WETLAND DELINEATION REPORT

Humboldt County APN 217-142-002
Redway, CA.

Prepared for

Wood Ranch, LLC

Prepared by

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In Conjunction with

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Date Prepared

May 20, 2021

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Executive Summary

Landowners and associated contractors are preparing conceptual designs to evaluate design alternatives for construction of cannabis agricultural facilities. The landowner requested assistance in identifying, mapping, and conducting functional assessments for wetlands within the project as part of the anticipated compliance requirements. Wetland scientist Joe Seney conducted an investigation of aquatic resources and delineated wetlands on Humboldt County parcel APN 217-142-002 on May 18th, 2021. The wetland map and associated data will help to evaluate potential infrastructure development, regulatory compliance documents, prepare wetland restoration alternatives, and assist in preparing applications for section 401/404 permits under the Clean Water Act through the North Coast Regional Water Control Board.

Wetlands within the parcel were mapped based on the presence of all three USACE parameters, hydric soil, wetland hydrology and hydrophytic vegetation for determining wetlands. In addition, we relied on depth to redoximorphic soil features and presence of wetland hydrology indicators in determining placement of wetland/upland boundary. Much of the vegetation within the project area is disturbed and is predominantly non-native grasses, which are not a strong indicator of wetland/upland boundaries.

There are approximately 0.25 acres of wetland within the 23.7 project area; a 0.18-acre slope wetland and 0.07-acre depressional wetland. The slope wetland (0.18 acres) is classified as a Palustrine Emergent Seasonally Saturated (ponded for short periods of time after significant rainfall events). Plant species identified are tall fescue (*Schedononrus arundinaceus*, FAC), soft chess (*Bromus hordeaceus,* FAC*),* spreading rush (*Juncus patens,* FACW*),* western rush *(Juncus occidentalis*, FACW*),* colonial bentgrass (*Agrostis capillaria*, FAC), California oatgrass (*Danthonia californica*, FAC), and velvetgrass (*Holcus lanatus*, FAC). Of the two soil profiles I described, both exhibited hydric soil field indicator. Redox Dark Surface (F6). Overall condition of this wetland is good due to the presence of native rushes and grasses, although non-native grasses are present. Impacts from the legacy motocross trails are minimal.

The depressional Wetland (0.07 acres) is classified as a Palustrine Emergent Seasonally Ponded/Saturated. This wetland has formed in tire tracks related to construction and use of the legacy motocross trails. Soils are moderately compacted from a depth of four - twelve inches, which significantly impedes infiltration of surface water. Soft sandstone bedrock is present at approximately 12 inches. Of the two soil profiles I described, both exhibited hydric soil field indicator. Redox Dark Surface (F6). Plant species identified are soft chess (*Bromus hordeaceus,* FAC*),* pennyroyal (*Mentha pulegium*, OBL), western rush *(Juncus occidentalis*, FACW*),* colonial bentgrass (*Agrostis capillaria*, FAC), California oatgrass (*Danthonia californica*, FAC), velvetgrass (*Holcus lanatus*, FAC), and foxtail barley (*Hordeum jubatum*, (FAC) and Italian ryegrass (*Festuca perennis*, FAC) (Table 2). Overall condition of this wetland is fair due to the presence of primarily non-native plants and limited areal extent.

Introduction

Landowners and associated contractors are preparing conceptual designs to evaluate design alternatives for construction of cannabis agricultural facilities. The landowner requested assistance in identifying, mapping, and conducting functional assessments for wetlands within the project as part of the anticipated compliance requirements. Wetland scientist Joe Seney conducted an investigation of aquatic resources and delineated wetlands on Humboldt County parcel APN 217-142-002 on May 18th, 2021. The wetland map and associated data will help to evaluate potential infrastructure development, regulatory compliance documents, prepare wetland restoration alternatives, and assist in preparing applications for section 401/404 permits under the Clean Water Act through the North Coast Regional Water Control Board.

The parcel is located in Humboldt County, California, approximately five air miles north east of Redway, California in the South Fork of the Eel Watershed, within the Miranda. 7.5-minute quadrangle. The Project area is approximately 23.7 acres in size (Figure 1).

Wetland Scientist Qualifications

The wetland delineation for this Report was conducted by Joe Seney, a contracted wetland/soil scientist. Joe has over 28 years of experience working as a wetland/soil scientist for the USDI National Park Service, USDA National Resources Conservation Service and USDA Forest Service. In addition, he has taught soils and hydrology courses at Humboldt State University since 2007. Joe has an MSc. in Earth Sciences and a PhD (unfinished) in Soils with a supporting field of Plant Ecology.

