
AQUATIC RESOURCES DELINEATION

APN: 214-142-009

HUMBOLDT COUNTY

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1. INTRODUCTION

This report includes the results an aquatic resources delineation conducted on a portion of APN: 214-142-009 near Redway. The purpose of the study was to determine the extent of wetlands and other aquatic resources that were filled or disturbed from development for cannabis cultivation so that a restoration plan can be developed.

2. DEFINITIONS

Waters of the United States

Waters of the United States are regulated by the U.S Army Corps of Engineers (Army Corps) under the Clean Water Act. Waters of the United States include, but are not limited to, territorial seas, waters used for interstate or foreign commerce and their tributaries, and waters adjacent to the aforementioned, including wetlands.

Army Corps jurisdiction in waters such as creeks and rivers includes the area below the ordinary high water mark, which is the line on the bank established by fluctuations of water that leave physical characteristics such as a distinct line on the bank, shelving, destruction of terrestrial vegetation, and presence of debris.

The Army Corps defines wetlands as:

“... areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

Waters of the State

Waters of the state are regulated by the State Water Resources Control Board (Water Board) under the Porter-Cologne Water Quality Control Act. Waters of the state are defined as:

"... any surface water or groundwater, including saline waters, within the boundaries of the state."

Waters of the State includes water in both natural and artificial channels.

The Water Board's definition of a wetland is:

“An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.”

Streamside Management Areas

The Humboldt County General Plan (Humboldt County 2017) recognizes Streamside Management Areas (SMAs) along all streams, which are defined as:

“100 feet, measured as the horizontal distance from the top of bank or edge of riparian drip-line whichever is greater on either side of perennial streams.”

“50 feet, measured as the horizontal distance from the top of bank or edge of riparian drip-line whichever is greater on either side of intermittent streams.”

3. ENVIRONMENTAL SETTING

Project Location

The parcel is located along Wood Ranch Road approximately 3.75 miles northeast of Redway on the Miranda USGS quadrangle (Non-sectioned area of T3S, R3E).

Soil, Topography, and Hydrology

The soil type mapped in the study area is Coyoterock-Yorknorth complex, 15-50% slopes (United States Department of Agriculture, Natural Resource Conservation Service 2019). This soil type is derived from sandstone, mudstone, and schist parent material. All of the soil components have a non-hydric soil rating. The study area is in a relatively flat, partially graded terrace on an approximately 15% south-facing slope. The elevation ranges from approximately 800-880 feet above sea level. The site includes wetlands and small streams that drain into the South Fork Eel River.

4. METHODS

4.1. Current Conditions

The study was conducted on May 8, 2019 by Kyle Wear, M.A. Mr. Wear has over 20 years of experience conducting floristic surveys and other botanical work in northern California and over ten years of experience conducting wetland delineations. Mr. Wear is also trained in wetland delineation by the Wetland Training Institute.

Federal, State, and County wetland delineation methods follow the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual Western Mountains, Valleys, and Coast Region (Version 2.0)* (Army Corps 2010). A positive wetland determination is made when all three wetland parameters (hydrophytic vegetation, hydric, soil, and wetland hydrology) are present. Four sample plots were evaluated for hydrophytic vegetation, hydric, soil, and wetland hydrology. Wetland determination data forms are provided in Appendix A.

Hydrophytic Vegetation

The presence of hydrophytic vegetation is determined by the wetland indicator status of each plant species present using the *Western Mountains Valleys and Coast 2016 Regional Wetland*

Plant List (Army Corps 2016). The indicator status of plants is based on the estimated probability of the species occurring in wetlands. The indicator status categories are:

Obligate Wetland Plants (OBL)	Almost always occur in wetlands	>99% frequency
Facultative Wetland Plants (FACW)	Usually occur in wetlands	67%-99%
Facultative Plants (FAC)	Equally occur wetlands and non-wetlands	33%-67%
Facultative Upland Plants (FACU)	Sometimes occur in wetlands	1%-33%
Obligate Upland Plants (UPL)	Rarely occur in wetlands	<1%

If more than 50% of the dominant plants across all vegetation strata (i.e. trees, shrubs, herbs) are OBL, FACW, or FAC, the vegetation is considered to be hydrophytic. Dominance of plants within the plots is determined using the “50/20” rule. This method involves estimating absolute cover of each plant in each vegetation stratum. Dominant plants include the plants with the highest cover that collectively or individually account for 50% of the total vegetation cover. Additional plants are considered dominant if their cover is at least 20%.

