scott

Scott Downes
Fish & Wildlife Habitat Biologist
Washington Department of Fish and Wildlife
Region 3 Habitat Program
1701 South 24th Ave
Yakima, WA 98902-5720
Scott.Downes@dfw.wa.gov
Office-509-457-9307

Cell-509-607-3578

From: Jamie C. M. Young [mailto:jyoung@swca.com]
Sent: Friday, April 28, 2017 6:13 PM
To: Downes, Scott G (DFW); Renfrow, Brent D (DFW)
Cc: Evan Dulin; Joy Potter; Greg Poremba; Sara Twitchell
Subject: RE: TUUSSO solar sites visit in Kittitas County

Hello Scott, and thank you again for this excellent summary.

Because we saw pairs of red-tailed hawks near 3 of the project sites and great horned owls on a nest near 1 site, we assume that these will be active nests next year. We are currently preparing our habitat assessment report, and will include in it recommendations to TUUSSO regarding noise and disturbance buffers and timing restrictions. At your earliest convenience, please provide any guidance or recommendations that WDFW would like to see included regarding these sensitive reproductive sites.

Thank you, Jamie (208.262.9323)

From: Jamie C. M. Young
Sent: Thursday, April 20, 2017 10:21 AM
To: 'Downes, Scott G (DFW)' <Scott.Downes@dfw.wa.gov>; Renfrow, Brent D (DFW) <Brent.Renfrow@dfw.wa.gov>
Cc: Evan Dulin <EDulin@swca.com>; Joy Potter <pcg@fairpoint.net>; Greg Poremba <GPoremba@swca.com>
Subject: RE: TUUSSO solar sites visit in Kittitas County

Thank you for providing this summary, Scott.

We appreciate you and Brent's responsiveness to joining us for the site visit on such short notice.

We look forward to continuing to work with WDFW on this project and will be in touch.

Sincerely, Jamie

From: Downes, Scott G (DFW) [mailto:Scott.Downes@dfw.wa.gov]
Sent: Thursday, April 20, 2017 10:06 AM
To: Jamie C. M. Young <jyoung@swca.com>; Renfrow, Brent D (DFW) <Brent.Renfrow@dfw.wa.gov>
Cc: Evan Dulin <EDulin@swca.com>; Joy Potter <pcg@fairpoint.net>; Greg Poremba <GPoremba@swca.com>
Subject: RE: TUUSSO solar sites visit in Kittitas County

Jamie, Evan and Joy,
Thank you for meeting with us last week. As promised, here are some general notes that we talked about. Sorry this has taken more time to get out than I had hoped. Before I get into specifics below, I want to say thank you for the early outreach to us on this project to address and investigate habitats impacts. To ensure that these measures remain successful as we go forward, it is important to keep us apprised of any changes to the plans and the path of permitting on this project. Whether it is decided that the project will go through EFSEC or Kittitas County Planning, either way we will need to sit down with that entity before permits are flown to ensure that they understand our role and habitat concerns. As promised, I won't be going that much into specifics below as we will craft a formal letter once the project is more fully understood and who is permitting it. The following is a general list of resources that we promised to pass along, as well as a list of areas that WDFW is likely to ask to be involved in.

Resources:

1. Jamie had a question on some amphibian egg identification. It seems possible they were Columbia Spotted Frog, but Central Washington University has an excellent herpetologist. He is Dr. David Darda: dardad@cwu.edu. I would recommend emailing him the pictures if you would like a more complete answer.

2. Historical imagery: As mentioned, CWU geography department has compiled a series of historical photos (1954 for Kittitas County) that help to show some historical content for the valley. These photos can be found at: http://www.cwu.edu/geography/central-washington-historical-aerial-photograph-project

3. WDFW PHS Guidelines-specifically for Great Blue Herons that we observed near the Typha site. There are some guidelines for avoidance to the colonies. In the link-some of the important areas are covered in Table 1. http://wdfw.wa.gov/publications/01371/