Methods

The survey was conducted in accordance with the three-parameter method of the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual and the 2010 Regional Supplement: Western Mountains, Valleys and Coast Region (Version 2.0) (USACE, 1987 and 2010). The US Army Corps of Engineers and North Coast Regional Water Quality Board regulates wetlands and other waters under section 404 of the Clean Water Act (CWA). The USACE defines "wetlands" as those areas that exhibit hydric soils, hydrophytic vegetation, and wetland hydrology. For purposes of identifying wetlands protected under the CWA when requesting a Nationwide or Individual CWA Permit from the USACE, wetland maps should be no more than five years old. The Army Corps of Engineers also has jurisdiction and permit authority over other "Waters of the U.S." – those additional aquatic systems such as streams, rivers, and mudflats, which are also protected by the CWA. The State of California has jurisdiction and permit authority over “Waters of the State”, which includes “isolated wetlands”.

Climate

Climate exerts an influence on soil, hydrology, and vegetation at regional, local, and micro-scales Regionally, cool, wet winters and nearly rainless summers characterize the climate of Humboldt County, California. Precipitation in the region follows a very strong seasonal pattern of a wet season (October to May) and a dry season (June to September). The average annual precipitation recorded at the Ukiah Weather Station, California is 40 inches, with approximately 95% falling in the wet season. From January through May 2021, the area received 5.41 inches of precipitation compared to the usual 13.9 inches