Hydric Soil

Indicators of hydric soil include, but are not limited to, a strong hydrogen sulfide (rotten egg) odor, redox concentrations, depleted matrix, and high organic matter content. Soil colors are determined by using a standard Munsell soil color chart (Gretag Macbeth 2000).

Wetland Hydrology

Indicators of wetland hydrology include, but are not limited to, surface water, high water table, soil saturation, sediment deposits, soil cracks, and oxidized root channels along living roots.

Non-Wetland Waters

Non-wetland waters include watercourses with an ordinary highwater mark in addition to ponds, lakes, and other waterbodies.

4.2. Conditions Before Development

National Agricultural Imagery Program (NAIP) images taken before (2014) and after (2016 and 2018) development and Google Earth images (2014 and 2019) were evaluated to determine the extent of filling and disturbance to wetlands on the site. The extent of wetlands and disturbance visible in the photos was mapped with QGIS software that was used to calculate the area of wetland fill and disturbance.

5. RESULTS AND DISCUSSION

There are 1.218 acres of seasonal emergent wetland visible in the 2014 NAIP (Appendix B) and Google Earth images (Appendix C) that were taken before development of the site. The wetlands are distinguishable by the brownish-green patches of rushes (likely *Juncus patens*) in contrast to the lighter green or tan color of the adjacent grasslands, and other lighter green features that are trees and shrubs including oaks, California bay, Douglas-fir, and coyote brush. By 2018, 2.990 acres of grading and development are visible in on the NAIP image, most of

which appears to have occurred by 2016 (Figure 1, Table 1). The grading resulted in filling of 0.465 acre of wetland. These areas no longer have wetland characteristics and are under greenhouse pads and roads. 0.753 acres of emergent wetland were delineated in 2019, of which 0.306 acre is within the graded area visible in the aerial images; there is no development on these areas and they still have wetland characteristics. Most of the grading and development outside the wetlands is within the 100-foot wetland setback (of the 2014 wetland extent) required by the *Cannabis Cultivation Policy* (Water Board 2019). Representative photos of the site are provided Appendix D.

Table 1. Summary of Wetland Impacts.

Map Feature	Total Area (acres)	
	2014	2019
Disturbed Area	0	2.990
Emergent Wetland	1.218	0.753
Filled Wetland	0	0.465
Disturbed Wetland	0	0.306
Unimpacted Wetland	1.218	0.447

There is an approximately 165-foot stretch of an intermittent stream running through the disturbed portion of Wetland 1. This feature is not visible on the 2014 aerial images. There is evidence of the channel on the 2016 NAIP image and the 2019 Google Earth image. Thus, it may be constructed, enhanced, or a result of the disturbance to the wetland. For example, the lack of vegetation after disturbance may have increased runoff and erosion through the area creating the channel. It is also possible it is not visible due to resolution of the images, or it is obscured by vegetation. There is no other evidence in the aerial images or on the ground at the site indicating other potential watercourse alterations.

The remaining wetlands, which includes the areas that were disturbed, but still have wetland characteristics, and the unimpacted wetlands have hydrophytic vegetation dominated by spreading rush (*Juncus patens*) and other hydrophytes including spike rush (*Eleocharis macrostachya*), nut sedge (*Cyperus eragrostis*), and pennyroyal (*Mentha pelugium*). The adjacent upland habitat includes grassland dominated by non-native grasses including rattlesnake grass (*Briza maxima*), wild oat (*Avena barbata*), and orchard grass (*Dactylis glomerata*). There are also stands coyote brush (*Baccharis pilularis*), Douglas-fir (*Pseudotsuga menziesii*), oaks (*Quercus* spp.), and California bay (*Umbellularia californica*).

