

**Biological Scoping Study  
For Unity Farm Holdings  
Whitlow, California, Humboldt County  
APN# 217-181-012**



Prepared By:

 **begreenlegal**

## Table of Contents

1.0	Introduction	1
2.0	Project Description	1
3.0	Survey Methods	1
4.0	Existing Conditions	5
5.0	Results and Discussion	15

### FIGURES

Figure 1 - Project Area Location	2
Figure 2 - NWI Wetlands	3
Figure 3 - CARI Wetlands	4
Figure 4 - Soils	6
Figure 5 - Existing Conditions	7
Figure 6 - CNDDB	8
Figure 7 - Critical Habitat	9

### ATTACHMENTS

Attachment A - CNDDB	17
Attachment B - U.S. Fish & Wildlife Services IPAC Report	20
Attachment C - NRCS Soil Report	33
Attachment D - Site Photos	58
Attachment E - Plant and Wildlife Observed	61

## 1.0 Introduction

On behalf of Unity Farms Holdings, this Biological Scoping Study (BSS) presents analysis of potential impacts associated with the development of an outdoor cannabis cultivation project located on a 15.53-acre property in Southeastern Humboldt County, California (Figure 1). The property is situated along the Eel River, just above the confluence with Sonoma Creek. It is surrounded by a large expanse of mixed-conifer forests with some hardwoods. The parcel on which the assessment was conducted (APN#217-181-012) is located within the SW corner of Section 2, Township 3 South, Range 3 East, of the Myers flat, California 7.5-minute USGS quadrangle. The Assessment Area is relatively flat with less than 5% slopes at an elevation of 185 feet above mean sea level (msl) and within the Lower Eel River Watershed HUC (18010105).

## 2.0 Project Description

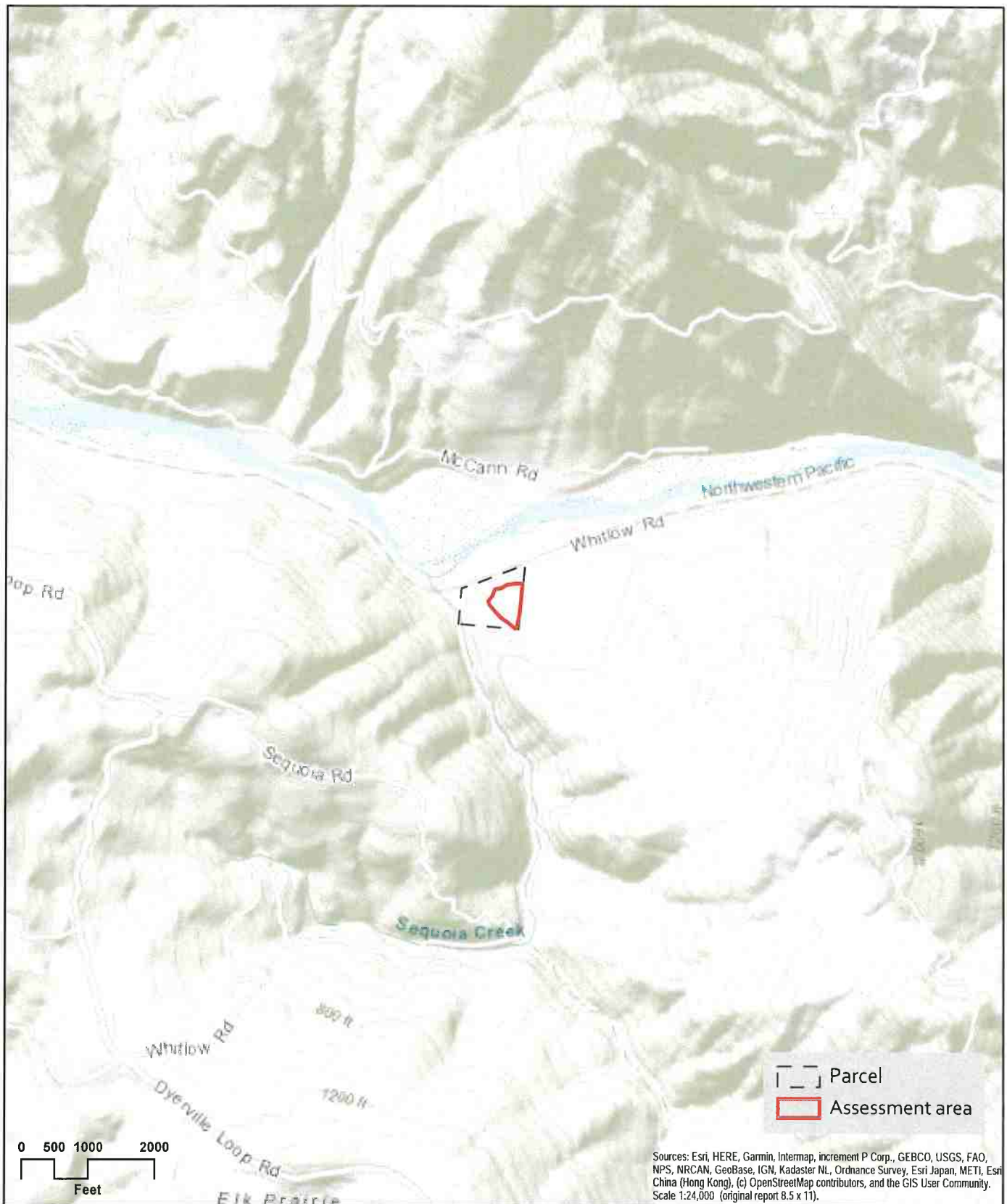
This project involves the development of a one-acre (43,560ft<sup>2</sup>) plot for outdoor cannabis cultivation, and construction of a 2,500ft<sup>2</sup> commercial agricultural building. A short access driveway to the site already exists and does not cross any streams or gullies. This project will not involve cutting trees, diverting water or the use of generators to power the operation. This project will involve clearing vegetation, tilling of the grow plot, and grading a plot for the building site. The property is dominated by invasive Himalayan blackberries, cherry plum trees, and a variety of non-native pasture grasses. The adjacent property to the east is an abandoned vineyard which is being overtaken but Himalayan blackberries.

## 3.0 Survey Methods

First BeGreenLegal queried both the U.S. Fish & Wildlife Service's National Wetland Inventory (NWI; Figure 2) and EcoAtlas' California Aquatic Resource Inventory (CARI; Figure 3) to determine whether any wetlands or "other waters of the U.S." or "waters of the State" had been historically recorded on or around the site as defined by the 1987 U.S. Army Corps of Engineers. (*USACE Wetlands Delineation Manual and its 2008 Arid West Region Regional Supplement*). We also assessed potentially federal and/or state jurisdictional wetlands and other waters in the Assessment Area in accordance with the *2008 Arid West Region Regional Supplement* and the *2014 Corps Field Guide to the Identification of the Ordinary High-Water Mark (OHWM) for Non-perennial streams in the Arid West Region of the Western United States*. The three parameters that identify and determine the boundaries of a jurisdictional wetland or "other waters of the U.S." include 1) the dominance of wetland vegetation; 2) the presence of hydric soils; and 3) hydrologic conditions that result in periods of inundation or saturation on the surface from flooding or ponding.

We then reviewed soil compositions in the Assessment Area through a query of the Natural Resources Conservation Service (NRCS) (Figure 4) to assist in evaluating the potential for occurrence of special status species that are sensitive to specific soil types, as well as determining whether hydric soils formed by wetlands may exist.

BeGreenLegal then queried the California Department of Fish & Wildlife's California Natural Diversity Database (CNDDB), U.S. Fish and Wildlife Service's iPAC Database, and California Native Plant Society's (CNPS) Inventory of Rare & Endangered Plants for special status species occurring within the vicinity, defined as a five mile radius search around the Assessment Area. This search is more precise than a nine-quadrangle search as the latter has the potential to identify species outside of a 5-mile radius.



Source: USGS 7.5-Minute Topographic Myers Flat, in Humboldt County, CA

## FIGURE 1 - PROJECT AREA LOCATION

Date: June 04, 2019

UNITY FARM HOLDINGS • HUMBOLDT COUNTY, CALIFORNIA

begreenlegal







U. S. Fish and Wildlife Service Publication date October 2018. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. <http://www.fws.gov/wetlands/>. Accessed May 9, 2019. Base Map Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, USDA Farm Service Agency. Scale 1:10,000 original report (8.5 x 11).

