

Appendix E.2

Biological Resource Reports

*Wetland and Other Waters Delineation
Report, Samoa Peninsula Wastewater
Project*

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Wetland and Other Waters Delineation Report

Samoa Peninsula Wastewater Project
Samoa Peninsula Community Service District

Assessor's Parcel Numbers
401-112-021 401-301-016
401-141-005 401-141-004
401-031-061
Samoa, California



Prepared for:
John Miller
County of Humboldt



August 2018
017203

Reference: 017203

Wetland and Other Waters Delineation Report

Samoa Peninsula Wastewater Project Samoa Peninsula Community Service District

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Prepared for:

John Miller

County of Humboldt

Prepared by:



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August 2018

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Table of Contents

	Page
Abbreviations and Acronyms	i
1.0 Introduction	1
1.1 Purpose	1
1.2 Project Location	1
2.0 Project Description	1
3.0 Environmental Setting	2
3.1 Site Overview	2
3.2 Site Hydrology and Climatic Conditions	2
3.3 National Wetlands Inventory (NWI)	3
4.0 Vegetation.....	4
4.1 Natural Communities.....	5
4.2 Special Status Plant Species.....	5
5.0 Geologic and Soil Composition	5
6.0 Regulatory Setting.....	8
6.1 Federal Laws	8
6.1.1 Sections 401 and 404 of the Clean Water Act	8
6.1.2 Rivers and Harbors Appropriation Act of 1899.....	9
6.2 State Laws	9
6.2.1 California Coastal Act.....	9
6.2.2 Porter-Cologne Water Quality Control Act.....	10
7.0 Methodology.....	10
7.1 Vegetation Methodology.....	12
7.2 Soils Methodology	13
7.3 Hydrology Methodology	13
7.4 Ordinary High Water Mark Methodology.....	13
8.0 Discussion and Results	13
8.1 TP1U.....	14
8.2 TP1W.....	14
8.3 TP2	15
8.4 TP3	15
8.5 TP4	15
8.6 TP5	16
8.7 TP6	16
8.8 TP7	16
8.9 TP8	16
8.10 TP9	17
8.11 TP10	17
8.12 TP11	17
8.13 TP12	18
8.14 Ordinary High Water Mark (OHWM)	18
9.0 Conclusions	18

Table of Contents, Continued

10.0	Limitations	20
11.0	References Cited	20

Appendices

1. National Wetlands Inventory
2. Wetland and OHWM Delineation Data Forms
3. Site Photographs
4. Plant List

List of Illustrations

Figures		Follows Page
1.	Project Location	1
2.	Project Boundary	1
3A.	Delineated Wetlands Northern Area	12
3B.	Delineated Wetlands Central Area	12
3C.	Delineated Wetlands Southern Area	12
3D.	Delineated Wetlands Northern Staging Area	

Tables		On Page
1.	WETS Rainfall Data.....	3
2.	Wetland Delineation and OHWM Results	19

Abbreviations and Acronyms

ft.	feet
APN	Assessor's parcel number
CDEC	California Data Exchange Center
CFR	Code of Federal Regulations
CIMIS	California Irrigation Management Information System
CSD	Community Service District
CT	control point
CWA	Clean Water Act
EPA	United States Environmental Protection Agency
ERDC/CRREL	United States Army Engineer Research and Development Center/Cold Regions Research and Engineering Laboratory
ESHA	environmentally sensitive habitat area
ETo	Evapotranspiration
FAC	facultative wetland plant species
FACU	facultative-upland plant species
FACW	facultative-wet wetland plant species
GIS	geographic information system
GPS	global positioning system
NL	not listed wetland plant species
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	obligate wetland plant species
OHWM	ordinary high water mark
PEM	Palustrine Emergent
PSS	Palustrine Scrub Shrub
Redox	redoximorphic
RMT II	redwood marine terminal II
RWQCB	California Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
TP	test pit
UPL	upland plant species
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
WDR	waste discharge requirement
WETS	Climate Analysis for Wetlands Tables
WoS	waters of the State
WoUS	waters of the United States

1.0 Introduction

SHN has prepared this Wetland and Other Waters Delineation Report for the Samoa Peninsula Wastewater Project in Samoa, California. Fieldwork was performed by SHN staff soil scientists and botanists.

1.1 Purpose

The purpose of this Report is to identify potential wetlands and other waters of the United States and State at the project site, as defined by the United States Army Corps of Engineers (USACE) and California Coastal Act methodology. The delineation of these features will help guide the design and construction of the proposed Samoa Peninsula Wastewater Project within the study area and avoid impacts to potential jurisdictional wetlands.