The soil in the wetlands meets hydric soil indicators F3 (Depleted Matrix) and F6 (Redox Dark Surface). The soil color is 10yr 4/1 or 10yr 3/1 with approximately 10% 7.5yr 5/6 redox concentrations. Primary wetland hydrology indicators observed included Surface Water (A1), High Water Table (A2), and Saturation (A3). The upland soil color was 10yr 2/2 with no redox features or other hydric soil indicators. The upland grassland and forested areas lack indicators of wetland hydrology.

6. REFERENCES

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1. Vicksburg, MS: U.S. Army Engineer Waterways Experimental Station.

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Sawyer, J.O., T. Keeler-Wolf and J.M Evans. 2009. *A Manual of California Vegetation, 2nd Edition*. California Native Plant Society. Sacramento, CA.

State Water Resources Control Board. 2019. *Cannabis Cultivation Policy. Principles and Guidelines for Cannabis Cultivation*.

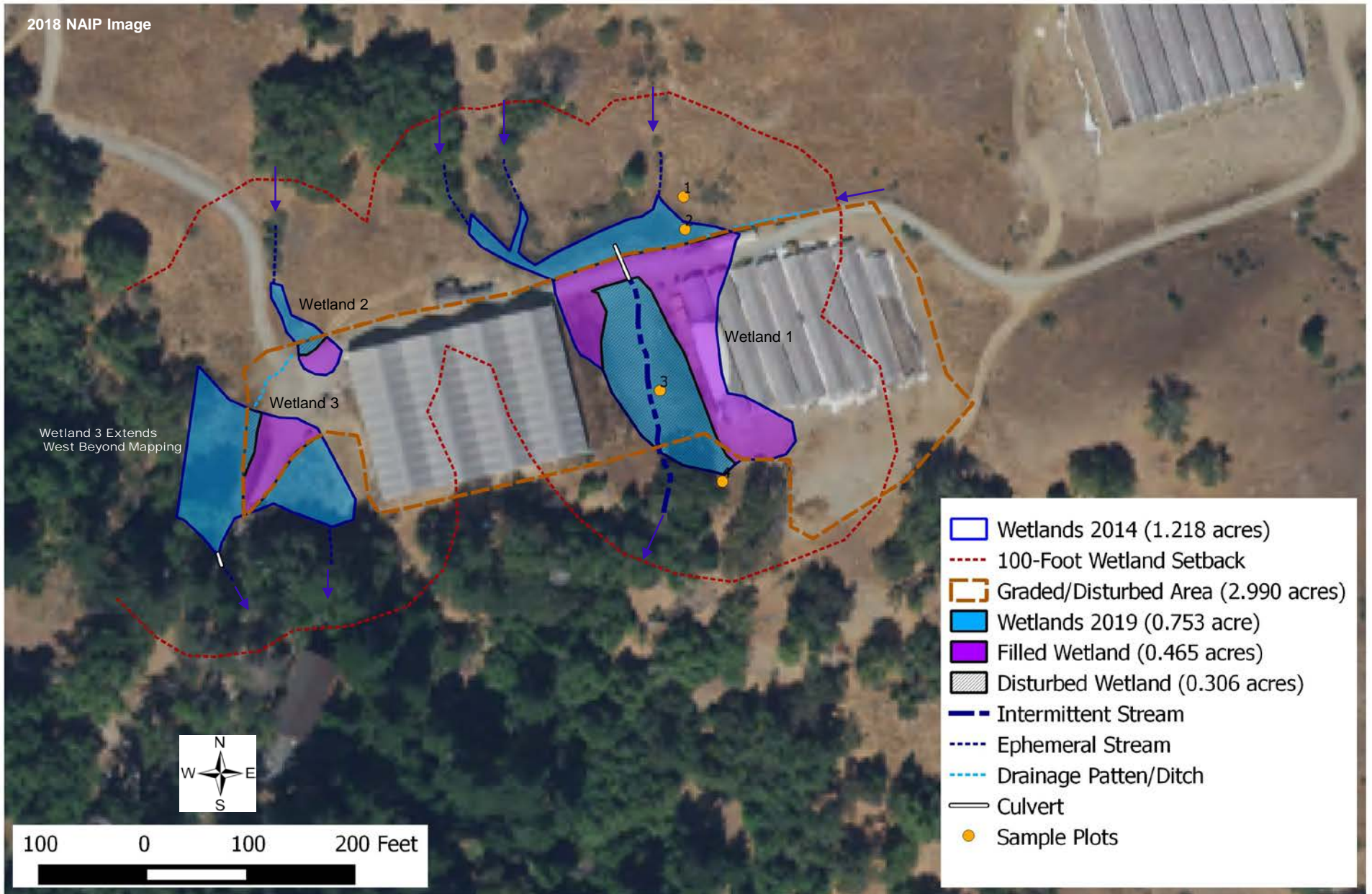
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U.S. Army Corps of Engineers. 2016. *Western Mountains, Valleys, and Coast 2016 Regional Wetland Plant List*. Lichvar, R.W., D.L. Banks, and N.C. Melvin. The National Wetland Plant List: 2016 Update of Wetland Ratings. Phytoneuron 2016-30: 1-17.

