APPENDIX P

Biological Resources: *Wetland Delineation for Activities in the Coastal Zone*

Stantec

Memo

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File:	Administrative Draft Wetland Delineation for Activities in the Coastal Zone	Date:	December 20, 2018

Reference: Administrative Draft Wetland Delineation for Activities in the Coastal Zone

This memorandum presents a delineation of wetlands subject to the Coastal Act associated with the proposed Humboldt Wind, LLC (Humboldt Wind) Humboldt Wind Energy Project (project) located in portions of the Coastal Zone under the jurisdiction of the California Coastal Commission. The transportation route that will be used to deliver project components to the main project site is the only portion of the project located within the Coastal Zone and follows Highway 101 for most of its route. This transportation route may deviate from Highway 101 in seven locations, six of which are in the Coastal Zone. Four of the six locations may require temporary improvements. All six locations located within the Coastal Zone were included in the wetland delineation.

METHODS

DESKTOP REVIEW

Prior to conducting fieldwork, Stantec biologists reviewed the following resources:

- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (USFWS, 2018),
- Google Earth color aerial imagery dating back to 1985,
- U.S. Geological Survey (USGS) 7.5-minute topographic maps (USGS, 1969a, 1969b, 1969c, 1970)
- USGS National Hydrography Dataset (USGS, 2007-2014)

These resources were used to identify potential aquatic features based on changes in vegetation, topographic changes, or visible drainage patterns. Prior to field surveys, potential features were digitized into a working field map which was then used as a reference during field surveys.

FIELD ASSESSMENT

The wetland delineation was conducted between October 11 and 12, by Stantec Biologists Sheryl Creer and John Holson. The last appreciable rainfall prior to the survey as recorded by the National Oceanic and Atmospheric Administration's Scotia weather station was 0.19 in on October 6, 2018 (NRCS 2018a).

Stantec biologists recorded plant species observed during field surveys (Appendix A). Botanical nomenclature follows The Jepson Manual: Vascular Plants of California, Second Edition (Baldwin et al. 2012). Nomenclatural changes made after the publication date of The Jepson Manual follow the Jepson eFlora (Jepson Flora Project 2018).

Wetlands

Stantec biologists followed the routine determination method given in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and the revised procedures in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE 2010). This methodology entails examination of specific sample points within potential wetlands for hydrophytic vegetation, hydric soils, and wetland hydrology. Potential wetlands under the jurisdiction of the California Coastal Commission (CCC) that are located within the Coastal Zone (CZ) were mapped following the USACE method for delineation. However, the CCC requires only one of the three USACE factors for a feature to qualify as a wetland in the CZ (CCC 2011). Therefore, features within the CZ that met one of the three USACE criterion were mapped as CCC wetlands.

Four sample points were established within the study area, and a USACE wetland determination data form was completed for each (Appendix B). Sample pits were excavated at each point, and soils were evaluated for hydric indicators (NRCS 2017). Vegetation was also sampled and recorded, as well as indicators of wetland hydrology in a 1-meter-radius plot surrounding the sample point. In situations where close-by or adjacent wetland features supported similar vegetation composition and indicators of hydrology, one set of sample points was excavated for one wetland feature and then applied to adjacent features. Two sample points in suspected wetlands did not meet any of the USACE wetland criteria and are therefore considered upland.

Wetland boundaries were determined by following a combination of the limits of hydrophytic vegetation, limits of observed wetland hydrology, topographic breaks, and aerial ortho-photo interpretation. Sample pits and wetland boundaries were mapped using a sub-meter-accurate Bad Elf™ Global Positioning Service Unit (Bad Elf) paired with Collector for ArcGIS™ (Collector). All spatial data was collected in the WGS84 datum.

Representative photographs were also taken of sample points and features (Appendix C). All potential wetland areas were evaluated to identify their connection to on-site and off-site hydrologic resources; all potentially jurisdictional wetland areas were mapped if they met one USACE-required parameter. Boundaries of riparian wetlands were also mapped using aerial imagery or, in circumstances where riparian canopy was not discernible from aerial imagery, with the Bad Elf.