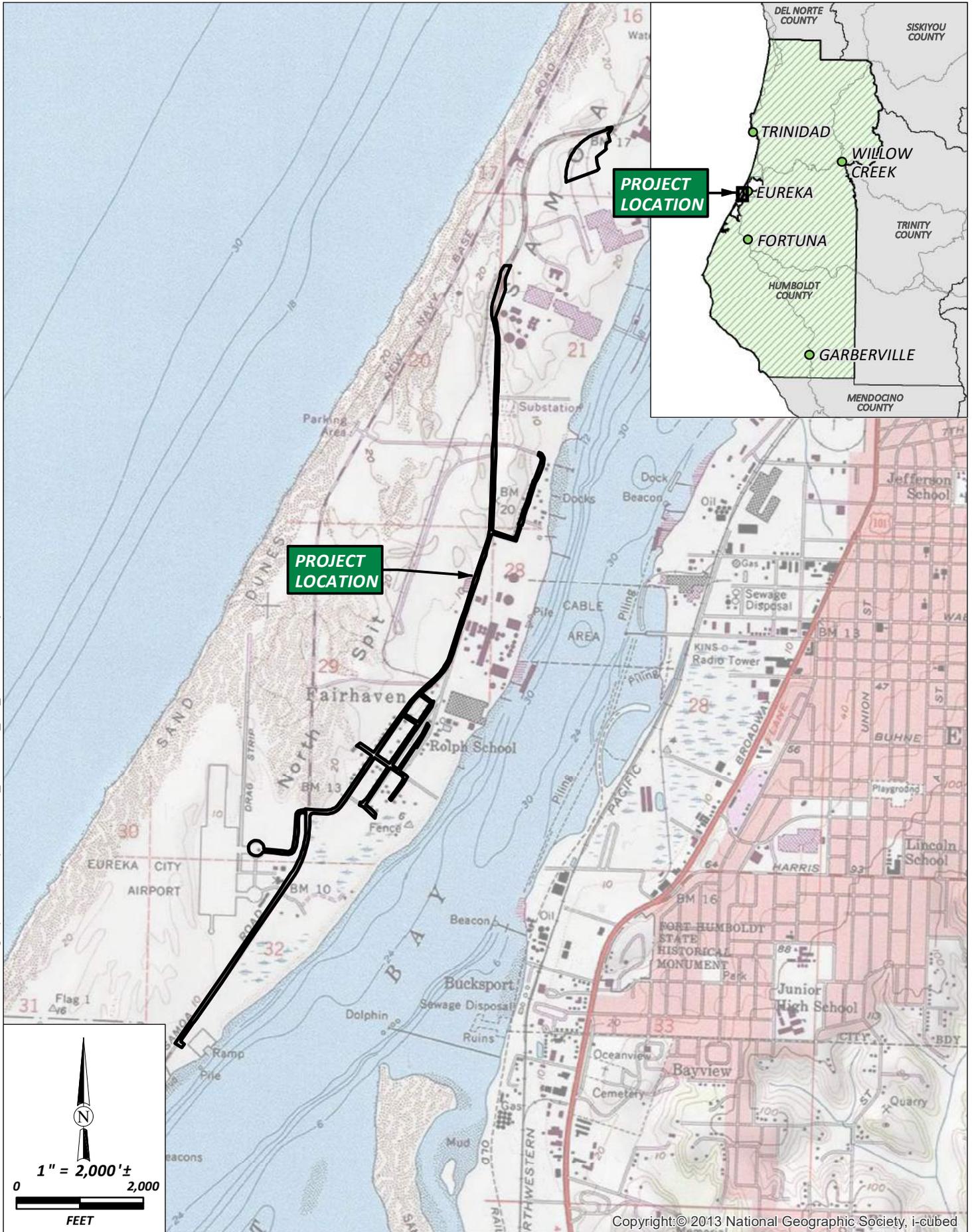
1.2 Project Location

The project is located on the Samoa Peninsula, stretching approximately 2.5 miles from the Redwood Marine Terminal II (RMT II) ocean outfall pipe to the Samoa boat ramp and RV Park, plus a large staging area proposed near the wastewater treatment facility (WWTF) site. This includes the two unincorporated communities of Fairhaven and Finntown, California, within Humboldt County (Figure 1; United States Geological Survey [USGS] Eureka 7.5-minute Quadrangle, Township 5 North, Range 1 West, Section 29, Humboldt Meridian). The project is also located within Sections 16, 20, 21, 28, and 32 of Township 5 North, Range 1 West, Humboldt Meridian. The study area intersects directly with five separate parcels (Assessor's parcel numbers [APNs] 401-112-021, 401-301-016, 401-141-005, 401-141-004, and 401-031-061). Parcel 401-141-004 is a staging area located next to the Samoa drag strip. Parcel 401-031-061 is a staging area near the WWTF. The study area for the wastewater collection system consists of approximately 30 acres with a center latitude and longitude of 40.789892° and -124.198747°, respectively. The study area for this report includes an approximately 4.7-mile long network along existing road prisms from the proposed RMT II ocean outfall access point south to the Samoa boat launch county park, along with two stockpile and staging areas (Figure 2). Additional project areas located to the north of the RMT II ocean outfall pipeline were addressed in the RMT II Wetland Delineation for Samoa Effluent Pipeline (SHN, 2017). The project is located on the Samoa peninsula, approximately 1 air-mile west of the city of Eureka, 6.5 air-miles southwest of Arcata, and an average half-mile east of the Pacific Ocean.

2.0 Project Description

The Samoa Peninsula Wastewater Project (project) is designed to develop a regional wastewater collection, treatment, and disposal system on the Samoa Peninsula to reduce water quality impacts from wastewater which is currently discharged to groundwater through existing percolation ponds and individual leach fields. The project would provide wastewater services to the unincorporated communities of Fairhaven and Finntown, existing industrial uses, the Samoa boat ramp and RV park, and smaller commercial operations located on or near the City of Eureka Samoa Field. The project would not service the Samoa Town as described in the approved Samoa Town Master Plan. The proposed project will include construction and operation of a wastewater collection system, upgrades to a previously approved WWTF, and treated water disposal through the ocean outfall pipe at the RMT II. Impacts from the construction of the WWTF, and treated wastewater disposal were studied and analyzed in the wetland delineation for the Samoa Effluent Pipeline Project (SHN, 2017). This wetland delineation addresses jurisdictional wetlands and other waters potentially impacted by the construction of the wastewater system between the RMT II outfall pipe and the Samoa boat ramp and RV park, and use of the staging area near the WWTF.

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SHN
Consulting Engineers
& Geologists, Inc.

County of Humboldt
Samoa Peninsula Wastewater, Wetland Delineation
Samoa, California