United States Department of Agriculture, Natural Resource Conservation Service. 2019. *Web Soil Survey*. <https://websoilsurvey.sc.egov.usda.gov>

Figure 1. Aquatic Resources and Impacts Map.



Appendix A. Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: APN: 212-142-009 City/County: Humboldt Sampling Date: 1
 Applicant/Owner: TRC State: CA Sampling Point: 5-8-19
 Investigator(s): K. Wear Section, Township, Range: N5, T3S, R3E
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 20
 Subregion (LRR): A Lat: E 432230.9 Long: N 4446917.0 Datum: NAD83
 Soil Map Unit Name: Coyote Rock - Parknorth NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes _____	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes _____	No <input checked="" type="checkbox"/>			
Remarks:					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
				= Total Cover	
Sampling/Shrub Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Baccharis pilularis</u>	<u>20</u>	<u>Y</u>	<u>UPL</u>		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
				= Total Cover	
Herb Stratum (Plot size: <u>20' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Briza maxima</u>	<u>60</u>	<u>Y</u>	<u>UPL</u>		
2. <u>Avena barbata</u>	<u>30</u>	<u>Y</u>	<u>UPL</u>		
3. <u>Linum bienne</u>	<u>5</u>	<u>N</u>	<u>UPL</u>		
4. <u>Vicia sativa</u>	<u>5</u>	<u>N</u>	<u>UPL</u>		
5. <u>Hypochaeris radicata</u>	<u>2</u>	<u>N</u>	<u>FACW</u>		
6. <u>Taraxacum officinale</u>	<u>2</u>	<u>N</u>	<u>UPL</u>		
7. _____	<u>104</u>	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
				= Total Cover	
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
				= Total Cover	
% Bare Ground in Herb Stratum _____				= Total Cover	

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
 Total Number of Dominant Species Across All Strata: 3 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 ___ 1 - Rapid Test for Hydrophytic Vegetation
 ___ 2 - Dominance Test is >50%
 ___ 3 - Prevalence Index is ≤3.0¹
 ___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ 5 - Wetland Non-Vascular Plants¹
 ___ Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10yr 2/2						CL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