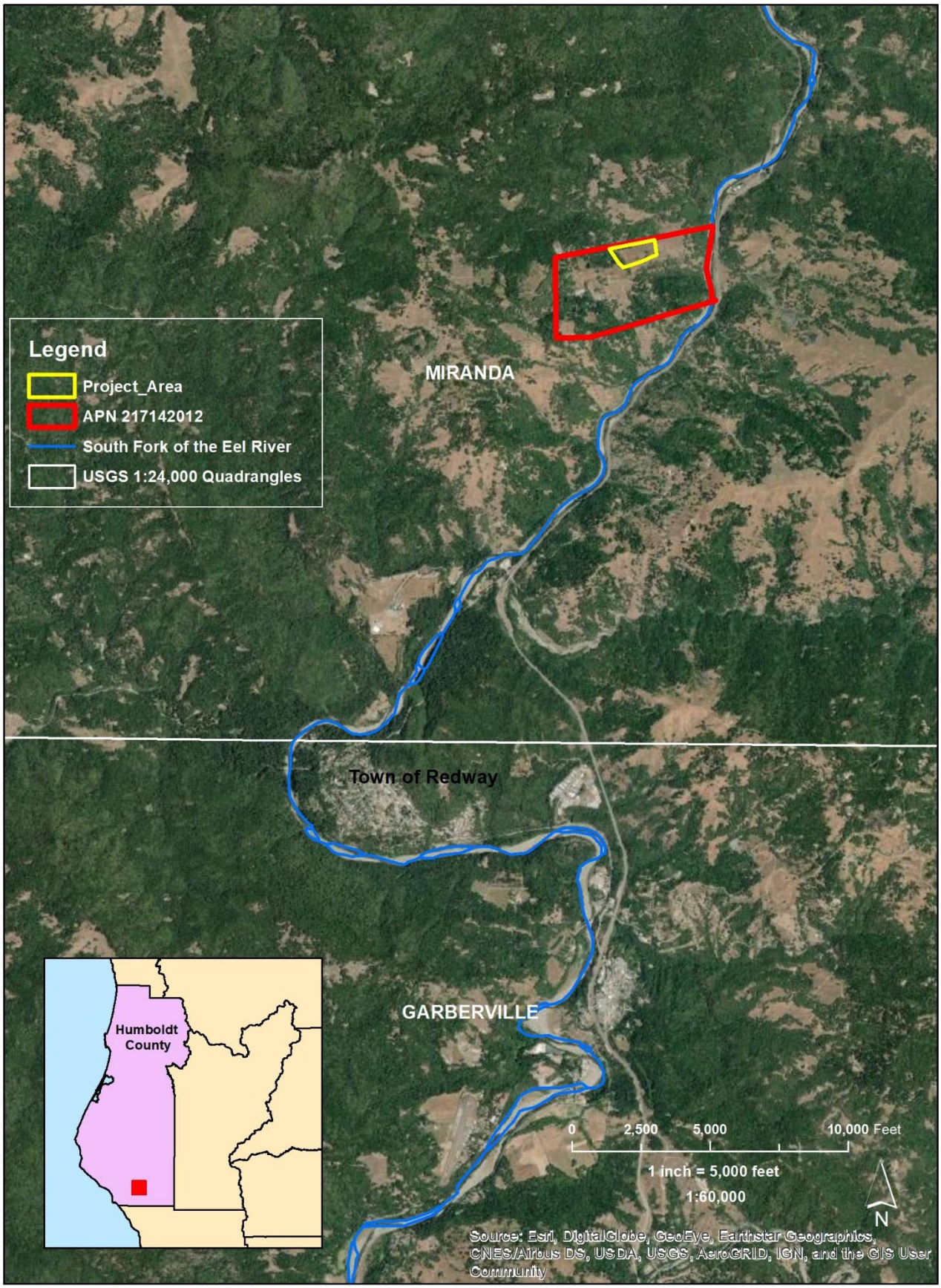


Figure 1 . Parcel Location Map

Table 1. Monthly mean precipitation amounts (inches) for February through May 2021, the 30-year mean 1961-1990 period of record and historic record standard deviation. Ukiah Weather Station-049127, Ukiah, California.

Year(s)	Feb	Mar	Apr	May	Total
2021	2.7	2.4	0.3	0.01	5.41
1961-1990	5.7	5.2	2.3	0.7	13.9
SD (2016-2021)	4.6	3.6	2.0	1.2	

(1961-1990 normal), approximately 61% below average. The last measurable (trace) rainfall occurred on May 15th, 2021 (Table 1).

Wetland Hydrology

Presence or absence of wetland hydrology is one of the three parameters used by the 1987 USACE manual (along with hydric soils and hydrophytic vegetation) to delineate wetland boundaries. Although wetland hydrology indicators are important in delineating wetlands, they are the least credible compared to soil and vegetation indicators due to variability of seasonal and local weather patterns that influence hydrology. Wetland hydrology exists at a site when it is flooded, ponded, or has groundwater within 12 inches of the ground surface for 14 or more consecutive days during the growing season in at least 5 out of 10 years. Wetland hydrology is the most seasonal and transitory of the three parameters.

The USACE manual describes primary and secondary wetland hydrology "indicators" that allow delineators to evaluate hydrology throughout the growing season, even late in the dry season when saturation in the upper part of the soil may no longer be present. Examples of primary indicators include surface water, a high-water table (groundwater within 12 inches of soil surface), soil is saturated, oxidized iron along live root channels or on live root surfaces, and iron deposits. Examples of secondary indicators include presence of a "dry season water table" between 12 and 24 inches below the ground surface, a shallow aquitard, a dense layer within 24 inches of the soil surface, the FAC Neutral Test, and "geomorphic position" of the site (e.g., toe slopes, drainageways, depressions, and swales). The presence of one primary or two secondary indicators confirms wetland hydrology.

Hydric Soils

The 1987 *Wetlands Delineation Manual* (USACE 1987) suggests evaluating existing soil maps before conducting in-field wetland delineations. Soils mapped in the project area are primarily the Coyoterock and Yorknorth Soil Series. These soils form in colluvium and residuum derived from mudstone and sandstone and are hillslopes throughout Southern Humboldt County (Image 1). Coyoterock soils are very deep (>60" to bedrock) moderately well drained (non-hydric soil), with redoximorphic features related to wet season saturation starting at a depth greater than 20 inches. Soil textures are loam or clay loam in the very dark brown or black surface horizons, and clay loam or clay to a depth of 60 inches. Yorknorth

soils are very deep (>60” to bedrock) moderately well drained (non-hydric soil), with redoximorphic features related to wet season saturation starting at a depth greater than 20 inches. Soil textures are loam or silt loam in the very dark brown or black surface horizons, and clay loam or silty clay loam to a depth of 60 inches.

Hydric soils are one of the three parameters used to delineate wetlands. Most hydric soils exhibit characteristic, identifiable morphologies that result from anaerobic conditions and persist in the soil during both saturated (reduced) and dry (oxidized) conditions in the upper 12 inches of soil. Examples include a mottled color pattern resulting from reduction and reoxidation of iron or manganese, and accumulation of organic matter due to increased plant production and slow decomposition rates in saturated environments. Hydric soil field indicators display characteristic morphologies as a result of the accumulation or loss of iron, manganese, sulfur, or carbon compounds in a saturated and anaerobic environment (USACE, 2010).

A soil pit was dug at each sampling point to a minimum depth of between 12 to 20 inches (Image 5). For each soil profile examined we determined soil horizons, soil texture, soil moist color, described redoximorphic features present, and documented depth to groundwater and soil saturation if present. (NRCS, 2018).