August 2018

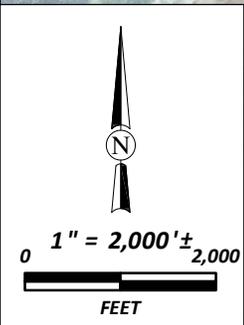
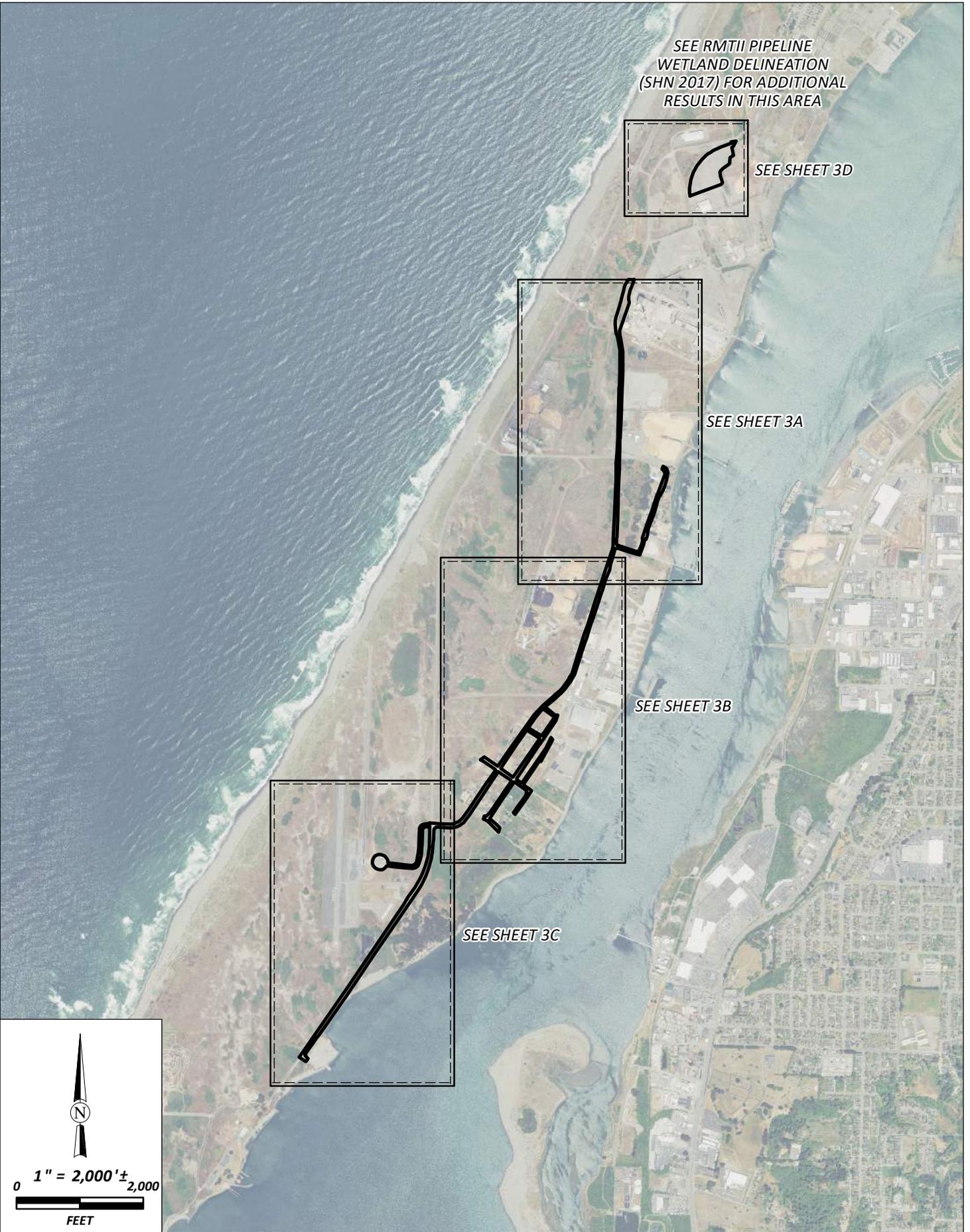
Project Location

SHN 017203.003

Figure 1

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3.0 Environmental Setting

3.1 Site Overview

The study area is located within former industrial land, road ways, and in the unincorporated communities of Fairhaven and Finntown. The majority of these lands were historically dune and deflation plain wetland habitat (Figures 1 and 2). The study area has been used for industrial purposes, roadways, and residences since the late 1800s with a large portion of the industrial development occurring in the 1960s and 1970s. The towns of Fairhaven and Finntown historically operated with shipyards oriented around the lumber trade. Several lumber mills and pulp mills operated on the northern and mid-sections of the study area, closing at different times within the last 20 years. These facilities have mostly been demolished, leaving vacant industrial land, however, several have been repurposed into other industrial uses. Many lumber-based industrial facilities continue to operate within and adjacent to the study area. The southern portion of the study area includes the Samoa boat launch and campground, operated by the County of Humboldt, and the road access area to the Samoa Drag Strip. The western portion of the study area covers sections of New Navy Base Road and Vance Avenue. Other roadways within the study area include residential roads in Fairhaven and Finntown. Currently, the majority of the study area includes active roadways; it is covered in old asphalt, fractured concrete, compacted gravel, former log decks obscured by fragmented bark, and railroad infrastructure. Installation of the wastewater collection system is proposed to occur within the existing roadways to minimize impacts to sensitive coastal habitat. A large portion of the study area is characterized by a mix of disturbance-adapted, primarily non-native, herbaceous species, and other early seral disturbance-adapted shrubby species such as coyote brush (*Baccharis pilularis* ssp. *consanguinea*). Small areas of semi-natural dune and wetland habitat occur between the vacant industrial lands in areas that are used as drainages, or along property lines. These areas are mostly dominated by native vegetation. Native dune habitat and areas of larger undisturbed wetlands occur adjacent to the study area and are composed of native vegetation communities. Wetland areas and deflation swales are primarily dominated by coastal willow (*Salix hookeriana*) and wax myrtle (*Morella californica*), among others. Many relatively undisturbed sandy areas exist alongside the proposed project alignment and constitute dune habitat; however, large portions of these areas are dominated by non-native species such as European beach grass (*Ammophila arenaria*) or non-native annual grasses.

3.2 Site Hydrology and Climatic Conditions

The United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) Climate Analysis for Wetlands Table (WETS) method was used to assess the previous three months before the initial site and test pit investigations (or the same month and two prior if after the 15th; Table 1; USDA, 2017a). The current 2018 rainfall data for three months is compared to the 30-year rainfall average at Eureka Woodley Island weather station (1981-2010). If the current rainfall of each month is within 70% of the 1981-2010 precipitation average, it is a “normal” rainfall; if above, it’s ranked “above normal”; if below, it’s ranked “below normal.” The wetland subsurface test pits (TP) were excavated on April 11 and 17, May 31, and June 12, 2018, which calculate to be within normal to wet rainfall values (Table 1).

**Table 1. WETS Rainfall Data
Samoa, CA**

Month	WETS data	Rank	Weight	Value
May 31 & June 12: Test Pit Excavation (Normal)				
May 2018	Below Normal	1	3	3
April 2018	Above Normal	3	2	6
March 2018	Above Normal	3	1	3
Total¹				12
April 17: Test Pit Excavation (Wetter than Normal)				
April 2018	Above Normal	3	3	9
March 2018	Above Normal	3	2	6
February 2018	Below Normal	1	1	1
Total¹				16
April 11: Test Pit Excavation (Normal)				
March 2018	Above Normal	3	3	9
February 2018	Below Normal	1	2	2
January 2018	Above Normal	3	1	3
Total¹				14
1. A sum of 6-9 prior to site investigation is considered a drier than normal rainfall. 10-14 prior to site investigation is considered a normal rainfall. 15-18 prior to site investigation is considered a wetter than normal rainfall. Sources: CDEC, 2018; USDA, 2018a				

Additionally, the project lies within the Coastal Plains Heavy Fog Belt Reference Evapotranspiration (ETo) Zone (CIMIS, 1999). The average monthly ETo for the October through April rainy season is 1.77 inches, which removes both infiltrating and ponded precipitation from the soil through the porous sand and plant uptake. The undeveloped habitat within the study area contains very rough topography that creates heat pockets and above-average evaporative surface area. The average monthly pan evaporation rate for the area's Ferndale reference station is 1.60 inches for the seven-month rainy season (NOAA, 1982), providing moisture removal even in non-vegetated areas. Average annual rainfall for the area is approximately 40 inches.