Water Table Present? Yes _____ No Depth (inches): _____

Saturation Present? Yes _____ No Depth (inches): _____ (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: APN 212-14-009 City/County: Humboldt Sampling Date: 5-8-19
 Applicant/Owner: TRC State: CA Sampling Point: 2
 Investigator(s): K. Wear Section, Township, Range: NS, T35, R3E
 Landform (hillslope, terrace, etc.): base of slope Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): A E: 432231.5 Long: N 4446907.3 Datum: NAD83
 Soil Map Unit Name: ~~Coyle~~ Coyolerock - York north NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
				_____ = Total Cover
Sapling/Shrub Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
				_____ = Total Cover
Herb Stratum (Plot size: <u>10' - radius</u>)				
1. <u>Eleocharis macrostachya</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Juncus patens</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Mentha pelusium</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
4. <u>Holcus lanatus</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
5. <u>Poa trivialis</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
6. <u>Rumex crispus</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
				<u>75</u> = Total Cover
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
				_____ = Total Cover
% Bare Ground in Herb Stratum _____				
Remarks:				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
Remarks:				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Remarks:				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Remarks:				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: APN: 212-142-009 City/County: Humboldt Sampling Date: 5-8-19
 Applicant/Owner: TRC State: _____ Sampling Point: 3
 Investigator(s): K. Wear Section, Township, Range: NS, T35, R3E
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): A Lat: E 432224.0 Long: 4446800.3 Datum: NAD83
 Soil Map Unit Name: Coyoterock - Yorknoth NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes _____ No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>Plot Plot is in graded area, vegetation has been clearly disturbed, likely soil & hydrology as well</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>10' radius</u>)				
1. <u>Smex pates</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Cyperus eragrostis</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Poa trivialis</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	
4. <u>Mentha pelusim</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
5. <u>Dipsacus fulanum</u>	<u>2</u>	<u>N</u>	<u>FAC</u>	
6. <u>Linum biene</u>	<u>2</u>	<u>N</u>	<u>UPL</u>	
7. <u>Myosotis discolor</u>	<u>2</u>	<u>N</u>	<u>FAC</u>	
8. <u>Tribolium dubium</u>	<u>2</u>	<u>N</u>	<u>FACW</u>	
9. <u>Tribolium subterranean</u>	<u>2</u>	<u>N</u>	<u>UPL</u>	
10. <u>Hypochaeris radicata</u>	<u>2</u>	<u>N</u>	<u>FACW</u>	
11. _____	_____	_____	_____	
<u>92</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks:				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation _____

2 - Dominance Test is >50% _____

3 - Prevalence Index is ≤3.0¹ _____

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) _____

5 - Wetland Non-Vascular Plants¹ _____

Problematic Hydrophytic Vegetation¹ (Explain) _____

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No _____

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10yr 3/1	90	7.5yr 5/6	10	c	m	cl	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
--	--	---

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	Secondary Indicators (2 or more required) <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)
--	--	--

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Water Table Present? Yes _____ No _____ Depth (inches): _____	
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: water flowing in stream channel adjacent to plot