All wetland features were assigned a Manual of California Vegetation (MCV) community based on overall vegetation within each delineated feature (i.e., using vegetation beyond the sample plot). Upland vegetation was also classified according to the MCV. Two vegetation communities are not described in the MCV. For the purposes of this memo, a new vegetation alliance was described and named, following MCV convention.

Other Waters

No drainages were present within the study area (i.e. no potentially jurisdictional drainages with primary or secondary indicators of Ordinary High Water Mark (OHWM) were observed), therefore none were mapped. Stantec biologists followed A Guide to Ordinary High Water Mark Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States (USACE 2014).

UPLAND VEGETATION

All wetland features were assigned an MCV vegetation community based on overall vegetation within each delineated feature (i.e., using vegetation beyond the sample plot). One vegetation community within the delineated wetlands is not described in the MCV. For the purposes of this memo, a new vegetation alliance was described and named, following MCV convention. These vegetation alliances are denoted with an asterisk (*).

*Sweet vernal grass meadows

Sweet vernal grass meadows semi-natural alliance is common in the study area and is dominated by sweet vernal grass. In many stands it co-dominates with other grasses such as rattlesnake grass (*Briza maxima*) and velvet grass or non-native forbs such as jointed charlock (*Raphanus sativus*) or English plantain.

Himalayan blackberry brambles

Himalayan blackberry riparian brambles semi-natural alliance occurs in very disturbed, partially developed landscapes in the study area. This shrub community is dominated by Himalayan blackberry and includes other introduced species such as firethorn (*Pyracantha* spp.), poison oak, and bromes.

Wild Oats Grassland

Wild oats (*Avena fatua*) occurs in disturbed areas adjacent to roads highways within the study area. Wild oat is dominant throughout, and co-dominant species vary across the study area and include other non-native species such as ripgut brome (*Bromus diandrus*), common velvet grass (*Holcus lanatus*), Italian rye grass (*Festuca perennis*), and orchardgrass (*Dactylis glomerata*).

Perennial Rye Grass Fields

Perennial rye grass (*Festuca perennis*) fields semi–natural alliance occurs in the Hookton Overpass portion of the study area in uplands adjacent to Arroyo willow thickets. This herbaceous plant community is dominated by perennial rye grass with sub-dominant grasses present such as blue wild-rye. Other forbs commonly observed include Helminthotheca echioides and Rumex crispus.

Monterey pine plantation

Two stands of Monterey pine (*Pinus radiata*) plantations are located in the study area. Both locations are small areas in the Transportation Route bounded by Highway 101 offramps and county roads. In both locations, Monterey pine accounts for 100% of the tree species in the stand, with a moderate herbaceous layer dominated by sweet vernal grass and rattlesnake grass.

RESULTS

Stantec biologists mapped 6 wetlands (0.8229 ac) potentially under the jurisdiction of the CCC (Table 1, Figure 1).

Table 1: Summary of Potentially Jurisdictional Wetlands within the Survey Area

Cowardin Code[1]	Vegetation Community	Acres
Palustrine Emergent	**Mentha pulegium* (pennyroyal) marshes	0.1305
Palustrine Scrub-Shrub	*Salix lasiolepis* (arroyo willow) thickets	0.6924
Total Jurisdictional Area		0.8229

* alliance not included in the MCV

[1] PEM = palustrine emergent, PSS = palustrine scrub-shrub, PFO = palustrine forested. Codes based on Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service Report No. FWS/OBS/-79/31.Washington, D.C.

WETLANDS

Wetlands were categorized into one of two Cowardin classifications: palustrine emergent or palustrine scrub-shrub habitats (Cowardin et al. 1979). Mapped wetlands were further classified into one of two vegetation alliances. The most abundant vegetation type by wetland feature is *Salix lasiolepis* (arroyo willow thickets), which comprise four wetlands and 0.6924 ac. The wetland indicator status for the dominant species in each vegetation/wetland type is provided below (Lichvar et al. 2016).