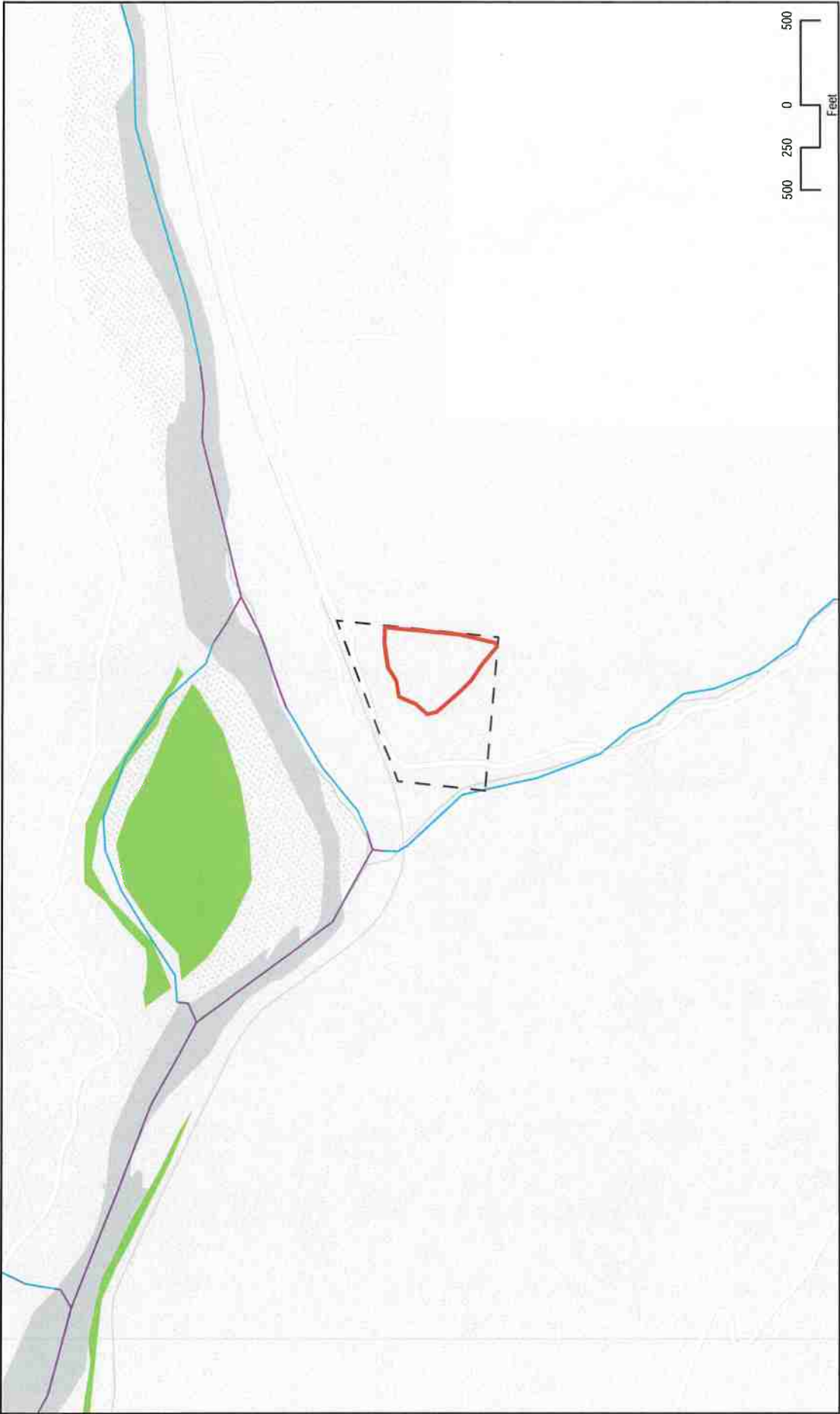
Parcel  
Assessment area  
Freshwater Emergent Wetland  
Freshwater Forested/Shrub Wetland  
Riverine

## FIGURE 2 - NATIONAL WETLANDS INVENTORY (NWI) WETLANDS

UNITY FARM HOLDINGS • HUMBOLDT COUNTY, CALIFORNIA

Date: June 04, 2019





San Francisco Estuary Institute (SFEI). "California Aquatic Resource Inventory (CARI) version 0.3." Accessed June 9, 2018. Original report (8.5 x 11) scale 1:10,000.



**FIGURE 3 - CALIFORNIA AQUATIC RESOURCES INVENTORY (CARI) WETLANDS**

Date: June 04, 2019

UNITY FARM HOLDINGS • HUMBOLDT COUNTY, CALIFORNIA

BeGreenLegal then conducted an onsite evaluation of habitat conditions within the Assessment Area on May 30, 2019. The entire perimeter of the Assessment Area was surveyed on foot and observations were recorded noting current habitat conditions, vegetation types, hydrologic elements and surrounding land uses that may contribute to the effects of the project. The purpose of the site survey was to confirm presence or absence of species identified during the database search and their habitats, to better determine whether any biological impacts may occur as a result of the project.

## 4.0 Existing Conditions

Unity Farms property is situated along the Lower Eel river within the transition zone between the Douglas fir and redwood forest habitat types. These forests are diverse with a variety of tree species including Douglas fir (*Pseudotsuga menziesii*), coast redwood (*Sequoia sempervirens*), grand fir (*Abies grandis*), pacific madrone (*Arbutus menziesii*), tan oak (*Notholithocarpus densiflorus*), big leaf maple (*Acer macrophyllum*) and red alder (*Alnus rubra*). Most of the property is cleared of trees except for along the southern and western edge of the property. The neighboring property to the east is an abandoned vineyard which is also being overgrown with Himalayan blackberries (Figure 5).

The Assessment Area is centrally situated within the property and the property has been laid fallow for several years. Dominant vegetation within the Assessment Area includes clumps of Himalayan blackberries (*Rubus armeniacus*) with scattered cherry plum trees (*Prunus cerasifera*), and a mixture of non-native pasture grasses including several *Bromus* species, velvet grass (*Holcus lanatus*), tall fescue (*Festuca arundinacea*), wild oats (*Avena fatua*) and rough dogs tails (*Cynosurus echinatus*). The Assessment Area does not contain any water courses, wetlands, or springs that could provide habitat for aquatic species or limit the project. A photoplate of Assessment Area is provided in (Attachment D). A complete list of plants and animals observed during the onsite field visit is provided in (Attachment E).

### Soil Types

According to NRCS, the Assessment Area contains two primary soils types; shively flat (85%) and parkland-garberville (15%) (Figure 4.) These are very deep, poorly to moderately drained soils formed in alluvium derived from mixed sedimentary sources including deposited riverine sediments along flood plains and adjacent steps. They are non-hydric but have high water holding capacity (10-12 inches). Soil texture varies from silt loam to gravelly clay loam. These soils are considered prime agricultural soils and are well suited for pasture and hay with small areas used for orchards, vineyards, and non-irrigated truck crops.


### Special Status Species

A list of special status species resulting from a query of the CNDDB, iPAC, and CNPS database is given in (Attachment A and B). A map of these occurrences within a 5-mile radius of the Assessment Area is shown in (Figure 6). While there may be a number of plant and animal species occurring within a 5-mile radius of the Assessment Area, we can better refine the list of those species with any real potential of occurring by filtering for relevant onsite habitats, locations, and elevations. All special-status species with potential to occur within the Assessment Area are listed in (Table 1).







 Assessment area

 143, Shivelyflat, 0 to 2 percent slopes

 151, Parkland-Garberville complex, 2 to 9 percent slopes

 179, Eelriver and Cottoncove soils, 0 to 2 percent slopes

 514, Redwoodhouse-Yagercreek-Mailridge complex, 50 to 75 percent slopes

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, USDA Farm Service Agency, USDA NRCS Soil Survey accessed 5/18/19, <https://datagateway.nrcs.usda.gov/GDGOrder.aspx>. Original report scale 1:5,000, 8.5x11.

## FIGURE 4 - SOILS MAP

UNITY FARM HOLDINGS • HUMBOLDT COUNTY, CALIFORNIA

Date: June 04, 2019





Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, USDA Farm Service Agency. Original report scale: 1:2,200, original map 8.5x11.