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: ADW: 212-142-007 City/County: Humboldt Sampling Date: 5-9-19
 Applicant/Owner: TRC State: CA Sampling Point: 4
 Investigator(s): K. Wear Section, Township, Range: WS, T3S, R3E
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): 5
 Subregion (LRR): A Lat: E 432242.4 Long: N 4446833.4 Datum: NAD83
 Soil Map Unit Name: Coyokrak - Parknorth NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes _____	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes _____	No <input checked="" type="checkbox"/>			
Remarks:					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>6</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>17%</u> (A/B)	
4. _____	_____	_____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>30' - radius</u>)				Prevalence Index worksheet:	
1. <u>Quercus garryana</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	Total % Cover of: _____	Multiply by: _____
2. <u>Pseudotsuga menziesii</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	OBL species _____ x 1 = _____	
3. <u>Umbellularia californica</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	FACW species _____ x 2 = _____	
4. _____	_____	_____	_____	FAC species _____ x 3 = _____	
5. _____	_____	_____	_____	FACU species _____ x 4 = _____	
= Total Cover				UPL species _____ x 5 = _____	
Herb Stratum (Plot size: <u>10' - radius</u>)				Column Totals: _____ (A) _____ (B)	
1. <u>Briza maxima</u>	<u>Y</u>	<u>40</u>	<u>UPL</u>	Prevalence Index = B/A = _____	
2. <u>Dactylis glomerata</u>	<u>Y</u>	<u>10</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators:	
3. <u>Iris purdyi</u>	<u>Y</u>	<u>10</u>	<u>UPL</u>	___ 1 - Rapid Test for Hydrophytic Vegetation	
4. <u>Anthoxanthum odoratum</u>	<u>N</u>	<u>5</u>	<u>FACU</u>	___ 2 - Dominance Test is >50%	
5. <u>Chlorogalum sp</u>	<u>N</u>	<u>5</u>	<u>UPL</u>	___ 3 - Prevalence Index is ≤3.0 ¹	
6. <u>Ranunculus sp</u>	<u>N</u>	<u>5</u>	<u>?</u>	___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
7. <u>Sisyrinchium bellum</u>	<u>N</u>	<u>2</u>	<u>FACU</u>	___ 5 - Wetland Non-Vascular Plants ¹	
8. <u>Viola hirsuta</u>	<u>N</u>	<u>2</u>	<u>BPL</u>	___ Problematic Hydrophytic Vegetation ¹ (Explain)	
9. <u>Elymus glaucus</u>	<u>N</u>	<u>2</u>	<u>FACU</u>	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
10. <u>Calochortus tolmiei</u>	<u>N</u>	<u>2</u>	<u>UPL</u>		
11. <u>Tribolium subterraneum</u>	<u>N</u>	<u>2</u>	<u>UPL</u>		
= Total Cover					
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
= Total Cover					
% Bare Ground in Herb Stratum _____					
Remarks:					

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10, r2/2						CL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)
	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

Water Table Present? Yes _____ No Depth (inches): _____

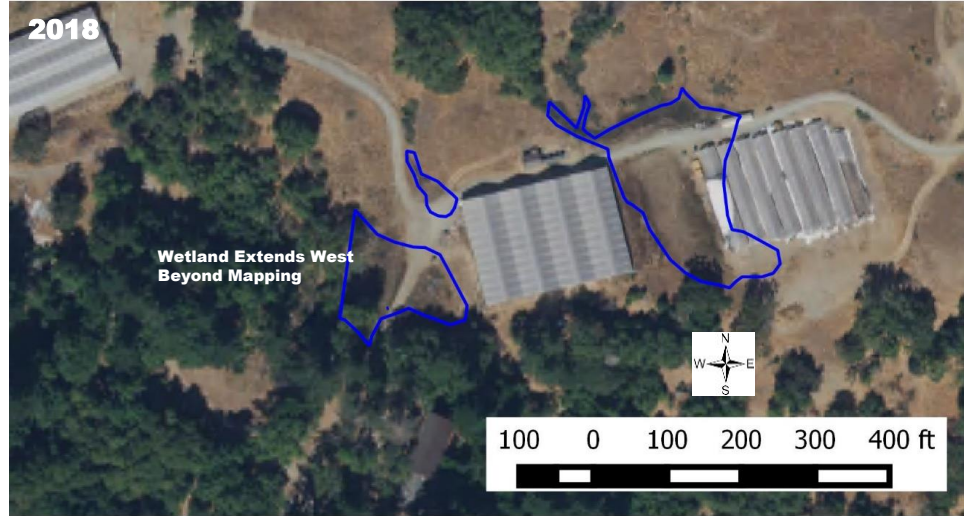
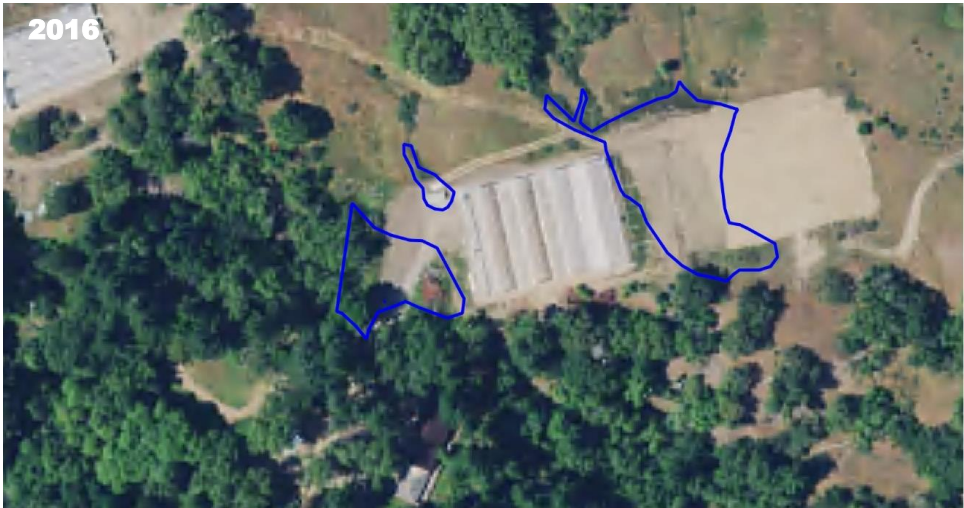
Saturation Present? Yes _____ No Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No