Table 2: Potentially Jurisdictional Wetlands within the Survey Area

Wetland ID	Cowardin Code[1]	Vegetation Community	Description	Acres
302	Palustrine Scrub-Shrub	*Salix lasiolepis* (arroyo willow) thickets	Forested riparian wetland; associated with an unnamed ditch located outside the survey area.	0.1962
306	Palustrine Scrub-Shrub	*Salix lasiolepis* (arroyo willow) thickets	Forested riparian wetland; associated with an unnamed ditch in a median bounded by Highway 101 and a frontage road.	0.1181
311a	Palustrine Emergent	**Mentha pulegium* (pennyroyal) marshes	Vegetated ditch located in a median bounded by Highway 101 and a frontage road.	0.0518
319	Palustrine Emergent	**Mentha pulegium* (pennyroyal) marshes	Seasonal wetland; likely isolated.	0.0786
321	Palustrine Scrub-Shrub	*Salix lasiolepis* (arroyo willow) thickets	Forested riparian wetland; associated with an unnamed ditch located outside the survey area.	0.2158
322	Palustrine Scrub-Shrub	*Salix lasiolepis* (arroyo willow) thickets	Forested riparian wetland.	0.1622
Total				**0.8229**

[1] Acreage for drainages was calculated using the area within the OHWM and includes culverts.

Palustrine Emergent Wetlands

**Pennyroyal marshes*

Two wetlands were classified as pennyroyal marshes; one at Fields Landing, and one along the transportation route at Hookton Overpass. The marshes are dominated by pennyroyal (OBL), and the majority are co-dominated by common velvet grass (FAC) or perennial rye grass (FAC).

Soils and Hydrology

One set of paired points was established in a PEM wetland (wetland [W-] 319). Soils examined at the excavated sample point within the PEM wetland did not exhibit indicators of of hydric soil. However, indicators of wetland hydrology were observed at W-319: algal mat or crust (indicator B4) and surface soil cracks (indicator B6). Sample points were not established for W-311a, but secondary indicators of wetland hydrology were observed: drainage patters (indicator B10) and FAC-neutral test (D5).

Palustrine Scrub-Shrub

Arroyo willow thickets

Four wetlands were as arroyo willow (*Salix lasiolepis*) thickets. This shrub community is dominated by arroyo willow (FACW). Stands at Hookton Overpass support a diversity of shrub species including Nootka rose (*Rosa nutkana*) (FAC) and California hazel (*Corylus cornuta* subsp. *californica*) (FACU). Stands at Finch Creek Bridge Bypass are overwhelmingly dominated by arroyo willow with a trace amount of thimbleberry and Himalayan blackberry (FAC).

Soils and Hydrology

Sample points were not established for the four PSS wetlands mapped. All PSS wetlands exhibited a dominance of hydrophytic vegetation as well as indicators of wetland hydrology: drainage patterns (indicator B10) and geomorphic position (indicator D2).

OTHER AREAS INVESTIGATED

Two sample test points (304 and 313) were established in locations that appeared to be potential wetlands. However, upon examination and completion of the 3-factor USACE analysis, these locations did not meet any of the three wetland criteria, and therefore were not considered CCC jurisdictional wetland areas.

CONCLUSION

Potential waters under the jurisdiction of the CCC identified in the study area includes six wetlands (0.8229 ac). Two additional features were investigated, but do not meet any of the three USACE wetland criteria and are likely not under the jurisdiction of the CCC.

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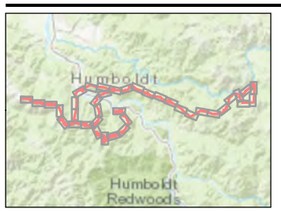
FIGURES

	Area (acres)
Wetlands	
W-319	0.0786
W-321	0.2158
W-322	0.1622
Total Potential Waters	0.4567



Study Area

Control Point (Easting, Northing)

Coastal Zone Boundary

Wetland Features
by Cowardin Classification

PEM: Palustrine Emergent

PSS: Palustrine Scrub-Shrub

Data Points

Upland

Wetland

N

0 200 400

Feet

1 inch = 400 feet
(At original document size of 11x17)