3.3 National Wetlands Inventory (NWI)

The United States Fish & Wildlife Service (USFWS) NWI website (USFWS, 2018) shows Palustrine Emergent Persistent Seasonally Flooded (PEM1C), Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded (PSS1C), Palustrine Emergent Persistent Semi-Permanently Flooded (PEM1F), Palustrine Unconsolidated Bottom Semi-Permanently Flooded (PUBF), and Estuarine Intertidal Emergent Persistent Irregularly Flooded (E2EM1P) wetland classifications along the study area. All of these wetland types were observed during the study, along with the bay and bay beaches, which were not delineated.

The NWI mapping for this project is found in Appendix 1. This general categorization by the NWI is not intended for planning or design purposes, due to a lack of ground-truthing. In their “Data Limitations, Exclusions, and Precaution” statement, it points out that:

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.
(USFWS, 2018)

This analysis more precisely defines the general NWI boundaries with the addition of onsite soils, hydrology and vegetation observations, and mapping. Although the NWI mapping was useful for initial wetland investigation, wetland boundaries varied considerably between the mapping and conditions observed on the ground. A checkmark has been placed next to the NWI designation on the data sheets to signify which TP locations are correctly classified on the NWI mapping. Designations lacking a check mark indicate that onsite analysis revealed the NWI mapping to be inaccurate, as indicated in Section 8 Discussion and Results.

4.0 Vegetation

Vegetation composition varied widely across the study area, but was representative of coastal dune and wetland habitat as well as disturbed and developed coastal areas. Coastal dune habitat was dominated by both native and non-native species.

The habitat within the study area surrounding the old mill sites, Finntown, and Fairhaven was dominated primarily by non-native grass species, reflecting the historic and current surrounding use of the site. Some portions of the study area are relatively undisturbed and consist of non-native grasses and native dune mat plant species. Other portions of the study area consist of historical fill material supporting non-native grasses and limited native species. The area surrounding the developed sites is predominantly disturbed dune mat and dune scrub vegetation (see Appendix 3, Photos 1-5). During preparation of the Natural Resources Assessment completed for this same project, 168 plant species were observed within the study area and surrounding buffer (SHN, 2018). Of the species observed, 45% of the plant species were native, reflecting the existing conditions and the undeveloped areas surrounding the site. The study area is dominated by varying densities of grass with the dominant species being sweet vernal grass (*Anthoxanthum odoratum*), large quaking grass (*Briza maxima*), brome fescue (*Festuca bromoides*), and annual bluegrass (*Poa annua*), among others. Dominant species within the buffer area surrounding the project included Monterey pine (*Pinus radiata*), Hooker's willow (*Salix hookeriana*), and coyote brush, yellow bush lupine (*Lupinus arboreus*), and planted ornamental species, among others.

Invasive species including rat tail fescue (*Festuca myuros*), ice plant (*Carpobrotus edulis*), cotoneaster (Cotoneaster spp.), Himalayan blackberry (*Rubus armeniacus*), and jubata grass (*Cortaderia jubata*) were observed. These species are known to displace native vegetation by competition.

4.1 Natural Communities

Coastal dune, dune mat, and dune swale vegetation communities were observed surrounding the study area. Vegetation closely resembling *Holcus lanatus* - *Anthoxanthum odoratum* semi-natural non-native grasslands was observed to be the dominant vegetation community in the study area. These communities were located on historic fill and disturbed areas. The remnant dune communities surrounding the study area are fragmented, in close proximity to development, and have abundant invasive herbaceous and shrub layers present. The project does not propose any impacts to the surrounding dune habitat, nor is it anticipated that the project will impact the surrounding dune mat communities. The project is primarily proposed to occur on level areas, within ten feet of the road surface, and will primarily utilize the existing roads. No trees are proposed for removal nor are ground disturbances anticipated outside of the already graded and developed areas.

Environmentally sensitive habitat areas (ESHA) such as dune mat community, dominantly Brewer's rush (*Juncus breweri*,) were recorded within the study area. The characteristic dune mat community is yellow sand verbena (*Abronia latifolia*) – beach bur (*Ambrosia chamissonis*) herbaceous alliance (G3 S3). Variations are described at the association level, which include some native species described in the study area. These communities however, are impacted by non-native invasive species. The Natural Resources Assessment prepared for this project (SHN, 2018) further describes the ESHAs found during the study.

4.2 Special Status Plant Species

Based on a review for special status plant species, 50 special status plant species have been reported from the region consisting of the Eureka quadrangle and surrounding quadrangles (Arcata South, Cannibal Island, Fields Landing, McWhinney Creek, Tyee City, and Arcata North). Of the special status plant species reported for the region, 23 plant species are considered to have low or no potential to occur at the project site and 27 species have a moderate or high potential of occurring at the project site. Species with a moderate or high potential for occurrence within the study area are described in the Natural Resources Assessment (SHN, 2018).

5.0 Geologic and Soil Composition

The project site is located in the back dunes, where vegetation is established. The geology immediately below the ground surface is considered late Holocene marine deposits (QM).

The underlying soils in the study area have the USDA-NRCS classification of Samoa-Clambeach Complex, 0-50 percent slope (map unit 155) and Urban land-Anthraltic Xerorthents association, 0 to 2 percent slopes (map unit 1014). The site-specific descriptions for each exploratory soil TP are included in the field data forms found in Appendix 2 with photos in Appendix 3.

155—Samoa-Clambeach Complex, 0 to 50 percent slopes

Map Unit Setting

National map unit symbol: hs2h

Elevation: 0 to 70 feet

Mean annual precipitation: 35 to 80 inches

Mean annual air temperature: 50 to 55 degrees F

Frost-free period: 275 to 330 days

Farmland classification: Not prime farmland

Map Unit Composition

Samoa and similar soils: 65 percent

Clambeach and similar soils: 30 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the map unit.