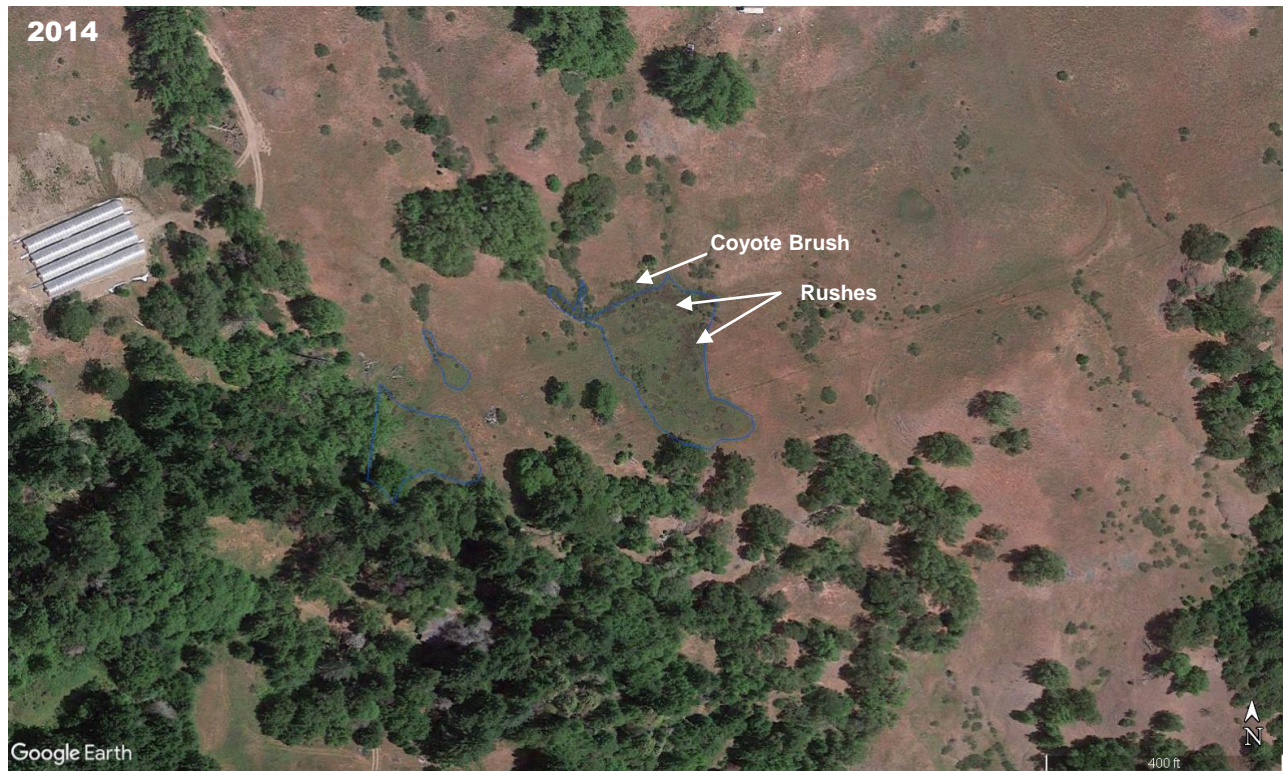
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B. Comparison of 2014, 2016, and 2019 NAIP Images.