Coordinate System: California State Plane, Zone 1 (feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983
Vertical Datum: NAVD88, U.S. Feet
Imagery Source: Digital Globe
Imagery Date: 10/12/2017

Project Location
Humboldt County, California

185703758

Prepared by PG on 2018-12-14
Technical Review by SC on 2018-12-14
Independent Review by JD on 2018-12-17

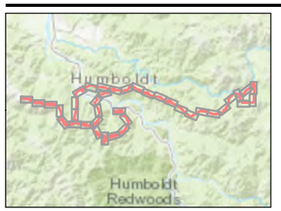
Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
1

Title
Potential Waters

Stantec

	Area (acres)
Wetlands	
W-306	0.1181
W-311a	0.0518
Total Potential Waters	0.1699



Study Area

Control Point (Easting, Northing)

Coastal Zone Boundary

Wetland Features
by Cowardin Classification

PEM: Palustrine Emergent

PSS: Palustrine Scrub-Shrub

Data Points

Upland

Wetland

0 200 400
Feet
1 inch = 400 feet
(At original document size of 11x17)

Coordinate System: California State Plane, Zone 1 (feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983
Vertical Datum: NAVD88, U.S. Feet
Imagery Source: Digital Globe
Imagery Date: 10/12/2017

Project Location
Humboldt County, California

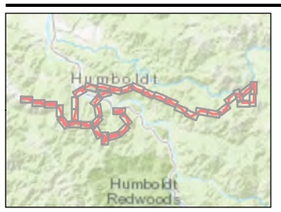
185703758
Prepared by PG on 2018-12-14
Technical Review by SC on 2018-12-14
Independent Review by JD on 2018-12-17

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
1

Title
Potential Waters

Stantec



Study Area

Control Point (Easting, Northing)

Coastal Zone Boundary

Wetland Features
by Cowardin Classification

PEM: Palustrine Emergent

PSS: Palustrine Scrub-Shrub

Data Points

Upland

Wetland

N

0 200 400

Feet

1 inch = 400 feet
(At original document size of 11x17)

Coordinate System: California State Plane, Zone 1 (feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983
Vertical Datum: NAVD88, U.S. Feet
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Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
1

Title
Potential Waters

Stantec

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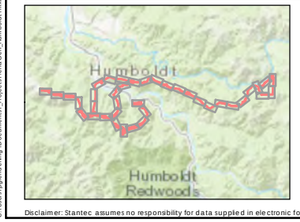
	Area (acres)
Wetlands	
W-302	0.1962
Total Potential Waters	0.1962



Study Area

Control Point (Easting, Northing)

Coastal Zone Boundary

Wetland Features
by Cowardin Classification

PEM: Palustrine Emergent

PSS: Palustrine Scrub-Shrub

Data Points

Upland

Wetland

N

0 200 400

Feet

1 inch = 400 feet
(At original document size of 11x17)

Coordinate System: California State Plane, Zone 1 (feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983
Vertical Datum: NAVD88, U.S. Feet
Imagery Source: Digital Globe
Imagery Date: 10/12/2017

Project Location
Humboldt County, California

185703758

Prepared by PG on 2018-12-14
Technical Review by SC on 2018-12-14
Independent Review by JD on 2018-12-17