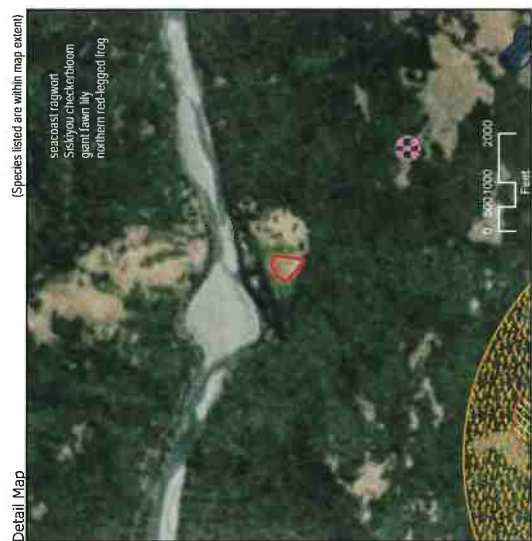
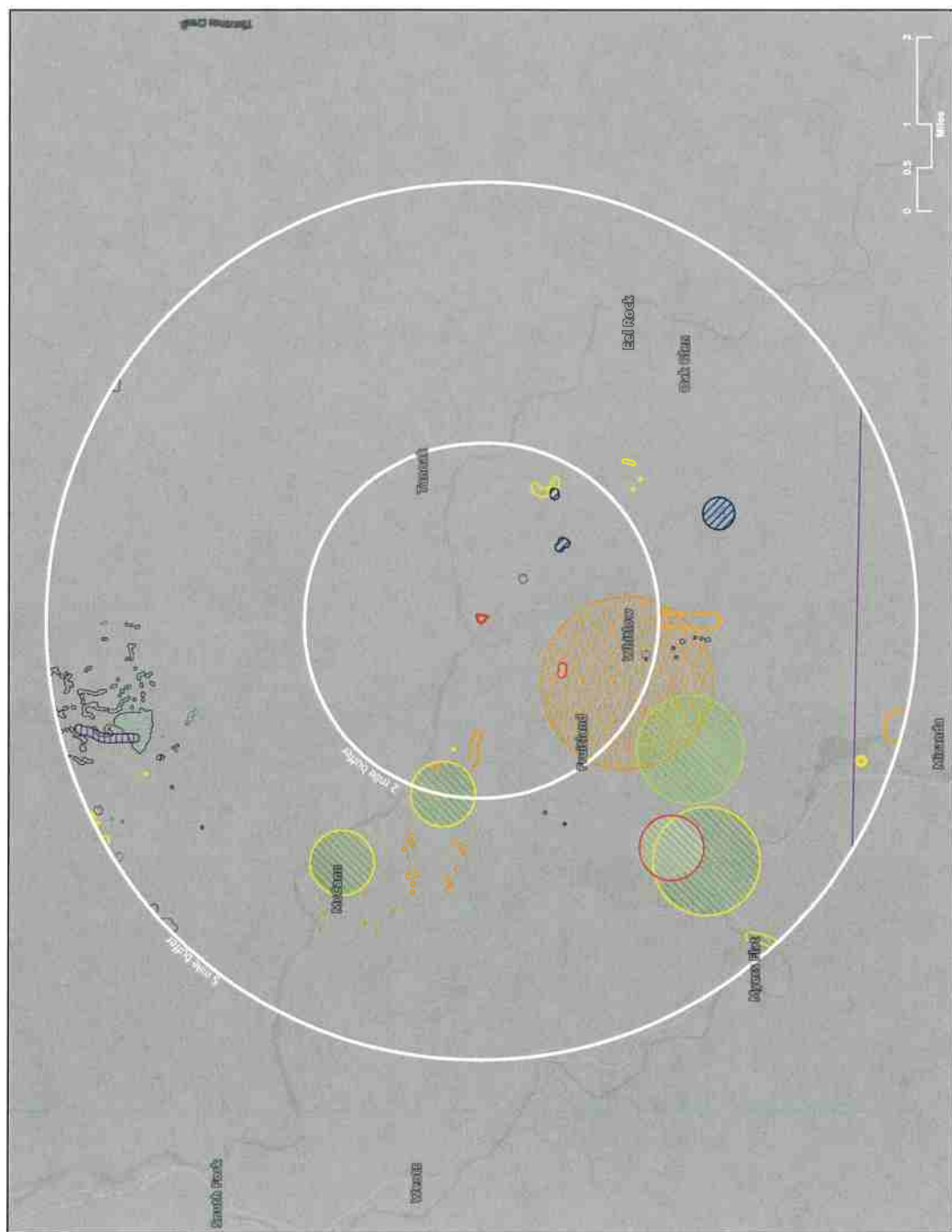
## FIGURE 5 - EXISTING CONDITIONS

UNITY FARM HOLDINGS • HUMBOLDT COUNTY, CALIFORNIA

Date: June 08, 2019

be<sup>green</sup>legal





	Assessment area
	American peregrine falcon
	Howell's montia
	Humboldt County milk-vetch
	Pacific gilia
	Siskiyou checkerbloom
	coast fawn lily
	fisher - West Coast DPS
	foothill yellow-legged frog
	giant fawn lily
	little willow flycatcher
	northern red-legged frog
	seacoast ragwort
	southern torrent salamander
	western pond turtle
	white-flowered rein orchid

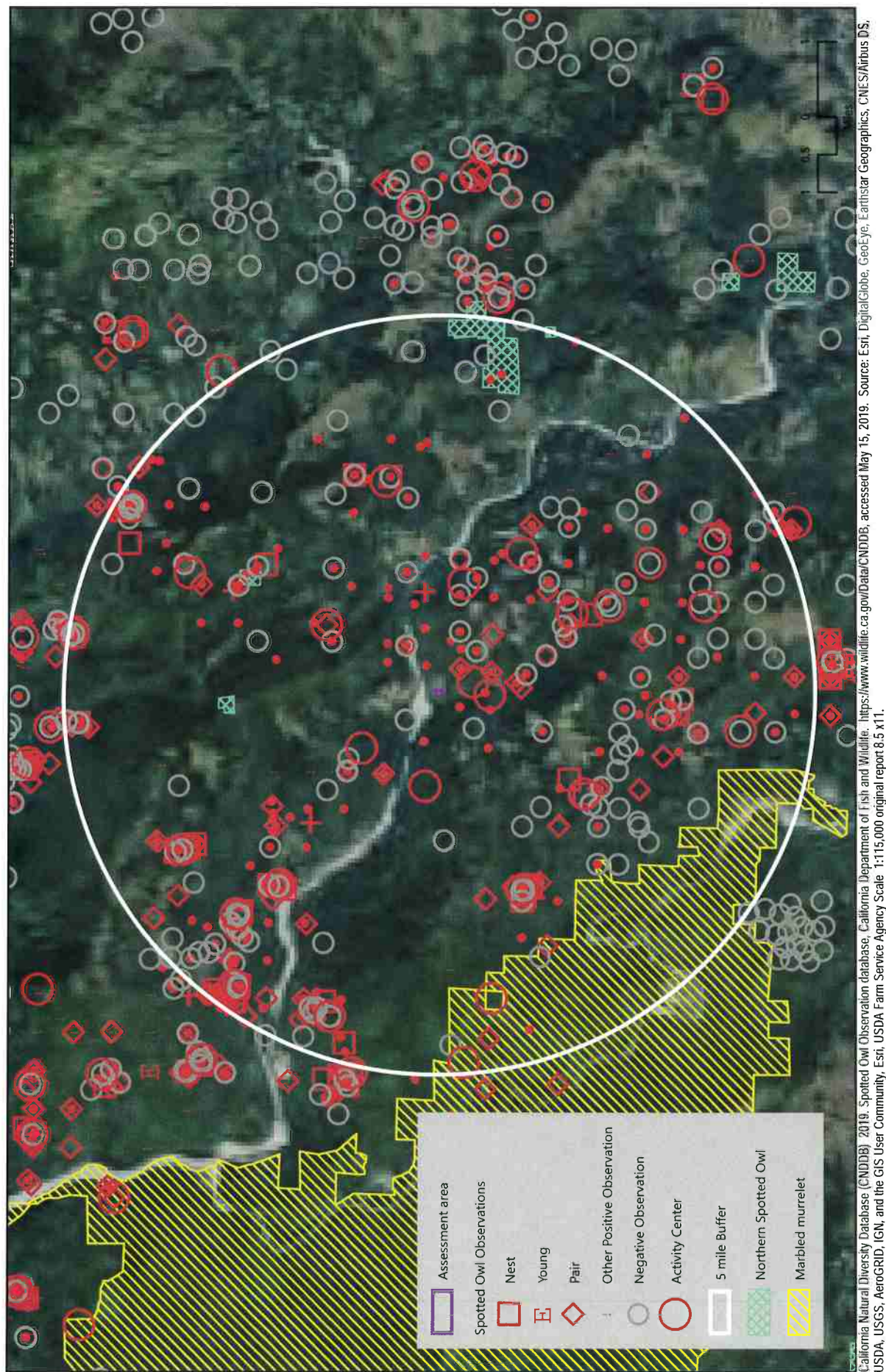
California Natural Diversity Database (CNDDB). 2019. California Department of Fish and Wildlife. <https://www.wildlife.ca.gov/Data/CNDDB>, accessed May 15, 2019. Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Esri, USDA Farm Service Agency Scale: 1:29,802 original repro 11x17.