Hydrophytic Vegetation

Predominance of "hydrophytic" (wetland) vegetation is one of the three parameters used to identify wetlands. According to the USACE wetland delineation procedures, calls regarding presence or absence of hydrophytic vegetation are based on the “wetland indicator status” of each dominant species in the plant community being evaluated. Lichvar and others (2016) classified plant species into indicator status categories ranked from wettest to driest as follows: Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), Upland (UPL), and Not Listed (NI). Plant communities are considered to be hydrophytic (wetland vegetation) if greater than 50 percent of the plant cover by dominant species are ranked as OBL, FACW, or FAC (Dominance Test). The FAC-Neutral Test was calculated and used as a Wetland Hydrology secondary indicator, and is essentially the same as the Dominance Test, but it disregards dominant facultative plant species.

Plant species identified in the slope and depressional wetland areas are tall fescue (*Schedononrus arundinaceus*, FAC), soft chess (*Bromus hordeaceus,* FAC*),* pennyroyal (*Mentha pulegium*, OBL), spreading rush (*Juncus patens,* FACW*),* western rush *(Juncus occidentalis*, FACW*),* colonial bentgrass (*Agrostis capillaria*, FAC), California oatgrass (*Danthonia californica*, FAC), velvetgrass (*Holcus lanatus*, FAC), and foxtail barley (*Hordeum jubatum*, (FAC) and Italian ryegrass (*Festuca perennis*, FAC) (Table 2).

Plant species identified in non-wetland areas include tall fescue (*Schedononrus arundinaceus*, FAC), vernal grass (*Anthoxanthum odoratum,* FACU), orchard grass (*Dactylis glomerata*, FACU), greater quaking grass (*Briza maxima,* FACU*),* colonial bentgrass (*Agrostis capillaria*, FAC), ripgut brome (*Bromus diandrus*, FACU), California oatgrass (*Danthonia californica*, FAC), velvetgrass (*Holcus lanatus*, FAC), and Italian ryegrass (*Festuca perennis*, FAC) (Table 2).

Table 2. Plant Species Identified during field work

Scientific Name	**Common Name**	**Wetland Plant Status**
Agrostis capillaria	colonial bentgrass	FAC
Anthoxanthum odoratum	vernal grass	FACU
Briza maxima	greater quaking grass	FACU
Bromus diandrus	ripgut brome	FACU
Bromus hordeaceus	soft chess	FACU
Dactylis glomerata	orchard grass	FACU
Danthonia californica	California oatgrass	FAC
Festuca perennis	Italian rye grass	FAC
Holcus lanatus	velvetgrass	FAC
Hordeum jubatum	foxtail barley	FAC
Juncus occidentalis	western rush	FACW
Juncus patens	spreading rush	FACW
Mentha pulegium	pennyroyal	OBL
Plantago lanceolata	narrow leaf plantain	FACU
Schedononrus arundinaceus	tall fescue	FAC
Trifolium repens	white clover	FAC

Results

Wetlands within the parcel were mapped based on the presence of all three USACE parameters, hydric soil, wetland hydrology and hydrophytic vegetation for determining wetlands. In addition, we relied on depth to redoximorphic soil features and presence of wetland hydrology indicators in determining placement of wetland/upland boundary. Much of the vegetation within the project area is disturbed and is predominantly non-native grasses, which are not a strong indicator of wetland/upland boundaries.

There are approximately 0.25 acres of wetland within the 23.7 project area; a 0.18-acre slope wetland and 0.07-acre depressional wetland (Figure 2).

Slope wetland (0.18 acres)

This wetland is classified as a Palustrine Emergent Seasonally Saturated (and ponded for short periods of time after significant rainfall events). Legacy motocross trails cross a portion of this wetland (Image 3).

Plant species identified are tall fescue (*Schedononrus arundinaceus*, FAC), soft chess (*Bromus hordeaceus,* FAC*),* spreading rush (*Juncus patens,* FACW*),* western rush *(Juncus occidentalis*, FACW*),* colonial bentgrass (*Agrostis capillaria*, FAC), California oatgrass (*Danthonia californica*, FAC), and velvetgrass (*Holcus lanatus*, FAC), (Table 2).

Of the two soil profiles I described, both exhibited hydric soil field indicator. Redox Dark Surface (F6) (Images 2 and 4).

Overall condition of this wetland is good due to the presence of native rushes, although non-native grasses are present. Impacts from the legacy motocross trails are minimal.