Description of Samoa**Typical profile**

Oi - 0 to 1 inches: slightly decomposed plant material

A - 1 to 6 inches: sand

AC - 6 to 18 inches: sand

C - 18 to 63 inches: sand

Properties and qualities

Slope: 2 to 50 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

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

Available water storage in profile: Low (about 3.9 inches)

Description of Clambeach**Typical profile**

A - 0 to 9 inches: sand

Cg1 - 9 to 20 inches: sand

Cg2 - 20 to 63 inches: sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Very poorly drained

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: About 0 to 4 inches

Frequency of flooding: None

Frequency of ponding: Frequent

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

Available water storage in profile: Low (about 3.6 inches)

1014—Urban land-Anthraltic Xerorthents association, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w91f
Elevation: 0 to 10 feet
Mean annual precipitation: 41 to 43 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 275 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land, industrial: 80 percent
Anthraltic xerorthents and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Urban Land, Industrial

Setting

Landform: Fluviomarine terraces

Properties and qualities

Slope: 0 to 2 percent
Depth to water table: About 24 inches
Frequency of ponding: Frequent

Description of Anthraltic Xerorthents

Setting

Parent material: Coarse-loamy fluviomarine deposits and/or coarse-loamy dredge spoils

Typical profile

A - 0 to 6 inches: gravelly loamy fine sand
^C1 - 6 to 13 inches: sandy loam
^C2 - 13 to 19 inches: sandy loam
^C3 - 19 to 24 inches: sandy loam
^C4 - 24 to 31 inches: sandy loam
^C5 - 31 to 43 inches: gravelly sand
C6 - 43 to 65 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.7 inches)
(USDA-NRCS, 2018b)

6.0 Regulatory Setting

6.1 Federal Laws

6.1.1 Sections 401 and 404 of the Clean Water Act

Under Section 404 of the Clean Water Act (CWA; 33 U.S. Code [USC] 1344), as amended, the USACE and the Environmental Protection Agency (EPA) retain primary responsibility for regulating discharge of dredged or fill material into “navigable waters of the United States.” All discharges of dredged or fill material into jurisdictional waters of the United States (WoUS) that result in permanent or temporary losses of WoUS are regulated by the USACE. A permit from the USACE must be obtained before placing fill or grading in wetlands or other WoUS, unless the activity is exempt from CWA Section 404 regulation (for example, certain farming and forestry activities).

In summary, the definition of WoUS as defined by 33 Code of Federal Regulations (CFR) Section 328.3 (U.S. CFR) includes:

1. waters used for commerce,
2. interstate wetlands,
3. all other waters (including lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds),
4. impoundments of water,
5. tributaries to aforementioned waters,
6. territorial seas, and
7. wetlands adjacent to waters.

Under 33 CFR 328.3, WoUS do not include prior converted cropland or waste treatment systems.

In 2008, the EPA and USACE released a guidance memorandum implementing the Supreme Court’s decision in the cases of the Rapanos v. U.S. and Carabell v. U.S. Because of these cases, the agencies will apply a significant nexus standard to the following categories of waterbodies to determine if it meets the definition of a WoUS:

- Non-navigable tributaries that are not relatively permanent
- Wetland adjacent to non-navigable tributaries that are not relatively permanent
- Wetland adjacent to but that does not directly abut a relatively permanent tributary

Section 401 of the CWA (33 USC 1341) requires applicants for a federal license or permit obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards. The certification is obtained from the State in which the discharge originates or would originate, or if appropriate, from the interstate water pollution control agency having jurisdiction over the affected

waters at the point where the discharge originates or would originate. The responsibility for the protection of water quality in California rests with the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs).

6.1.2 Rivers and Harbors Appropriation Act of 1899

The River and Harbors Appropriation Act of 1899 addresses activities that involve the construction of dams, bridges, dikes, and other structures across any navigable water. Placing obstructions to navigation outside established federal lines and excavating from or depositing material in such waters require permits from the USACE Section 10 (33 USC 403) of the Rivers and Harbors Appropriation Act and prohibits the unauthorized obstruction or alteration of any navigable WoUS.

6.2 State Laws

6.2.1 California Coastal Act

The California Coastal Act (CCA; California Public Resources Code sections 30000 et seq.) was enacted by the State Legislature in 1976 to provide long-term protection of California's 1,100-mile coastline. The mission of the California Coastal Commission (CCC), as the lead agency responsible for carrying out California's coastal management program, is to plan for and regulate development in the coastal zone consistent with the policies of the CCA. The CCC has the same authority over federal activities and federally licensed or assisted activities in the coastal zone.

The CCC regulates the alteration of wetlands within the Coastal Zone under jurisdiction of the CCA. The California Coastal Zone is broken into local coastal program (LCP) units that specifically oversee land use and management of resources within local government jurisdictions. CCC has delegated responsibility of regulating the CCA to the County of Humboldt through the approval of their LCP. However, the CCC has oversight authority over the LCP.

The California Public Resources Code, Division 20, CCA (2013), Section 30121 broadly defines wetlands as, "lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens."

However, the CCC Administrative Regulations (Title 14 California Code of Regulations [CCR] Section 13577 (b)) provides a more explicit definition:

Wetlands are lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent or drastic fluctuations of water surface levels, wave action, water flow, turbidity or high concentrations of salt or other substance in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deepwater habitat.

The 1994 CCC Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone provides the following information:

Although the U. S. Fish & Wildlife Service (FWS) classification system is complex, it does provide an objective method for identifying virtually any wetland landscape. Relative to the ACOE definition, the FWS definition is generally regarded as being more inclusive in the classification and subsequent delineation of a wetland. This is because the FWS classification system defines a wetland by the presence of the proper hydrology and either the presence of hydric soils or hydrophytic vegetation, except in nonsoil areas, such as rocky intertidal areas, where only the presence of proper hydrology is required (CCC, 1994).

For purposes of delineation, a location with any of the three wetland parameters is considered a Coastal Act wetland.

6.2.2 Porter-Cologne Water Quality Control Act

The State maintains independent regulatory authority over the placement of waste, including fill, into waters of the State (WoS) under the Porter-Cologne Water Quality Control Act. WoS are defined by the Porter-Cologne Water Quality Control Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The SWRCB protects all waters in its regulatory scope, but has special responsibility for isolated wetlands and headwaters. WoS are regulated by the RWQCBs under the State Water Quality Certification Program, which regulates discharges of dredged and fill material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act.

Projects that require a USACE permit, or fall under other federal jurisdiction, and have the potential to impact WoS are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, but does involve activities that may result in a discharge to WoS, then the local RWQCB has the option to regulate such activities under its state authority in the form of waste discharge requirements (WDRs) or certification of WDRs. Water Quality Order No. 2004-0004-DWQ specifies general WDRs for dredge or fill discharges to waters deemed by the USACE to be outside of federal jurisdiction under Section 404 of the CWA.