FIGURE 6 - CALIFORNIA NATIONAL DIVERSITY DATABASE (CNDDB) RECORDED SPECIES OBSERVATIONS WITHIN FIVE MILES OF THE PROJECT AREA

UNITY FARM HOLDINGS • HUMBOLDT COUNTY, CALIFORNIA







begreenlegal

Date: June 07, 2019

## FIGURE 7- CRITICAL HABITAT

UNITY FARM HOLDINGS • HUMBOLDT COUNTY, CALIFORNIA



### Designated Critical Habitat

The Federal Endangered Species Act (FESA) requires the federal government to designate critical habitat for any listed species. Critical habitat is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation. There is critical habitat for the northern spotted owl and the marbled murrelet within five miles of the Assessment Area as shown in (Figure 7). Critical habitat for the marbled murrelet is located roughly 3.8 miles to the southwest of the Assessment Area. There are three designated critical habitats for the northern spotted owl to the north, northeast, and west of the Assessment Area with the nearest habitat approximately 3.5 miles north.

Nevertheless, there are no forests or mature old growth forests on the Unity farms property and therefore, there is no suitable habitat for either the Spotted owl or Marbled murrelet that could be affected by this project.

**Table 1: Special Status Species with potential to occur within the Assessment Area**

Species	Federal	State	CNPS	Habitat	Potential for Occurrence in Study Area	Rationale for Assessing Potential for Occurrence
<b>Plants</b>						
White flowered rein orchid <i>Piperia candida</i>	No	No	1B Rare	Broad leafed upland and north coast coniferous forests, forest duff, mossy banks, rock outcrops, and muskeg on serpentinite/ultramafic soils.	None	The Assessment Area does not contain suitable habitat such as north coast coniferous forest, mossy banks, or serpentinite/ultramafic soil conditions to support this species. Furthermore, this species was not found during May 30, 2019 site survey. According to CNDDDB, there are five documented occurrences within five miles of the Assessment Area with the nearest occurrence 1.9 miles south.
Humboldt County milk-vetch <i>Astragalus agnicidus</i>	No	CE	1B Rare	Broad-leafed upland forest, north coast coniferous forest. Disturbed openings in partially timbered forest lands; also along ridgelines; south aspects. 377-2197ft elevation	None	The Assessment Area does not contain suitable north coast coniferous forest habitat conditions to support this species. Additionally, the Assessment Area lies outside the elevation range for this species. Furthermore, this species was not found during May 30, 2019 site survey. According to CNDDDB, there is a single recorded species 3.9 miles north of the Assessment Area

Species	Federal	State	CNPS	Habitat	Potential for Occurrence in Study Area	Rationale for Assessing Potential for Occurrence
<b>Plants</b>						
Seacoast ragwort <i>Packera bolanderi</i> var. <i>bolanderi</i>	No	No	2B Rare	Coastal scrub, north coast coniferous forest. Usually moist rocky slopes in open areas	None	The Assessment Area does not contain suitable coastal scrub and coast coniferous forest habitat conditions to support this species. Furthermore, this species was not found during May 30, 2019 site survey. According to CNDDDB, there are 8 documented occurrences within five miles of the Assessment Area with the nearest occurrence 0.8 miles south.
Howell's montia <i>Montia howellii</i>	No	No	1B Rare	Meadows and seeps, north coast coniferous forest, vernal pools, sometimes wet roadsides in compacted soil	None	The Assessment Area does not contain suitable meadow and seep habitat conditions to support this species. Furthermore, this species was not found during May 30, 2019 site survey. According to CNDDDB, there are five documented occurrences within five miles of the Assessment Area with the nearest occurrence 1.5 miles east.
Pacific gilia <i>Gilia capitata pacifica</i>	No	No	2B Rare	Coastal bluff scrub, chaparral, coastal prairie, valley and foothill grassland adjacent to mixed oak woodland	None	The Assessment Area does not contain suitable coastal bluff scrub or coastal prairie habitat conditions to support this species. Furthermore, this species was not found during May 30, 2019 site survey. According to CNDDDB, there is a single occurrence of this species located 3.2 miles west of the Assessment Area.
Giant fawn lily <i>Erythronium oregonum</i>	None	None	2B Rare	Cismontane woodland, meadows and seeps. Sunny openings. Sometimes on serpentine; rocky sites. 984-4707ft elevation.	None	The Assessment Area does not contain suitable meadow and seeps habitat conditions to support this species. Furthermore, this species was not found during May 30, 2019 site survey. According to CNDDDB, there are three documented occurrences within five miles of the Assessment Area with the nearest occurrence 1.1 miles southwest.

Species	Federal	State	CNPS	Habitat	Potential for Occurrence in Study Area	Rationale for Assessing Potential for Occurrence
<b>Plants</b>						
Siskiyou checkerbloom <i>Sidalcea malviflora ssp. patula</i>	None	None	1B Rare	Coastal bluff scrub, coastal prairie, roadsides within north coast coniferous forests.	None	The Assessment Area does not contain suitable coastal bluff scrub or coastal prairie habitat conditions to support this species. Furthermore, this species was not found during May 30, 2019 site survey. According to CNDDDB, there are 3 documented occurrences within five miles of the Assessment Area with the nearest occurrence 0.6 miles southeast.
<b>Birds</b>						
American peregrine falcon <i>Falco peregrinus</i>	DL	FP	NA	Peregrine Falcons can be found any open habitat, including along barrier islands, mudflats, coastlines, lake edges, and mountain chains. Peregrine Falcons nest on cliffs from about 25–1,300 feet high. Other sites include electricity transmission towers, quarries, silos, skyscrapers,	None	There are no cliffs or large rock outcrops that could support peregrine falcon nesting within the Assessment Area or on the property. No peregrine falcons were seen during the May 30, 2019 site survey. According to CNDDDB, there are two documented occurrences within five miles of the Assessment Area with the nearest occurrence 4.3 miles south.
Northern spotted owl <i>Stryx Occidentalis caurina</i>	FT	CT	NA	Northern spotted owls live in forests characterized by dense canopy closure of mature and old-growth trees, abundant logs, standing snags, and live trees with broken tops. Spotted owls prefer older forest stands with variety: multi-layered canopies	None	There are no late successional or old growth forests within the Assessment Area or within the property capable of supporting this species. No northern spotted owls were observed during the May 30, 2019 site survey. As you can see from Figure 7, there are a number of observance of this species surrounding the Assessment Area, however not within the Assessment Area.



Species	Federal	State	CNPS	Habitat	Potential for Occurrence in Study Area	Rationale for Assessing Potential for Occurrence
<b>Birds</b>						
Marbled murrelet <i>Brachyramphus marmoratus</i>	FT	CE	NA	The Marbled murrelet spends the majority of its time on the ocean, roosting and feeding, but flies inland up to (50 miles) to nest in dense shady old growth forests generally characterized by large trees with large branches or deformities for use as nest platforms.	None	There are no late successional or old growth forests within the Assessment Area or within the property capable of supporting this species. No marbled murrelets were observed during May 30, 2019 site survey. According to USFWS there is critical habitat for this species within five miles of the Assessment Area as shown in Figure 7.
Western snowy plover <i>Charadrius nivosus nivosus</i>	FT	None	NA	Western snowy plover breeds primarily on coastal beaches above the high tide line on sand spits, and sparsely vegetated dunes, river mouths, and salt pans within lagoons and estuaries	None	The property is not located along the beach or shoreline; therefore the Assessment Area does not contain suitable habitat to support this species. No western snowy plovers were observed during the May 30, 2019 site survey. According to CNDDB, there are no documented occurrences of this species within five miles of the Assessment Area.
Yellow-billed cuckoo <i>Coccyzus americanus</i>	FT	CT	NA	Western yellow-billed cuckoos require large blocks of riparian habitat for nesting, including stands of willows and cottonwoods.	None	There are no contiguous stands of willows or riparian habitat within Assessment Area or on the property. This species was not observed during the May 30, 2019 site survey. Additionally, there are no CNDDB documented occurrences within five miles of the Assessment Area.
Little willow flycatcher <i>Empidonax traillii brewsteri</i>	None	CE	NA	Mountain meadows and riparian habitats in the Sierra Nevada and Cascades. Nests near the edges of vegetation clumps and near streams.	None	The Assessment Area does not contain suitable mountain meadows and riparian habitat near streams. This species was not observed during the May 30, 2019 site survey. According to CNDDB, there is a single documented occurrence 4.6 miles south.