Table 1. Recommended buffers for nesting colonies

Year-round Buffers [a]			
Meters	**Feet**	**Setting**	**Percent built within a ¼ mile of the nest colony** [c]
300	984	Undeveloped	0 - 2%
200	656	Suburban/Rural	2 - 50%
60 [d]	197	Urban	≥ 50%
Seasonal Buffers [e]			
Meters	**Feet**	**Land Use Activity**	**Time of Year**
200	656	Unusually loud activities [f]	February to September
400	1,320	Extreme loud activities like blasting	

a Buffer guidelines based on *3, 4, 7, 15*.
b Rationale for setting-specific buffers based on observed heron tolerance variations associated with land use levels (*49, 52*)
c Cutoff percentages among undeveloped, urban, and suburban/rural as defined in *36, 49*.
d When birds in an urban area exhibit behavior indicative of a low tolerance to people, assign the 300 meter buffer regardless of setting.
e Seasonal buffer begins at the outer edge of the year-round buffer when specified land uses occur near a colony in the breeding season.
f These activities generates sounds exceeding 92 decibels when the sound reaches the outer boundary of the nesting colony (*58*).

4. Native seed sources mentioned. WDFW gets much of their native seed mixes from BFI natives seeds in Moses Lake. Excellent source of information and he can help to craft an appropriate mix that could work with the site and likely work with the landowner to meet their concerns about seed spread into adjoining farm fields. As a point of note, Jerry Benson owner of BFI used to work for WDFW long ago. http://www.bfinativeseeds.com/contact.aspx

Specific habitat issues:

1. For the most part these are on agricultural lands and locating them on these areas have started the process of minimizing habitat impacts. All/most of the sites are next to streams, so WDFW will want to continue to explore ways that we can provide habitat protection for these riparian areas, including restoring some of the riparian areas as we explored. This may be clustered as habitat mitigation, those details need to be worked out later. WDFW will want to be involved in proposed buffers and the scheme for restoration/planting of those buffers.
2. The Fumaria site appears to have the most intact habitat that currently could be supporting some wildlife value. To the extent possible it may be worth exploring if the existing vegetation could be left and the panels placed on the existing site.
3. The sites currently in irrigated agriculture will need a seed mix that can work with adjoining ag lands, the functionality of the solar sites and ideally provide some minimal value for animals, even if just some birds and pollinators. WDFW would like to be involved in review of the mixture of the site.
4. The Typa site has some erosion next to the Yakima River. A riparian restoration plan will not only help habitat, but will also likely help reduce further bank erosion that eventually may come next to the solar site.
5. Wildlife issues identified were:
    a. Great blue heron colony, we would likely ask for buffer guidance similar to our PHS reference above.

b. Raptor nests-several sites have some raptor nests next to the site. It is likely they'll need some surveys to identify what's active before the project is built and then some seasonal timing restrictions for noise and disturbance. WDFW can help to identify distances and timing for those seasonal restrictions.
c. Wetlands-several sites have wetland habitat that can and are supporting wildlife including birds, mammals and amphibians. WDFW would want to continue to review plans to ensure these habitats are being protected.
d. Perimeter fencing—several fencing options were discussed. More discussion needs to be had on this subject as plans develop. WDFW understands that security is a concern, but what wires are put on top of the fence could be the difference between minimal impacts to birds flying in the area and substantial impacts to various bird species. WDFW would like to be part of those discussions.

Those are the notes I have for now. Please keep us in the loop and if you have any questions, let me know. We'll work to be responsive on issues as they come up.

Scott

Scott Downes
Fish & Wildlife Habitat Biologist
Washington Department of Fish and Wildlife
Region 3 Habitat Program
1701 South 24th Ave
Yakima, WA 98902-5720
Scott.Downes@dfw.wa.gov
Office-509-457-9307
Cell-509-607-3578

From: Jamie C. M. Young [mailto:jyoung@swca.com]
Sent: Wednesday, April 05, 2017 9:08 PM
To: Downes, Scott G (DFW); Renfrow, Brent D (DFW)
Cc: Evan Dulin; Joy Potter; Greg Poremba
Subject: TUUSSO solar sites visit in Kittitas County

Scott and Brent,

I've attached a zipped geodatabase and PDF overview map for the TUUSSO solar sites near Ellensburg, WA, where we will conduct our site visit on Wednesday April 12th.

Evan and I look forward to meeting you that morning at the WDFW Ellensburg office. Please call my cell phone, if you have any questions in the meantime.

Thank you, Jamie

Jamie C. M. Young
Project Manager / Natural Resources Specialist

SWCA Environmental Consultants
4435 E. Canvasback Ave.
Post Falls, ID 83854
P 208.262.9323 | C 907.821.0404 | F 503.224.1851