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
1

Title
Potential Waters

Stantec

Appendix A *Plant Species Observed*

Table A-1. Plant Species Observed

Scientific Name	Common Name	Wetland Indicator Status	Origin
Anacardiaceae (Sumac or Cashew Family)			
Toxicodendron diversilobum	poison oak	FAC	native
Apiaceae (Umbelliferae) (Carrot Family)			
Torilis arvensis	field hedge parsley	-	non-native (invasive)
Achillea millefolium	yarrow	FACU	native
Artemisia douglasiana	California mugwort	FACW	native
Baccharis pilularis	coyote brush	-	native
Bellis perennis	English lawn daisy	-	non-native (invasive)
Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	-	non-native
Cichorium intybus	chicory	FACU	non-native
Cirsium vulgare	bull thistle	FACU	Non-native (invasive)
Hypochaeris glabra	smooth cats ear	-	non-native (invasive)
Hypochaeris radicata	hairy cats ear	FACU	non-native (invasive)
Leontodon saxatilis	hawkbit	FACU	non-native
Leucanthemum vulgare	oxe eye daisy	FACU	non-native (invasive)
Madia elegans	common madia	-	native
Betulaceae (Birch Family)			
Alnus rubra	red alder	FAC	native
Corylus cornuta ssp. *californica*	beaked hazelnut	FACU	native
Caprifoliaceae (Honeysuckle Family)			
Lonicera hispidula	Pink honeysuckle	FACU	native
Cyperaceae (Sedge Family)			
Carex praegracilis	field sedge	FACW	native
Cyperus eragrostis	tall cyperus	FACW	native
Eleocharis macrostachya	spike rush	OBL	native
Dipsacaceae (Teasel Family)			
Dipsacus fullonum	wild teasel	FAC	non-native (invasive)
Dryopteridaceae (Wood Fern Family)			
Equisetaceae (Horsetail Family)			
Equisetum arvense	common horsetail	FAC	native
Fabaceae (Leguminosae) (Legume Family)			
Acmispon americanus var. *americanus*	Spanish lotus	FACU	native

Scientific Name	Common Name	Wetland Indicator Status	Origin
Lotus corniculatus	bird's foot trefoil	FAC	non-native (invasive)
Lotus tenuis	narrow-leaf bird's-foot trefoil	FACU	non-native
Trifolium dubium	shamrock	FACU	non-native
Trifolium fragiferum	strawberry clover	FACU	non-native
Trifolium repens	white clover	FAC	non-native
Vicia sativa ssp. *sativa*	Spring vetch	UPL	non-native
Zeltnera muehlenbergii	Muehlenberg's centaury	FACW	native
Juncaceae (Rush Family)			
Juncus balticus ssp. *ater*	Baltic rush	FACW	native
Juncus bufonius	common toad rush	FACW	native
Juncus effusus	common bog rush	FACW	native
Juncus occidentalis	slender juncus	FACW	native
Juncus patens	rush	FACW	native
Juncus tenuis	slender rush	FAC	native
Lamiaceae (Labiateae) (Mint Family)			
Mentha pulegium	pennyroyal	OBL	non-native (invasive)
Prunella vulgaris	self heal	FACU	native
Linaceae (Flax Family)			
Hesperolinon micranthum	small flower western flax	-	native
Linum bienne	flax	-	non-native
Lythraceae (Loosestrife Family)			
Lythrum hyssopifolia	hyssop loosestrife	OBL	non-native
Phrymaceae (Lopseed Family)			
Parentucellia viscosa	yellow parentucellia	FAC	non-native (invasive)
Plantaginaceae (Plantain Family)			
Plantago lanceolata	ribwort	FACU	non-native (invasive)
Veronica anagallis-aquatica	water speedwell	OBL	non-native
Poaceae (Gramineae) (Grass Family)			
Agrostis exarata	bentgrass	FACW	native
Agrostis idahoensis	Idaho redtop	FACW	native
Agrostis pallens	Diego bent grass	UPL	native
Aira caryophyllea	silvery hairgrass	FACU	non-native (invasive)
Alopecurus saccatus	foxtail	FACW	native
Anthoxanthum odoratum	sweet vernal grass	FACU	non-native (invasive)
Briza maxima	rattlesnake grass	UPL	non-native