Species	Federal	State	CNPS	Habitat	Potential for Occurrence in Study Area	Rationale for Assessing Potential for Occurrence
<b>Amphibians and Reptiles</b>						
Foothill Yellow Legged Frog <i>Rana boylei</i>	None	CT	NA	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying.	None	There are no flowing streams within the Assessment Area or on the property that could support this species. and No frogs were observed during the May 30, 2019 site survey. According to CNDDDB, there are four documented occurrences within five miles of the Assessment Area with the nearest occurrence 1.7 miles west.
Northern red-legged frog <i>Rana aurora</i>	None	CSC	NA	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation: includes wetlands, marshes, natural and artificial ponds, diversion canals.	None	There is no suitable riparian habitat located within the Assessment Area, or on the property. No frogs were observed during the May 30, 2019 site survey. Accordingly to CNDDDB there are two recorded occurrences within the Assessment Area with the nearest occurrence one mile south-west.
Southern torrent salamander <i>Rhyacotriton variegatus</i>	None	No	NA	Coastal redwood, Douglas-fir, mixed conifer, riparian, and montane hardwood-conifer habitats. Old growth forest. Cold, well-shaded, permanent streams and seepages, or within splash zone or on moss-covered rocks within trickling water.	None	There is no suitable old growth forest or permanent stream habitat for this species located within the Assessment Area, or on the property. No salamanders were observed during the May 30, 2019 site survey. According to CNDDDB, there is a single documented occurrence 4.1 miles north of the Assessment Area.
Western pond turtle <i>Rhyacotriton variegatus</i>	None	CSC	NA	Found in permanent and intermittent waters of rivers, creeks, small lakes and ponds, marshes, irrigation ditches and reservoirs. Nests are typically located on sandy banks near water, forest habitats or in fields within 100 feet of water.	None	There are no ponds or streams within the Assessment Area or on the property that could support this species. No turtles were observed during the May 30, 2019 survey. According to CNDDDB, there is a single documented occurrence of this species located 2.1 south of the Assessment Area.

Species	Federal	State	CNPS	Habitat	Potential for Occurrence in Study Area	Rationale for Assessing Potential for Occurrence
<b>Mammals</b>						
West Coast Fisher <i>Pekania pennanti</i>	None	CT	NA	Contiguous stands of mid to late seral coniferous forests, Old growth and riparian forests containing trees with cavities & snags; or logs and rocky areas for cover and denning. Large areas of mature, dense forest, having dense canopy cover (>60%),	None	There is no suitable mid to late seral coniferous forest habitat for Fisher within the Assessment area or on the property. Additionally, no Fisher were observed during the May 30, 2019 site survey. Additionally, there are no documented CNDDDB recorded occurrence within the five miles of the Assessment Area.

Special Status Species Codes:

Federal: FE = Federal Endangered

FT = Federal Threatened

DL = Delisted

State: CSC = California Species of Concern

CE = California Endangered

CFP = California Fully Protected

CT = California Threatened

CCT = CandidCNPS:

1B = Rare or Threatened in CA and elsewhere 2B = Rare, Threatened, or Endangered in CA, but more common elsewhere

Potential for Occurrence Codes:

None: No suitable habitat for the special status species within the Study Area

Very Low: Either the special status species is known to occur within five miles but no suitable habitat exists in the Study Area, or the Study Area provides suitable habitat but the species is not known to occur within a five-mile radius.

Low: Marginally suitable habitat exists in the Study Area and the special status species occurs within 5 miles, but surrounding urban land use conditions and regularity of human activity make it unlikely that the species occurs in the Study Area.

Moderate: The special status species is known to occur within a five-mile radius and the Study Area contains suitable habitat, however surrounding urban land use conditions and onsite disturbance reduce the likelihood of occurrence.

High: The Study area provides suitable habitat and there is either documentation of species occurrence within a five-mile radius or evidence gathered by a professional surveyor during an onsite field assessment.

Present: Species known to occur within the Study Area



## 5.0 Results and Conclusion

The potential cultivation area, staging area, and footprint for a new agricultural building represent the Assessment Area on the Unity Farms property. This is the area of potential impact to environmental resources. However, the Assessment Area does not contain any critical resources that would be impacted by this proposed project. There are no water resources, critical habitats, old growth forests, or special status plants or wildlife inhabiting the property that could be affected by the development of a cultivation operation within the Assessment Area. The property and the Assessment Area are dominated almost exclusively by non-native vegetation including Himalaya black berries and pasture grasses as indicted in (Appendix E) Assessment area plant list.

Through the pre-inspection database search out to a five-mile radius from the Assessment Area, 18 species were identified as having the potential to occur. However, after comparing the habitat requirements for these species, none of the required habitats occur within the Assessment Area or on the property. Furthermore, after an extensive on-site survey of the Assessment Area on May 30<sup>th</sup>, 2019, this determination was substantiated, and no observations of special status wildlife or plant species were discovered or observed.

Therefore, BeGreenLegal has determined and is resolved that the Unity Farms cultivation project will have no significant impacts on environmental resources including federal or state listed special status species and their habitats.



**Selected Elements by Common Name**  
**California Department of Fish and Wildlife**  
**California Natural Diversity Database**



**Query Criteria:** Species<span style='color:Red'> IS </span>(Erythronium oregonum<span style='color:Red'> OR </span>Montia howellii<span style='color:Red'> OR </span>Astragalus agnicidus<span style='color:Red'> OR </span>Gilia capitata ssp. pacifica<span style='color:Red'> OR </span>Erythronium revolutum<span style='color:Red'> OR </span>Sidalcea malviflora ssp. patula<span style='color:Red'> OR </span>Packera bolanderi var. bolanderi<span style='color:Red'> OR </span>Piperia candida<span style='color:Red'> OR </span>Falco peregrinus anatum<span style='color:Red'> OR </span>Pekania pennanti<span style='color:Red'> OR </span>Strix occidentalis caurina<span style='color:Red'> OR </span>Rana boylei<span style='color:Red'> OR </span>Coccyzus americanus occidentalis<span style='color:Red'> OR </span>Charadrius alexandrinus nivosus<span style='color:Red'> OR </span>Rana aurora<span style='color:Red'> OR </span>Empidonax traillii brewsteri<span style='color:Red'> OR </span>Emys marmorata<span style='color:Red'> OR </span>Rhyacotriton variegatus)



Selected Elements by Common Name  
California Department of Fish and Wildlife  
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b>American peregrine falcon</b> <i>Falco peregrinus anatum</i>	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
<b>coast fawn lily</b> <i>Erythronium revolutum</i>	PMLIL0U0F0	None	None	G4G5	S3	2B.2
<b>fisher - West Coast DPS</b> <i>Pekania pennanti</i>	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
<b>foothill yellow-legged frog</b> <i>Rana boylei</i>	AAABH01050	None	Candidate Threatened	G3	S3	SSC
<b>giant fawn lily</b> <i>Erythronium oregonum</i>	PMLIL0U0C0	None	None	G4G5	S2	2B.2
<b>Howell's montia</b> <i>Montia howellii</i>	PDPOR05070	None	None	G3G4	S2	2B.2
<b>Humboldt County milk-vetch</b> <i>Astragalus agnicidus</i>	PDFAB0F080	None	Endangered	G2	S2	1B.1
<b>little willow flycatcher</b> <i>Empidonax traillii brewsteri</i>	ABPAE33041	None	Endangered	G5T3T4	S1S2	
<b>northern red-legged frog</b> <i>Rana aurora</i>	AAABH01021	None	None	G4	S3	SSC
<b>northern spotted owl</b> <i>Strix occidentalis caurina</i>	ABNSB12011	Threatened	Threatened	G3T3	S2S3	
<b>Pacific gilia</b> <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6	None	None	G5T3	S2	1B.2
<b>seacoast ragwort</b> <i>Packera bolanderi var. bolanderi</i>	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
<b>Siskiyou checkerbloom</b> <i>Sidalcea malviflora ssp. patula</i>	PDMAL110F9	None	None	G5T2	S2	1B.2
<b>southern torrent salamander</b> <i>Rhyacotriton variegatus</i>	AAAAJ01020	None	None	G3G4	S2S3	SSC
<b>western pond turtle</b> <i>Emys marmorata</i>	ARAAD02030	None	None	G3G4	S3	SSC
<b>western snowy plover</b> <i>Charadrius alexandrinus nivosus</i>	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
<b>western yellow-billed cuckoo</b> <i>Coccyzus americanus occidentalis</i>	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
<b>white-flowered rein orchid</b> <i>Piperia candida</i>	PMORC1X050	None	None	G3	S3	1B.2