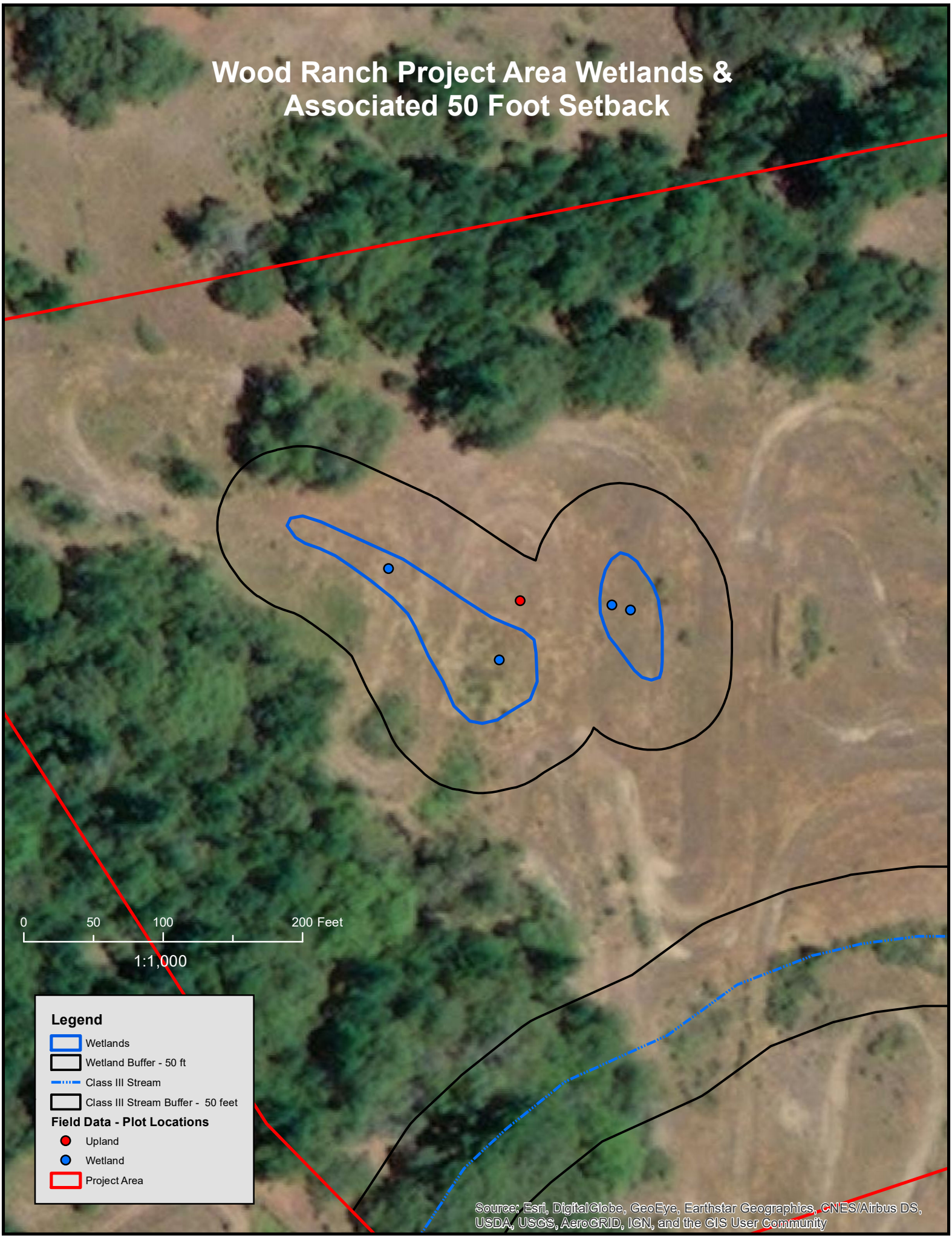
Depressional Wetland (0.07 acres)