Scientific Name	Common Name	Wetland Indicator Status	Origin
Briza minor	little rattlesnake grass	FAC	non-native
Bromus diandrus	ripgut brome	-	non-native (invasive)
Bromus hordeaceus	soft chess	FACU	non-native (invasive)
Cynodon dactylon	Bermuda grass	FACU	non-native (invasive)
Cynosurus echinatus	dogtail grass	-	non-native (invasive)
Dactylis glomerata	orchardgrass	FACU	non-native (invasive)
Distichlis spicata	salt grass	FACW	
Elymus glaucus ssp. *glaucus*	blue wild rye	FACU	native
Festuca arundinacea	reed fescue	FAC	non-native (invasive)
Festuca bromoides	brome fescue	FAC	non-native
Festuca myuros	rattail sixweeks grass	FACU	non-native (invasive)
Festuca perennis	Italian rye grass	FAC	non-native
Holcus lanatus	common velvetgrass	FAC	non-native (invasive)
Hordeum marinum ssp. *gussoneanum*	barley	FAC	non-native
Phalaris aquatica	harding grass	FACU	non-native (invasive)
Poa pratensis ssp. *pratensis*	Kentucky blue grass	FAC	non-native (invasive)
Polypogon monspeliensis	annual beard grass	FACW	non-native (invasive)
Polygonaceae (Buckwheat Family)			
Rumex acetosella	sheep sorrel	FACU	non-native (invasive)
Rumex crispus	curly dock	FAC	non-native (invasive)
Rumex pulcher	fiddleleaf dock	FAC	non-native
Rhamnaceae (Buckthorn Family)			
Ceanothus integerrimus	deer brush	-	native
Rosaceae (Rose Family)			
Fragaria vesca	wood strawberry	FACU	native
Rosa nutkana	Nootka rose	FAC	native
Rubus armeniacus	Himalayan blackberry	FAC	non-native (invasive)
Rubus parviflorus	thimbleberry	FACU	native
Rubus ursinus	California blackberry	FACU	native
Salicaceae (Willow Family)			
Populus trichocarpa	black cottonwood	FAC	native
Salix exigua	narrowleaf willow	FACW	native
Salix lasiolepis	arroyo willow	FACW	native

Scientific Name	Common Name	Wetland Indicator Status	Origin
Sapindaceae (Soapberry Family)			
Acer macrophyllum	bigleaf maple	FACU	native
Urticaceae (Nettle Family)			
Urtica dioica	stinging nettle	FAC	native

Appendix B *Wetland Determination Data Forms*

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

Project/Site: Humboldt Wind Energy Project City/County: Humboldt Sampling Date: 10/3/18

Applicant/Owner: Humboldt Wind, LLC State: CA Sampling Point: 304

Investigator(s): S. Creer, J. Holson Section, Township, Range: S17, T03N, R01W

Landform (hillslope, terrace, etc.): fill Local relief (concave, convex, none): _____ Slope (%): 3

Subregion (LRR): A: Northwest Forests and Coast Lat: 40.642225 Long: -124.209596 Datum: _____

Soil Map Unit Name: 230: Hookton-Tablebluff complex, 2-9% NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X 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 X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: ~~Dr~~ borders by onramp + hwy 101 all fill

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 1m rad)			
1. Baccharis pil	10	Y	NL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 1m radius)			
1. Plantago lanceolata	2	N	FACU
2. Leucanthemum vulgare	15	Y	FACU
3. Anthoxanthum odoratum	10	Y	FACU
4. Bromus diandrus	15	Y	NL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	42 = Total Cover		
Woody Vine Stratum (Plot size: 1m radius)			
1. Rubus armeniacus	60	FAC	Y
2.	60		
	= Total Cover		

% Bare Ground in Herb Stratum 65

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	60	x 3 =	180
FACU species	27	x 4 =	108
UPL species	25	x 5 =	125
Column Totals:	112 (A)		538 (B)

Prevalence Index = B/A = 4.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 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.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

50% = 22

>22.8

SOIL

Sampling Point: 304

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 7/2	95					Clay	FILL
	10YR 4/4	5						
	10YR 5/8	10						

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

[3]Indicators 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: Problematic = fill: red parent material / sharp edges in redox