Record Count: 18



**Attachment B -  
U.S. Fish & Wildlife  
Service's IPAC Report**

## IPaC Information for Planning and Consultation U.S. Fish & Wildlife Service

# 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

Humboldt County, California



## Local office

Arcata Fish And Wildlife Office

☎ (707) 822-7201

📠 (707) 822-8411

1655 Heindon Road

Arcata, CA 95521-4573

NOT FOR CONSULTATION

# 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<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

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.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

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



## Mammals

NAME

STATUS

Fisher *Pekania pennanti*

Proposed Threatened

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/3651>

## Birds

NAME

STATUS

Marbled Murrelet *Brachyramphus marmoratus*

Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.<https://ecos.fws.gov/ecp/species/4467>Northern Spotted Owl *Strix occidentalis caurina*

Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.<https://ecos.fws.gov/ecp/species/1123>Western Snowy Plover *Charadrius nivosus nivosus*

Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.<https://ecos.fws.gov/ecp/species/8035>Yellow-billed Cuckoo *Coccyzus americanus*

Threatened

There is **proposed** critical habitat for this species. Your location is outside the critical habitat.<https://ecos.fws.gov/ecp/species/3911>

## Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

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>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS
------	--

ELSEWHERE" INDICATES THAT  
THE BIRD DOES NOT LIKELY  
BREED IN YOUR PROJECT AREA.)

**Allen's Hummingbird** *Selasphorus sasin*

Breeds Feb 1 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9637>

**Bald Eagle** *Haliaeetus leucocephalus*

Breeds Jan 1 to Sep 30

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

**Golden Eagle** *Aquila chrysaetos*

Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

**Great Blue Heron** *Ardea herodias fannini*

Breeds Mar 15 to Aug 15

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

**Olive-sided Flycatcher** *Contopus cooperi*

Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3914>

**Rufous Hummingbird** *selasphorus rufus*

Breeds Apr 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8002>

**Western Screech-owl** *Megascops kennicottii kennicottii*

Breeds Mar 1 to Jun 30

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your



project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season (●)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

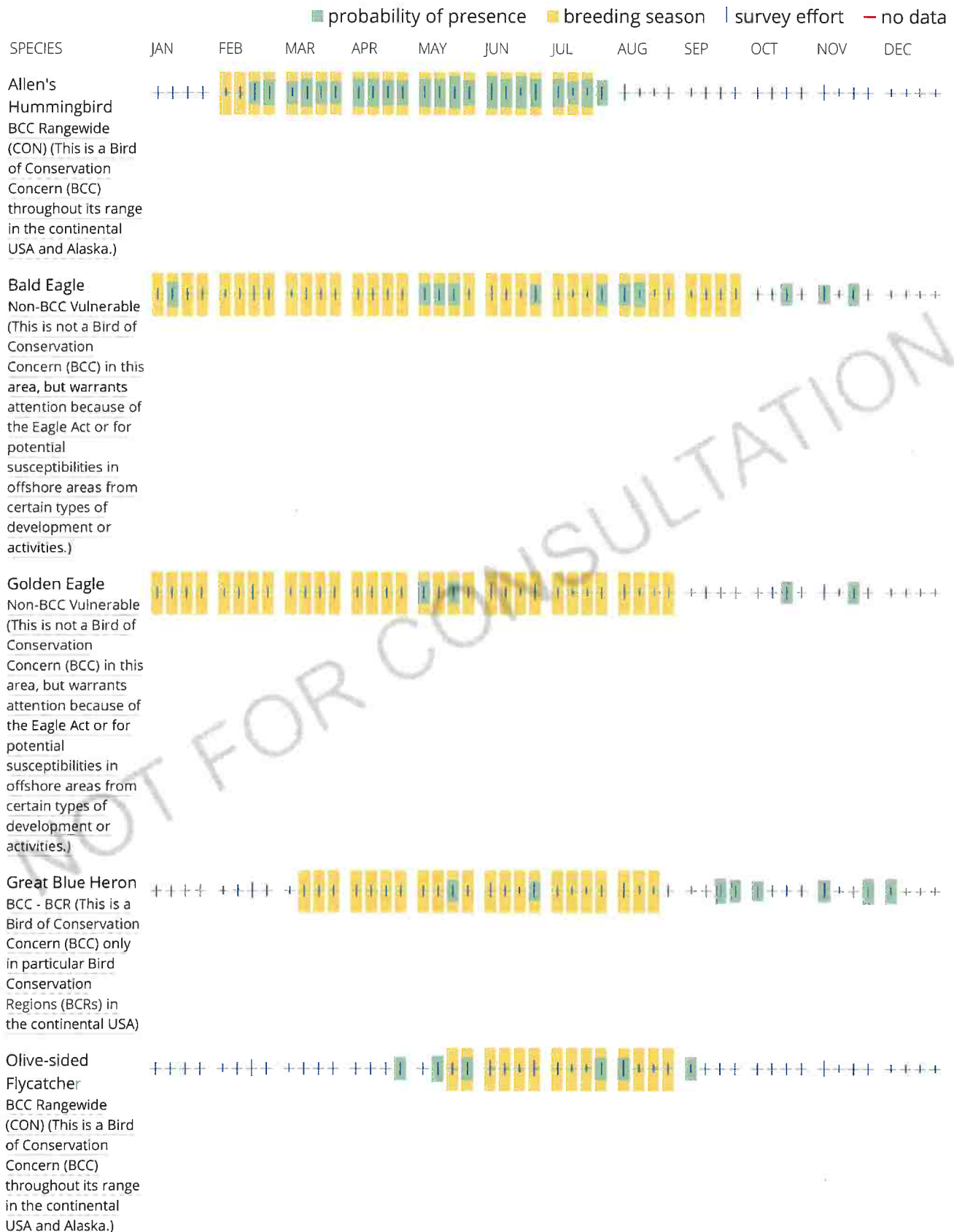
### No Data (—)

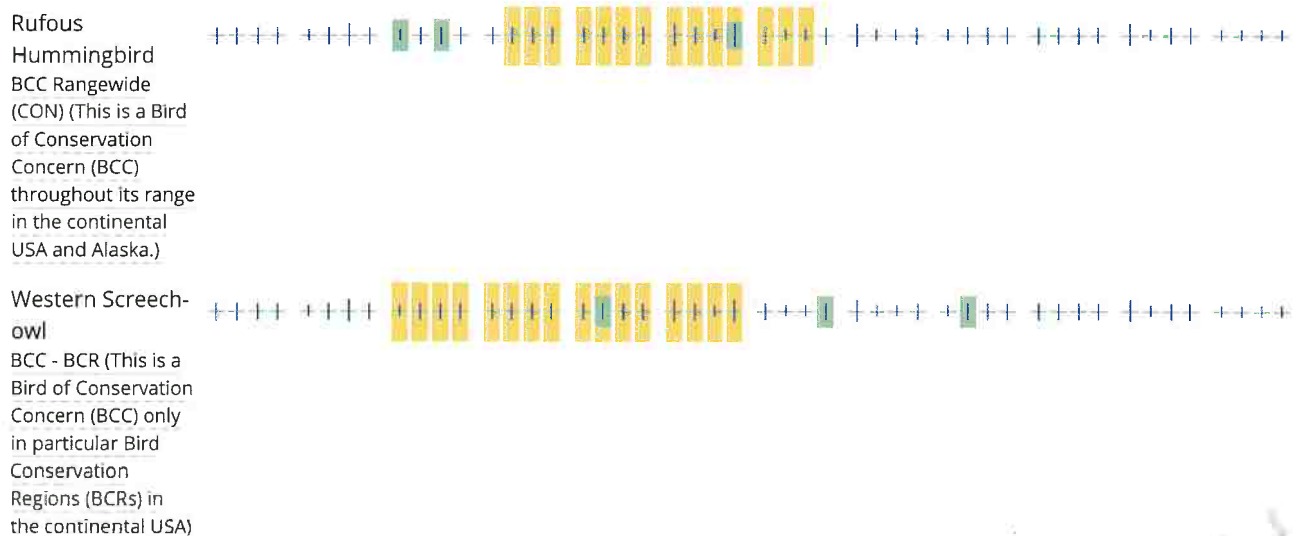
A week is marked as having no data if there were no survey events for that week.

### Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based

on all years of available data, since data in these areas is currently much more sparse.





**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret



them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### Details about birds that are potentially affected by offshore projects

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 [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority

concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

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

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

### 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](#).

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

### 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 tubercled 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.