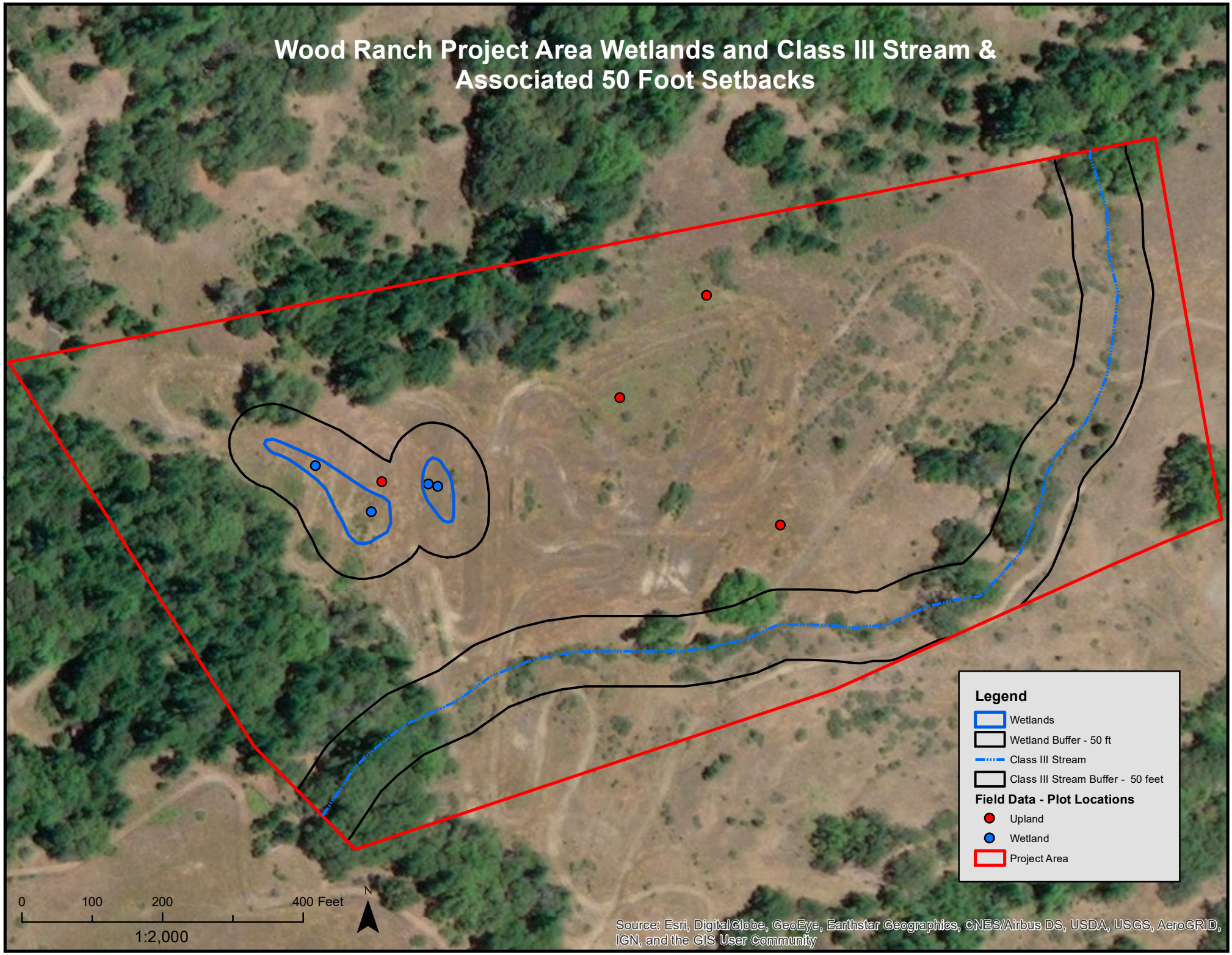
This wetland is classified as a Palustrine Emergent Seasonally Ponded/Saturated. This wetland has formed in tires tracks related to construction and use of the legacy motocross trails.

Soils are moderately compacted from a depth of four -twelve inches, which significantly impedes infiltration of surface water. Soft sandstone bedrock is present at approximately 12 inches. Of the two soil profiles I described, both exhibited hydric soil field indicator. Redox Dark Surface (F6) (Images 2 and 4).

Plant species identified are soft chess (*Bromus hordeaceus,* FAC*),* pennyroyal (*Mentha pulegium*, OBL), western rush *(Juncus occidentalis*, FACW*),* colonial bentgrass (*Agrostis capillaria*, FAC), California oatgrass (*Danthonia californica*, FAC), velvetgrass (*Holcus lanatus*, FAC), and foxtail barley (*Hordeum jubatum*, (FAC) and Italian ryegrass (*Festuca perennis*, FAC) (Table 2).

Overall condition of this wetland is fair due to the presence of primarily non-native plants and limited areal extent.


Wood Ranch Project Area Wetlands &
Associated 50 Foot Setback
0
50
100
200 Feet
1:1,000
Legend
Wetlands
Wetland Buffer - 50 ft
Class III Stream
Class III Stream Buffer - 50 feet
Field Data - Plot Locations
Upland
Wetland
Project Area
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS,
USDA, USGS, AeroGRID, IGN, and the GIS User Community


Wood Ranch Project Area Wetlands and Class III Stream &
Associated 50 Foot Setbacks
Legend
Wetlands
Wetland Buffer - 50 ft
Class III Stream
Class III Stream Buffer - 50 feet
Field Data - Plot Locations
Upland
Wetland
Project Area
0
100
200
400 Feet
1:2,000
N
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Appendix A
Images

WETLAND DELINEATION REPORT

APN #217-142-002

May 2021

Image 1. Looking northeast across tall fescue/coyote brush plant community.