Appendix C. Comparison of 2014 and 2019 Google Earth Images.



Appendix D. Representative Photos



Photo 1. Ephemeral stream flowing into Wetland 1, looking north from near the road.



Photo 2. Wetland 1, looking southwest towards greenhouses.

Appendix D (Cont.). Representative Photos



Photo 3. Wetland 2, looking south.



Photo 4. Ephemeral stream draining into Wetland 2, looking north.

Appendix D (Cont.). Representative Photos



Photo 5. Wetland 3, looking south from road.



Photo 6. Road drainage feature from Wetland 2, looking northeast.

Appendix D (Cont.). Representative Photos

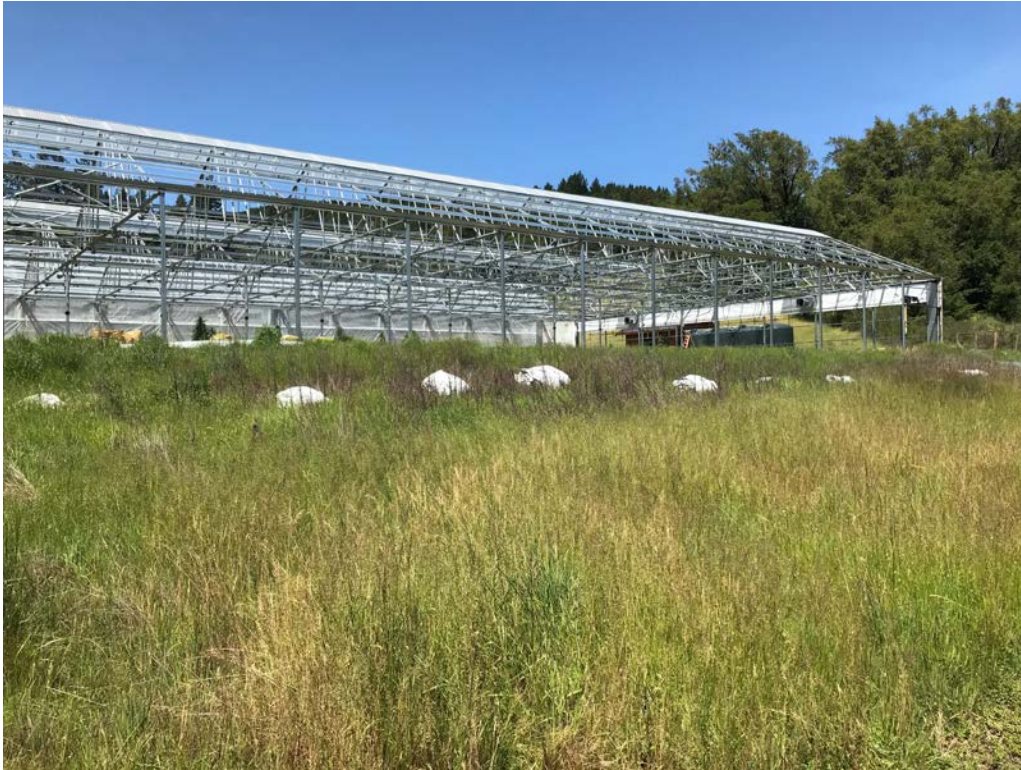


Photo 7. Greenhouses adjacent to Wetland 1, looking west.



Photo 8. Cultivation area on fill in Wetland 1, looking east.

Appendix D (Cont.). Representative Photos



Photo 9. Intermittent stream through disturbed portion of Wetland 1, looking south from road.



Photo 10. Intermittent stream through disturbed portion of Wetland 1, looking north.