7.0 Methodology

Wetland delineation methods described in *U.S. Army 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)* (USACE, 2010) were used to identify potential wetlands and other waters. The routine method for wetland delineation described in the USACE 1987 manual was used to identify potential wetlands within the study area. The USACE method relies on a three-parameter approach, in which criteria for hydrophytic vegetation, hydric soils, and wetland hydrology must each be met (present at the point of field investigation) to conclude that an area qualifies as a wetland. Additionally, the California Coastal Act requires only one of the three wetland parameters to be met to qualify as a Coastal Zone wetland. Mapping reflects both California Coastal Commission and USACE requirements by showing areas meeting one, two, and three parameters.

Hydrophytic vegetation refers to plant species known to be adapted to wetland sites. To classify the hydrophytic plants onsite, the most recent *Western Mountains, Valleys, and Coast 2016 Regional Wetland Plant List* was used (USACE, 2016). Hydric soils are soils that are formed under saturated conditions, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (USDA, 2017c). Wetland hydrology is demonstrated through direct evidence (primary indicators) or indirect evidence (secondary indicators) of flooding, ponding, or saturation for a significant portion of the growing season (USACE, 2010).

Prior to conducting the field investigation, SHN staff reviewed the USGS topographic quadrangle map (Figure 1); Google Earth (Google Earth, 2016); USDA-NRCS Web Soil Survey website (USDA, 2017b); and National Wetlands Inventory (NWI) map (USFWS, 2017; Appendix 1). Prior to the subsurface TP investigation, a Preliminary site investigation was performed to view existing topography, hydrology, and plant communities that indicate potential wetland presence for either USACE or Coastal Act standards. During the TP subsurface investigation, sample points were characterized at the site for the aforementioned botanical, hydrological, and soil parameters.

Wetland TP locations were selected to:

- achieve appropriate coverage and characterization of wetland and upland habitats,
- document potential changes in the vegetative community (such as a shift in the dominant species), and
- determine the approximate boundary line between wetlands and uplands by evaluating the extent of key wetland criteria (wetland hydrology, hydric soils, and hydrophytic vegetation).

The impact area assessed for this project comprised a path along the roads, as designated in Figures 1 and 2, which included the roads as well as a ten-foot-wide strip adjacent to both sides of the roads. For the purposes of thorough investigation and mapping, the ten-foot-wide strip was expanded to a 30-foot-wide study area on each side of the roadways. This expanded study area ensured wetland resources were captured in the study and facilitated more thorough mapping coverage.

Careful examination of the central study area revealed fewer wetland features, as well as more concentrated development and maintenance. TPs 1U-8 fell within the northern study area, while TPs 9-12 fell within the southern study area.

A number of locations designated in this report as wetland under both USACE jurisdictional criteria and Coastal Act definition did not have pits excavated and described. These locations were outside of the study area, on private property lacking access, or were easily identified as wetland due to hydrophytic vegetation classification under the Rapid Test with standing water or saturation throughout the study period. Under the Coastal Act wetland definition, wetland numbers 2-5, 9-16, 20, 21, 24-26, and 29-32 all met the hydrophytic vegetation parameter, classifying them as Coastal Act wetlands. When these locations were examined, they all lacked hydric soils and wetland hydrology, with the exception of Wetland #13, which sits behind a large fence and could not be accessed. However, this site lies over 50 feet from the roadway. Wetland numbers 4, 5, 9-16, 20, 21, 24-26, and 29-32 all contained hydrophyte dominance with plant species (such as, *Carex pansa*, *Morella californica*, or *Salix hookeriana*), but site conditions favoring drainage were confirmed by a lack of wetland hydrology or hydric soil indicators upon excavation. Lacking these indicators, the pits were not described on data sheets or included in the report as TPs. Only at locations such as TPs 2-5, 7, 8, and 11 were conditions present, in addition to hydrophytic vegetation that might indicate wetland classification.

Most notably were depressed topographic or redoximorphic features. Therefore, TPs were excavated and described at these locations to confirm the presence of one or two parameters for Coastal Act purposes, along with the absence of three parameters for USACE wetland qualification. Similarly, four wetlands meeting all three parameters were not described on data sheets due to a lack of access or inundation. All four of these sites could be distinguished as wetlands by meeting the Rapid Test for hydrophytic vegetation, combined with standing water, meeting the wetland hydrology parameter. With inundation through a two-month study period, hydric soils were inferred on these sites.

The remaining landscape throughout the study area was either flat to convex, well drained sandy locations that could not support wetland conditions, or was paved or compacted industrial surface sloped to shed stormwater runoff. The large proposed staging area near the WWTF site was an example of a completely paved surface observed during the field study (Figure 3D).

Field mapping employed a Trimble Pro 6t global positioning system (GPS) antenna connected to a Panasonic Toughbook CF-19 with geographic information system (GIS) software. SHN downloaded the appropriate aerial photos and digitized relevant site plan mapping (Google Earth, 2016). Several fixed locations (for example fence angles) were marked as control points (CT) with the Trimble Pro 6t to get an estimate of aerial imagery accuracy. Where reception was poor due to vegetative cover and terrain, TP locations and wetland boundaries were simple to identify on aerial imagery due to the contrasting terrain, vegetation, and other landmarks such as power poles.

7.1 Vegetation Methodology

Prior to the field investigation, a review of plant species reported to be within the study area was performed by querying the “Consortium of California Herbaria” (Consortium of California Herbaria, 2017) database records and “Calflora” (Calflora, 2017) observations. It was determined that the site investigations were performed during a normal rainfall period by reviewing rainfall data (see Section 3.2 Site Hydrology and Climatic Conditions, Table 1). Absolute percent cover of each plant species was visually estimated within the sample point and within each vegetation stratum. The tree stratum was inspected at a 30-foot radius centered on the sample point, and the herbaceous and sapling/shrub strata at a 5-foot radius. Botanical nomenclature follows *The Jepson Manual, Vascular Plants of California* (Baldwin et al., 2012) in addition to the online Jepson Interchange (University of California, Berkeley, 2017) for verification of species whose taxonomy may have changed since its publication.