Image 2. Depressional wetland formed as a result of shallow sandstone bedrock and legacy tire tracts when soil was saturated.

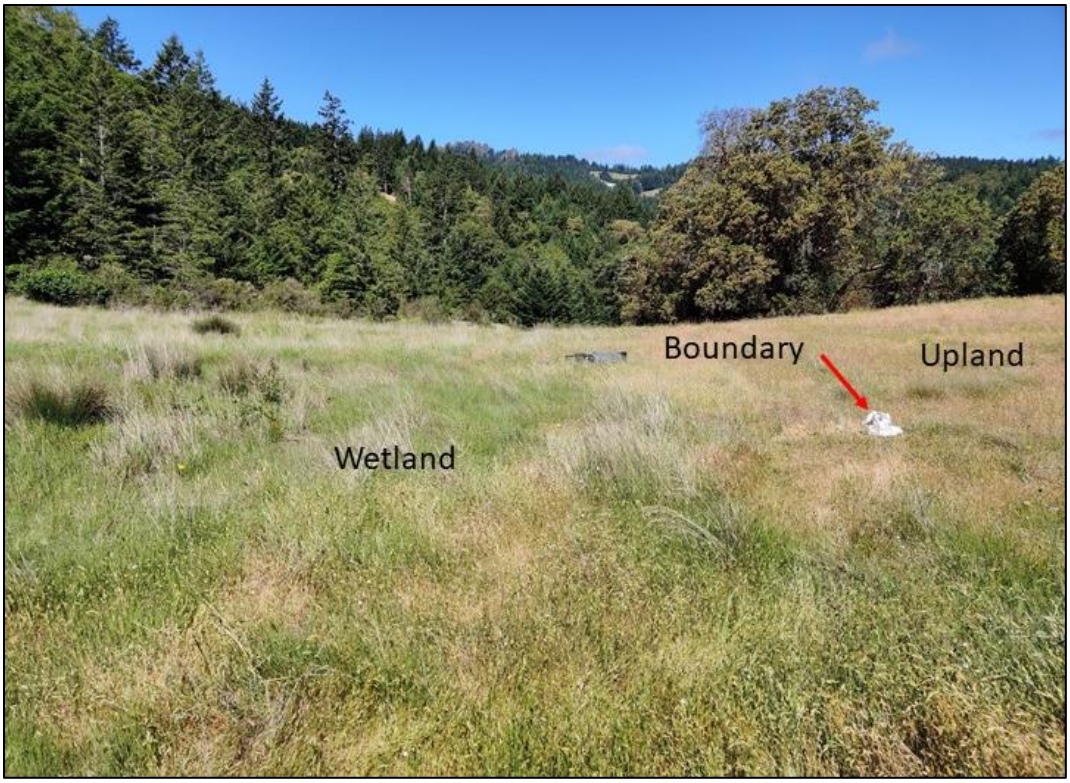

Image 3. Slope wetland, wetland boundary and upland. Plants within wetland are still green while Upland plants are turning brown.

Image 4. Example of iron depletions along root channels. Soil sample is from depressional wetland soil Profile.

Image 5. Representative soil profiles for non-hydric and hydric soils.

Appendix B
Plot Data

WETLAND DELINEATION REPORT

APN #217-142-002

May 2021

Table A. Summary of plot data 141-154.