# **Attachment C - NRCS Soils Report**



United States  
Department of  
Agriculture

**NRCS**

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for **Humboldt County, South Part, California**

**Unity Farm Holdings**



May 18, 2019

# Preface

---

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.



# Contents

---

<b>Preface</b> .....	2
<b>How Soil Surveys Are Made</b> .....	5
<b>Soil Map</b> .....	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
Humboldt County, South Part, California.....	13
143—Shivelyflat, 0 to 2 percent slopes.....	13
151—Parkland-Garberville complex, 2 to 9 percent slopes.....	14
179—Eelriver and Cottoneva soils, 0 to 2 percent slopes.....	17
514—Redwoodhouse-Yagercreek-Mailridge complex, 50 to 75 percent slopes.....	19
<b>References</b> .....	23

# How Soil Surveys Are Made

---

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

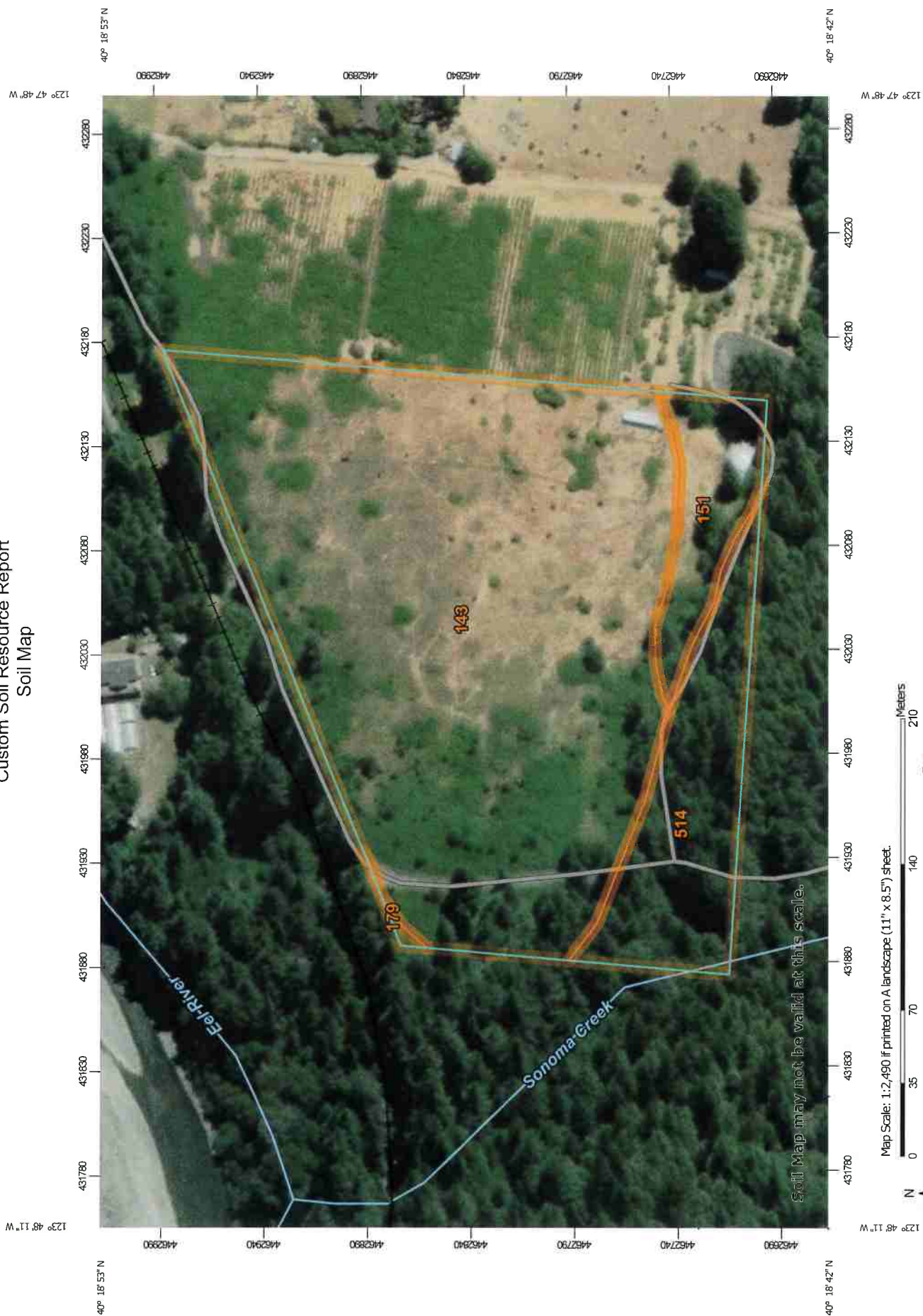


# Soil Map

---

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



MAP LEGEND

MAP INFORMATION

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

Soil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Humboldt County, South Part, California  
Survey Area Data: Version 7, Sep 13, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Nov 6, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
143	Shivelyflat, 0 to 2 percent slopes	12.2	78.7%
151	Parkland-Garberville complex, 2 to 9 percent slopes	1.1	7.0%
179	Eelriver and Cottoneva soils, 0 to 2 percent slopes	0.0	0.2%
514	Redwoodhouse-Yagercreek-Mailridge complex, 50 to 75 percent slopes	2.2	14.1%
<b>Totals for Area of Interest</b>		<b>15.5</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.



## Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Humboldt County, South Part, California

### 143—Shivelyflat, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* v6gz  
*Elevation:* 50 to 490 feet  
*Mean annual precipitation:* 40 to 70 inches  
*Mean annual air temperature:* 54 to 57 degrees F  
*Frost-free period:* 300 to 350 days  
*Farmland classification:* Prime farmland if irrigated

#### Map Unit Composition

*Shivelyflat and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Shivelyflat

##### Setting

*Landform:* Flood-plain steps  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Alluvium derived from mixed sedimentary sources

##### Typical profile

*Ap1 - 0 to 8 inches:* silt loam  
*Ap2 - 8 to 17 inches:* silt loam  
*Ap3 - 17 to 31 inches:* silt loam  
*C1 - 31 to 40 inches:* silt loam  
*C2 - 40 to 54 inches:* silt loam  
*C3 - 54 to 73 inches:* silt loam  
*C4 - 73 to 79 inches:* silt loam

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 10 to 20 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* Frequent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Very high (about 12.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 2w  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* B/D  
*Hydric soil rating:* No

## Custom Soil Resource Report

### Minor Components

#### Eelriver

*Percent of map unit:* 5 percent  
*Landform:* Flood-plain steps  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Pepperwood

*Percent of map unit:* 5 percent  
*Landform:* Flood-plain steps  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Cottoneva

*Percent of map unit:* 3 percent  
*Landform:* Flood-plain steps  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Weott

*Percent of map unit:* 2 percent  
*Landform:* Flood-plain steps, backswamps, depressions  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* Yes

### 151—Parkland-Garberville complex, 2 to 9 percent slopes

#### Map Unit Setting

*National map unit symbol:* v79t  
*Elevation:* 60 to 460 feet  
*Mean annual precipitation:* 49 to 90 inches  
*Mean annual air temperature:* 55 to 59 degrees F  
*Frost-free period:* 240 to 280 days  
*Farmland classification:* Prime farmland if irrigated

#### Map Unit Composition

*Parkland and similar soils:* 45 percent

## Custom Soil Resource Report

*Garberville and similar soils: 40 percent*

*Minor components: 15 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Parkland

#### Setting

*Landform: Alluvial fans, stream terraces*

*Landform position (two-dimensional): Backslope, footslope*

*Landform position (three-dimensional): Tread*

*Down-slope shape: Concave, linear*

*Across-slope shape: Linear, concave*

*Parent material: Alluvium derived from mixed sedimentary sources*

#### Typical profile

*Ap - 0 to 5 inches: loam*

*ABt - 5 to 7 inches: loam*

*Bt1 - 7 to 18 inches: silt loam*

*Bt2 - 18 to 29 inches: clay loam*

*Bt3 - 29 to 43 inches: clay loam*

*Bt4 - 43 to 61 inches: clay loam*

*Bt5 - 61 to 79 inches: clay loam*

#### Properties and qualities

*Slope: 2 to 9 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural drainage class: Moderately well drained*

*Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)*

*Depth to water table: About 20 to 39 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)*

*Available water storage in profile: High (about 10.8 inches)*

#### Interpretive groups

*Land capability classification (irrigated): 2e*

*Land capability classification (nonirrigated): 2e*

*Hydrologic Soil Group: C*

*Hydric soil rating: No*

### Description of Garberville

#### Setting

*Landform: Alluvial fans, stream terraces*

*Landform position (two-dimensional): Backslope, footslope*

*Landform position (three-dimensional): Tread*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Alluvium derived from mixed sedimentary sources*