Not native soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No X

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: Humboldt Wind Energy Project City/County: Humboldt Sampling Date: 10/4/18
Applicant/Owner: Humboldt Wind, LLC State: CA Sampling Point: 313
Investigator(s): S. Greer, J. Hulson Section, Township, Range: S17 and S20, T04N, R01W
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): A: Northwest Forests and Coast Lat: 40.72295808 Long: -124.2162069 Datum:
Soil Map Unit Name: 110: Wetitt, 0-2% Slopes and 230: Hooktan-Tableblyff complex, 2-9% slp NWI classification: PSSIC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N 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 ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: No hydrology or hydric soils. Veg does not pass the prevalence index test.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 1m radius)			
1. Anthoxanthum odoratum	40	Y	FAC
2. Equisetum arvense	5	N	FAC
3. Juncus patens	40	Y	FAC
4. Juncus effusus	3	N	FACW
5. Raphanus sativus	4	N	NL
6.			
7.			
8.			
9.			
10.			
11.			
	92 = Total Cover		
Woody Vine Stratum (Plot size: 1m radius)			
1. Rubus ursinus	40	Y	FAC
2.			
	40 = Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	3	x 2 =	6
FAC species	125	x 3 =	375
FACU species	0	x 4 =	0
UPL species	4	x 5 =	20
Column Totals:	132 (A)		401 (B)

Prevalence Index = B/A = 3.04

Hydrophytic Vegetation Indicators:
X - Rapid Test for Hydrophytic Vegetation
__ 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.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: 313

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 2/2	100					Clay loam	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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 X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ____ No X

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: Humboldt Wind Energy Project City/County: Humboldt Sampling Date: 10/4/18

Applicant/Owner: Humboldt Wind, LLC State: CA Sampling Point: 319h UP

Investigator(s): J. Holson, S. Greer Section, Township, Range: S20, T04N, R01W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A: Northwest Forests and Coast Lat: 40.72104665 Long: -124.2203459 Datum: _____

Soil Map Unit Name: 110-Wealth, 0-2% slopes NWI classification: PEMIC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation Y, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation N, Soil Y, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m radius)			
1. Briza maxima	25	Y	NL
2. Avena fatua	10	N	NL
3. Cynosurus echinatus	25	Y	NL
4. Myosotis. pulegium	5	N	OBL
5. Plantago lanceolata	25	Y	FACU
6. Hordeum marinum	5	N	FAC
7. Cyperus eragrostis	5	N	FACW
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 25

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 ≤3.0[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.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: 319b UP

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					loam	
2-6	10YR 5/1	100					sandy clay (cobble)	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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 X

Remarks:

shovel refusal @ 6"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No X

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: Humboldt Wind Energy Project City/County: Humboldt Sampling Date: 10/4/18
Applicant/Owner: Humboldt Wind, LLC State: CA Sampling Point: 399 wet
Investigator(s): J. Hulson, S. Green Section, Township, Range: S26, T04N, R01W
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR): A: Northwest Forests and Coast Lat: 40.72107405 Long: -124.2203558 Datum:
Soil Map Unit Name: 110. Wadsworth, 0-2% slopes NWI classification: PEMC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation Y, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation N, Soil N, or Hydrology N 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 X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Vegetation cleared and soil disturbed, possibly filled

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 1m radius)			
1. Salix lasiolepis	10	Y	FACW
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 1 meter radius)			
1. Distichlis spicata	10	Y	FACW
2. Mentha pulegium	10	Y	OBL
3. Cyperus eragrostis	5	N	FACW
4. Eleocharis macrostachya	10	Y	OBL
5. Rumex crispus	3	N	FAC
6. Festuca perennis	2	N	FAC
7. Hordeum marinum	1	N	FAC
8.			
9.			
10.			
11.			
	41 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 66

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
X 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
50=20
20=8.2

SOIL

Sampling Point: 319a Wet

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/2	100					loam	
1-8	10YR 3/1	100					gravel/cobble	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: rock/gravel

Depth (inches): 8"

Hydric Soil Present? Yes ___ No X

Remarks: heavily disturbed, alkali soils, redox may not be apparent

shovel refusal @ 8"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

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

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Appendix C *Representative Photographs*

Photo 1. W-302 at Finch Creek Bridge and Bypass

Photo 2. W-306 at Hookton Overpass

Photo 3. W-311a at Hookton Overpass

Photo 4. W-319 at Fields Landing

Photo 5. W-321, W-322 at Depot Road