Plot #	141	142	143	154
Wetland	no	yes	yes	yes
Location	0432429	0432397	0432450	0432446
	4447349	4447352	4447543	4447344
Local Relief	planar	concave	concave	concave
Hydrology	no	yes	yes	yes
Water Table	no	no	no	no
Saturation	no	no	no	no
Oxidized Rhizospheres	no	no	no	yes
Geomorphic position	no	yes	yes	yes
Indicators	D3	D2, D3	C3, D2, D5	C3, D2, D3, D5
Soils				
Layer 1	0-4" l 10YR 3/2 5% 10YR 5/6 compacted	0-5" l 10YR 3/2 2% 10YR 5/6	0-5" l 10YR 2/2 5% 10YR 5/6	0-4" l 10YR 3/2 10% 10YR 5/6
Layer 2	4-12" l 10YR 3/3 compacted	5-14" l 10YR 3/2 7% 7.5YR 5/6	5-11" 2.5Y 3/2 20% 7.5YR 5/6	4-8" l 10YR 3/1 40% 7.5YR 4/6 compacted
Layer 3	12+ cl soft sandstone bedrock	compacted	11-17" 2.5Y 3/1 30% 7.5YR 5/6	8-13" l 7.5YR 4/4 2% depletions 10YR 4/1
Hydric Soil	yes	yes	yes	yes
Indicators	F6- redox dark surface	F6- redox dark surface	F6- redox dark surface	F6-Redox dark surface
Vegetation				
Species 1	*Bromus hordeaceus 55% FAC/**Dom***	*Schedononrus arundinaceus 35%*/FAC/**Dom**	*Schedononrus arundinaceus 30%*/FAC/**Dom**	*Mentha pulegium 40%*/OBL/**Dom**
Species 2	*Danthonia californica 25% FAC/**Dom***	*Bromus hordeaceus 30% FAC/**Dom***	*Juncus patens 30%*/FACW/**Dom**	*Bromus hordeaceus 25% FAC/**Dom***
Species 3	*Agrostis capillaria 15%*/FAC	*Anthoxanthum odoratum 15% FACU*	*Juncus occidentalis 30%/FACW/**Dom***	*Juncus occidentalis 25%/FACW/**Dom***
Species 4	*Briza maxima 7% FAC*	*Holcus lanatus 10% FAC*	*Bromus hordeaceus 25% FAC/**Dom***	*Agrostis capillaria 15%*/FAC**/Dom**
Species 5	*Anthoxanthum odoratum 5% FACU*		*Holcus lanatus 15% FAC*	*Hordeum jubatum FAC 5%*
Species 6				*Danthonia californica 5% FAC*
Species 7				
Species 8				
Dominant Species	FAC, FAC	FAC, FAC	FACW, FACW, FAC, FAC	OBL, FACW, FAC, FAC
Hydrophytic Vegetation	yes	yes	yes	yes
Pass FAC Neutral Test	no	no	yes	yes

Wetland Hydrology Indicators: A2 = Water Table; A3 = Saturation; C3 = Oxidized rhizospheres along living root channels; D2 = Geomorphic position, D3 Shallow aquitard and D5 = Passes FAC Neutral Test

Table B. Summary of plot data 155-158.

Plot #	155	156	157	158
Wetland	yes	no	no	no
Location	0432450	0432599	0432574	0432529
	4447343	4447327	4447429	4447382
Local Relief	concave	no	planar	planar
Hydrology	yes	no	no	no
Water Table	no	no	no	no
Saturation	no	no	no	no
Oxidized Rhizospheres	yes	no	no	no
Geomorphic position	yes	no	no	no
Indicators	C3, D2, D3	none	none	none
Soils				
Layer 1	0-4" l 10YR 3/2 5% 10YR 5/6	0-5" fsl 10YR 3/3	0-4" l 10YR 3/2	0-6" sil 10YR 2/2
Layer 2	4-9" l 2.5Y 2.5/1 10% 7.5YR 4/6	5-12" l 10YR 3/3	4-8" cl 10YR 3/2 2% 7.5YR 4/6	6-10" l 10YR 2/2
Layer 3	9+" soft sandstone (fsl)	12+" soft sandstone (fsl)	8-15" cl 10YR 3/2	10-20" cl 10YR 2/2
Hydric Soil	yes	no	no	no
Indicators	F6-Redox dark surface	none	none	none
Vegetation				
Species 1	*Bromus hordeaceus 50% FAC/**Dom***	*Schedononrus arundinaceus 40%*/FAC/**Dom**	*Schedononrus arundinaceus 80%*/FAC/**Dom**	*Schedononrus arundinaceus 80%*/FAC/**Dom**
Species 2	*Danthonia californica 30% FAC/ **Dom***	*Briza maxima 30% FACU/ **Dom***	*Anthoxanthum odoratum 20% FACU*	*Anthoxanthum odoratum 15% FACU*
Species 3	*Trifolium repens 15% FAC*	*Agroistis capillaria 20%*/FAC	*Dactylis glomerata 3% FACU*	*Dactylis glomerata 5% FACU*
Species 4	*Juncus occidentalis 10%/FACW*	*Bromus hordeaceus 15% FAC*		*Holcus lanatus 3% FAC*
Species 5	*Hordeum jubatum FAC 5%*	*Bromus diandrus 5% FACU*		
Species 6	*Festuca perennis %5 FAC*			
Species 7	*Holcus lanatus 15% FAC*			
Species 8	*Plantago lanceolata %5 FACU*			
Dominant Species	FAC, FAC	FAC, FACU	FAC	UPL, FACW, FAC
Hydrophytic Vegetation	yes	no	yes	yes
Pass FAC Neutral Test	no	no	no	no