#### Typical profile

*Ap - 0 to 12 inches: gravelly loam*

*A - 12 to 19 inches: gravelly loam*

*Bt1 - 19 to 28 inches: gravelly clay loam*

*Bt2 - 28 to 39 inches: gravelly clay loam*



## Custom Soil Resource Report

*Bt3 - 39 to 50 inches:* gravelly sandy clay loam  
*BC - 50 to 59 inches:* very gravelly sandy loam  
*C - 59 to 79 inches:* very gravelly sandy loam

### Properties and qualities

*Slope:* 2 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

## Minor Components

### Conklin

*Percent of map unit:* 5 percent  
*Landform:* Stream terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Linear, convex  
*Hydric soil rating:* No

### Grannycreek

*Percent of map unit:* 5 percent  
*Landform:* Stream terraces, alluvial fans  
*Landform position (two-dimensional):* Backslope, footslope, toeslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Linear, concave  
*Hydric soil rating:* Yes

### Frenchman

*Percent of map unit:* 3 percent  
*Landform:* Stream terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### Gschwend

*Percent of map unit:* 2 percent  
*Landform:* Stream terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread

## Custom Soil Resource Report

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### 179—Eelriver and Cottoneva soils, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* xhtd  
*Elevation:* 50 to 490 feet  
*Mean annual precipitation:* 40 to 70 inches  
*Mean annual air temperature:* 50 to 54 degrees F  
*Frost-free period:* 330 to 365 days  
*Farmland classification:* Prime farmland if irrigated

#### Map Unit Composition

*Eelriver and similar soils:* 45 percent  
*Cottoneva and similar soils:* 40 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Eelriver

##### Setting

*Landform:* Flood-plain steps  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Alluvium derived from mixed sedimentary sources

##### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*A1 - 1 to 4 inches:* silt loam  
*A2 - 4 to 10 inches:* silt loam  
*C - 10 to 16 inches:* silt loam  
*2Ab - 16 to 27 inches:* silt loam  
*2C1 - 27 to 35 inches:* silt loam  
*2C2 - 35 to 49 inches:* silt loam  
*2C3 - 49 to 63 inches:* silt loam  
*2C4 - 63 to 79 inches:* silt loam

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 20 to 39 inches  
*Frequency of flooding:* Rare

## Custom Soil Resource Report

*Frequency of ponding:* Frequent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Very high (about 12.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2s

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### Description of Cottoneva

#### Setting

*Landform:* Flood-plain steps

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Parent material:* Alluvium derived from mixed sedimentary sources

#### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material

*A - 2 to 7 inches:* silt loam

*C1 - 7 to 17 inches:* fine sandy loam

*C2 - 17 to 28 inches:* fine sandy loam

*C3 - 28 to 43 inches:* silt loam

*C4 - 43 to 55 inches:* silt loam

*C5 - 55 to 79 inches:* silt loam

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Moderately well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 6.00 in/hr)

*Depth to water table:* About 20 to 39 inches

*Frequency of flooding:* Rare

*Frequency of ponding:* Frequent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 10.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2s

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### Minor Components

#### Shivelyflat

*Percent of map unit:* 5 percent

*Landform:* Flood-plain steps

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Concave

## Custom Soil Resource Report

*Across-slope shape:* Linear

*Hydric soil rating:* No

### **Pepperwood**

*Percent of map unit:* 5 percent

*Landform:* Flood-plain steps

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Hydric soil rating:* No

### **Arlynda**

*Percent of map unit:* 5 percent

*Landform:* Meander scars, backswamps, depressions, flood-plain steps

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* Yes

## **514—Redwoodhouse-Yagercreek-Mailridge complex, 50 to 75 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* vykc

*Elevation:* 200 to 3,770 feet

*Mean annual precipitation:* 40 to 85 inches

*Mean annual air temperature:* 48 to 52 degrees F

*Frost-free period:* 240 to 300 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Redwoodhouse and similar soils:* 40 percent

*Yagercreek and similar soils:* 35 percent

*Mailridge and similar soils:* 20 percent

*Minor components:* 5 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Redwoodhouse**

#### **Setting**

*Landform:* Mountain slopes

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Mountainflank

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear

*Parent material:* Colluvium and residuum derived from interbedded sandstone and mudstone



## Custom Soil Resource Report

### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material  
*A - 2 to 8 inches:* gravelly loam  
*Bt1 - 8 to 22 inches:* gravelly clay loam  
*Bt2 - 22 to 35 inches:* gravelly clay loam  
*Bt3 - 35 to 79 inches:* very gravelly clay loam

### Properties and qualities

*Slope:* 50 to 75 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 7.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

## Description of Yagercreek

### Setting

*Landform:* Mountain slopes  
*Landform position (two-dimensional):* Backslope, shoulder  
*Landform position (three-dimensional):* Mountainflank  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Colluvium and residuum derived from interbedded sandstone and mudstone

### Typical profile

*Oi - 0 to 4 inches:* slightly decomposed plant material  
*A - 4 to 12 inches:* gravelly silt loam  
*AB - 12 to 20 inches:* very gravelly loam  
*Bt1 - 20 to 55 inches:* very gravelly loam  
*Bt2 - 55 to 79 inches:* extremely gravelly clay loam

### Properties and qualities

*Slope:* 50 to 75 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.1 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* B

*Hydric soil rating:* No

### Description of Mailridge

#### Setting

*Landform:* Mountain slopes

*Landform position (two-dimensional):* Shoulder

*Landform position (three-dimensional):* Mountainflank

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Colluvium and residuum derived from interbedded sandstone and mudstone

#### Typical profile

*A - 0 to 4 inches:* very gravelly loam

*Bt1 - 4 to 8 inches:* gravelly loam

*Bt2 - 8 to 18 inches:* extremely cobbly loam

*C - 18 to 61 inches:* extremely cobbly sandy loam

#### Properties and qualities

*Slope:* 50 to 75 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 2.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Low (about 3.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* B

*Hydric soil rating:* No

### Minor Components

#### Mountbaldy

*Percent of map unit:* 3 percent

*Landform:* Ridges

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Mountaintop

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Rock outcrop

*Percent of map unit:* 2 percent

*Landform:* Mountain slopes

*Landform position (two-dimensional):* Backslope

## Custom Soil Resource Report

*Landform position (three-dimensional):* Center third of mountainflank

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

# References

---

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_054262](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262)

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053577](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577)

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053580](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580)

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2\\_053374](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374)

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

## Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_052290.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf)



**Attachment D -  
Site Photos of  
Assessment Areas**

## Attachment D. Assessment area site photos – Unity Farms

Photo #1 NW view of the project Assessment area – Site for staging area and 1 Acre cultivation



Photo #2 North view of Assessment area – Potential site #1 for new Agricultural building



Photo #3 South East view of Assessment area - Potential site #2 for new Agricultural building



Photo #4 Representative view of dominant pasture grasses



**Attachment E -  
Plant and Wildlife  
Observed**



## Attachment E

Plant and animal species observed during the May 30, 2019 Assessment area site survey

Results of Plant species survey May 30, 2019 Unity Farms Holdings		
Grasses		
Common name	Species name	Heritage
Soft brome	<i>Bromus mollis</i>	Non-native
Rip-gut brome	<i>Bromus diandrus</i>	Non- native
Velvet grass	<i>Holcus lanatus</i>	Non-native
Tall fescue	<i>Festuca arundinacea</i>	Non-native
Wild oats	<i>Avena fatua</i>	Non-native
Rough dogs tail	<i>Cynosurus echinatus</i>	Non-native
Flowering plants		
Canadian thistle	<i>Cirsium arvense</i>	Non-native
Common vetch	<i>Vicia sativa</i>	Non-native
Sheep sorrel	<i>Rumex acetosella</i>	Non-native
Spreading hedgeparsley	<i>Torilis arvensis</i>	Non-native
Shrubs/Vines		
Himalayan blackberry	<i>Rubus armeniacus</i>	Non-native
Trees		
Cherry plum	<i>Prunus cerasifera</i>	Non-native

Wildlife observed during the May 30, 2019 site survey Unity Farms Holdings		
Grasses		
Common name	Species name	Heritage
American crow	<i>Corvus brachyrhynchos</i>	Native
Turkey vulture	<i>Cathartes aura</i>	Native
California Scrub jay	<i>Aphelocoma californica</i>	Native
Wild turkey	<i>Meleagris gallopavo</i>	Non-native (California)