The wetland indicator status of plant species for this investigation was based on the *Western Mountains, Valleys, and Coast 2016 Regional Wetland Plant List* (USACE, 2016). Synonyms were checked for species that did not appear on the USACE wetland plant list. Plant species were classified as:

- Obligate (OBL)—almost always occurs in wetlands
- Facultative-wet (FACW)—usually occurs in wetlands, but may occur in non-wetlands
- Facultative (FAC)—occurs in wetlands and non-wetlands
- Facultative-upland (FACU)—usually occurs in non-wetlands, but may occur in wetlands
- Upland (UPL)—almost never occurs in wetlands
- Not listed (NL)—scored as an upland plant and calculated as such on wetland determination forms

The 50/20 method¹ was applied to each stratum to determine the dominant plant species and to satisfy the hydrophytic vegetation criteria. If hydric soils and wetland hydrology were present, the prevalence index² was applied. The occurrence and type of plant cover determine whether a site is identified as satisfying the vegetation criteria of a wetland or other waters. Those sites with little or no hydrophytic plant cover, or other sites not capable of supporting hydrophytic plant communities in normal circumstances, are identified as other waters, provided they have an ordinary high water mark (OHWM).

7.2 Soils Methodology

Soils were field-verified for the presence or absence of hydric conditions. All TPs were dug to a minimum depth of 16 inches, and the thickness of each soil horizon was measured. The Munsell Soil Color Chart (Kollmorgen Instruments Corporation, 1998) was referenced to determine the colors of the moist soil matrix and redoximorphic (redox) features (if present). Soils were closely inspected for hydric soil indicators, as defined by the NRCS “Field Indicators of Hydric Soils in the United States” (Version 8.1; USDA-NRCS, 2017c).

7.3 Hydrology Methodology

Hydrology was examined during the all test pit excavations for hydrology indicators (such as water marks, drift deposits, sediment deposits, alpha, alpha-dipyridyl reaction, drainage patterns, geomorphic placement, water-stained leaves, and similar features). Indicators of extended period saturation would include oxidized rhizospheres surrounding living roots or the presence of reduced iron or sulfur in the soil profile. A site location must contain at least one primary indicator or two secondary indicators to have the hydrology parameter.

7.4 Ordinary High Water Mark Methodology

No features were observed onsite that would require Ordinary High Water Mark delineation.

8.0 Discussion and Results

Thirteen TPs were excavated on April 11 and 17, May 31, and June 12, 2018 (Figures 3A-3D). The TPs were excavated during a normal rainfall season, with the exception of higher than normal rainfall for the April 17 site visit, and within the growing season for this region. Normal circumstances were considered present, because the most recent site disturbances were made over ten years ago, as seen on Google Earth images dating back to April 1989 (Google Earth, 2016).

This site’s hydrology has been altered over time by expanses of asphalt, buildings, and woody material storage. The majority of this impact area, which extends ten feet from the edge of pavement along the roadways, revealed essentially no disturbance since the mills were operational. Likewise, the study area extending 30 feet from the edge of pavement appeared relatively undisturbed. The average slope of the study area ranges from 1 to 50 percent. The photos of the study areas are shown in Appendix 3. The

¹ The 50/20 rule: for each stratum of the plant community, dominant species are the most abundant species that (when ranked in descending order of abundance and cumulatively totaled) immediately exceed 50% of total dominance measure for the stratum, plus any additional species that individually comprise 20% or more of the total dominance measure for the stratum (USACE, 2010).

² The prevalence index is a weighted-average wetland indicator status of all plant species in the sampling plot or other sampling unit, where each indicator status category is given a numeric code (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5) and weighting is by abundance (absolute percent cover).

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EXPLANATION

- TEST PIT LOCATION

WETLAND TYPE

- 3-PARAMETER
- 2-PARAMETER
- 1-PARAMETER
- - - PROJECT BOUNDARY

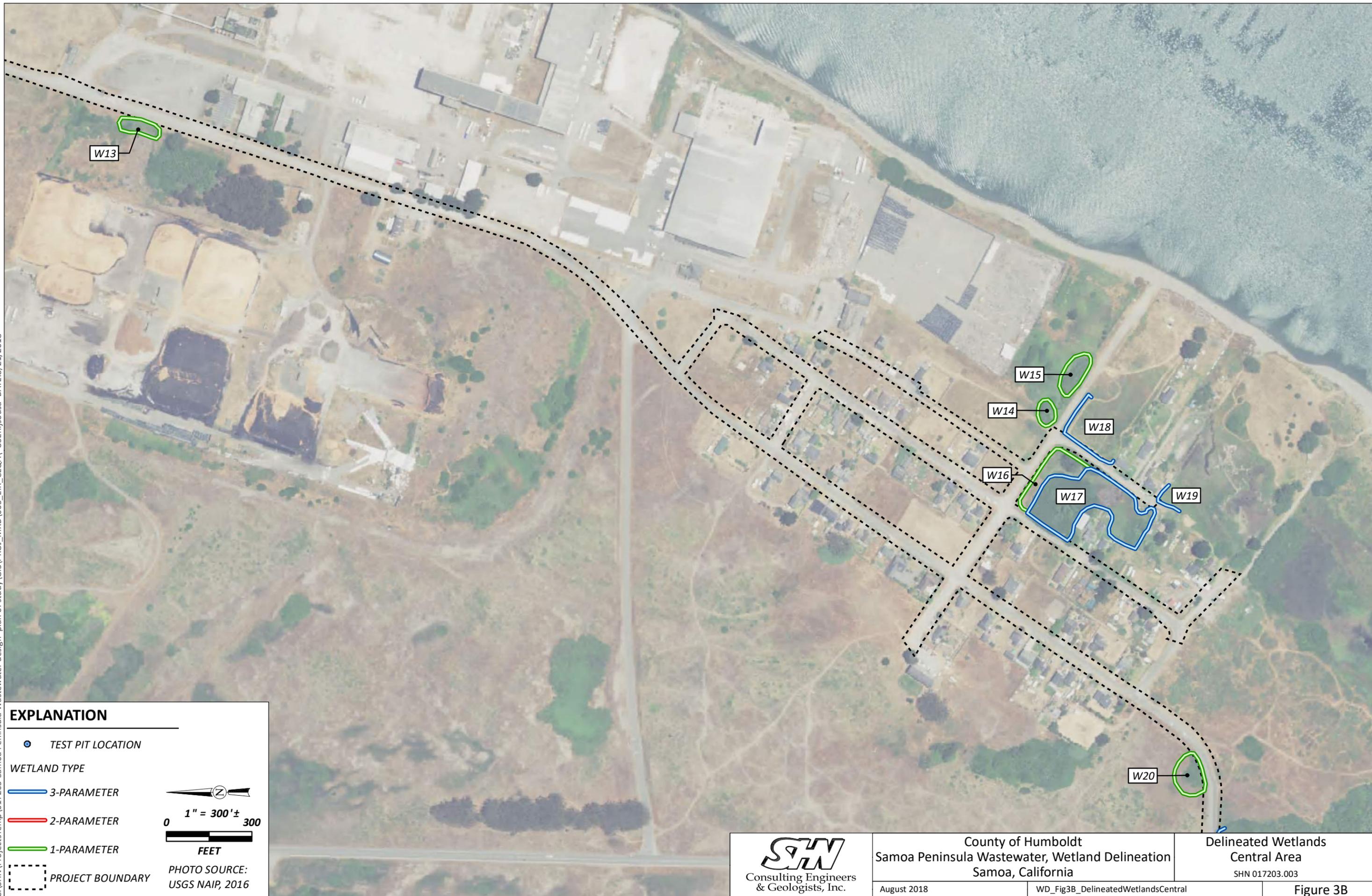
1" = 300'±

0 300
FEET

PHOTO SOURCE:
USGS NAIP, 2016

 Consulting Engineers & Geologists, Inc.	County of Humboldt Samoa Peninsula Wastewater, Wetland Delineation Samoa, California	Delineated Wetlands Northern Area SHN 017203.003
	August 2018	WD_Fig3A_DelineatedWetlandsNorth

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EXPLANATION

● TEST PIT LOCATION

WETLAND TYPE

— 3-PARAMETER

— 2-PARAMETER

— 1-PARAMETER

- - - PROJECT BOUNDARY

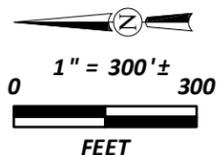


PHOTO SOURCE:
USGS NAIP, 2016



County of Humboldt
Samoa Peninsula Wastewater, Wetland Delineation
Samoa, California
August 2018

Delineated Wetlands
Central Area
SHN 017203.003
WD_Fig3B_DelineatedWetlandsCentral
Figure 3B

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EXPLANATION

● TEST PIT LOCATION

WETLAND TYPE

— 3-PARAMETER

— 2-PARAMETER

— 1-PARAMETER

- - - PROJECT BOUNDARY

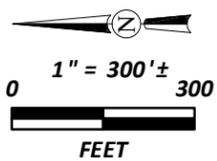


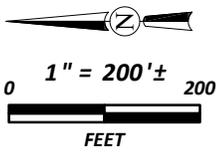
PHOTO SOURCE:
USGS NAIP, 2016



County of Humboldt
Samoa Peninsula Wastewater, Wetland Delineation
Samoa, California
August 2018

Delineated Wetlands
Southern Area
SHN 017203.003
WD_Fig3C_DelineatedWetlandsSouth
Figure 3C

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	County of Humboldt Samoa Peninsula Wastewater, Wetland Delineation Samoa, California		Delimited Wetlands Northern Staging Area SHN 017203.003
	August 2018	WD_Fig3D_DelineatedWetlandsStaging	Figure 3D

majority of the soils encountered in TPs were sandy soil material with varying amounts of organic matter in the surface horizons. See the Discussion section below for each TP that describes the physical features and considerations of the site, followed by a Data section that summarizes information from the completed Wetland Determination Forms located in Appendix 2.

Most of the man-made ditches contain vegetation. Of the thirteen TPs excavated, only pits 1U, 4, 7, and 11 displayed no wetland parameters. Table 2 at the end of this section lists all locations identified with one or more wetland parameters to satisfy both the California Coastal Act and USACE definitions of a wetland (one or more and three parameters, respectively). A number of locations designated as wetland under both USACE jurisdictional criteria and Coastal Act definition did not have pits excavated and described. These locations were outside of the study area, on private property lacking access, or were easily identified as wetland due to hydrophytic vegetation classification under the Rapid Test with standing water or saturation throughout the study period. Under the Coastal Act wetland definition, wetland numbers 2-5, 9-16, 20, 21, 24-26, and 29-32 all met the hydrophytic vegetation parameter. When these locations were examined, they all lacked hydric soils and wetland hydrology, with the exception of Wetland #13, which sits behind a large fence and could not be accessed. However, this site lies over 50 feet from the roadway. Similarly, four wetlands meeting all three parameters were not described on data sheets due to a lack of access or inundation. These four sites could be distinguished as wetlands by meeting the Rapid Test for hydrophytic vegetation, combined with standing water meeting the wetland hydrology parameter. With inundation through a two-month study period, hydric soils were inferred on these sites, which included wetland numbers 17, 18, 19, and 28 (Table 2 and Figures 3A through 3D). Of these four wetlands, numbers 17, 18, and 19 lie adjacent to the unpaved roadways, while number 28 lies outside of the ten-foot-from-road impact area. Many of the Coastal Act wetlands found within the study area lie just outside the impact area.

8.1 TP1U

Discussion. TP1U was chosen for its position between the road and an apparent adjacent wetland feature just outside the study area. This location represents the highest elevation west of the road in this section of the study area. The TP slopes steeply away from the road with well-drained soils extending 20 feet west of the road surface. No wetland parameters were observed; therefore, it is not considered a wetland site. (Appendix 3, Photos 1, 2, and 6).

Data. While TP1U vegetation contained a tree stratum dominated by coastal willow, California blackberry (*Rubus ursinus*) and sweet vernal grass dominated the shrub and herb strata, respectively. This vegetation did not meet the hydrophytic vegetation parameter.

There were no hydrology or hydric soil indicators observed.

8.2 TP1W

Discussion. TP1W was chosen for its position in an apparent wetland feature just outside the ten-foot-from-road impact area. This location represents the lowest elevation west of the road in this section of the study area. If there were wetlands in this area, TP1W was thought to be in the most likely spot. While this TP was just outside the impact area, it was excavated to characterize wetlands adjacent to the roadway. All three

wetland parameters were observed; therefore, it is considered a Palustrine Scrub Shrub (PSS) wetland site by all agencies (Appendix 3, Photos 3, 4, and 5). This site, beginning 20 feet west of the roadway, was designated Wetland #1.

Data. TP1W vegetation was dominated by tree and shrub strata, with only slough sedge (*Carex obnupta*) in the herbaceous stratum. This TP failed the dominance test because *Cornus sericea* is not listed (NL), despite this species' preference for wet sites. Since both hydric soils and wetland hydrology were present, the prevalence index was used, which qualified this site with hydrophytic vegetation.

Six-inch-thick mucky sand gave this location hydric soil indicator S1, Sandy Mucky Mineral. Both High Water Table and Saturation gave this TP wetland hydrology, with water rapidly filling the TP to within an inch of the surface. Additionally, Water Marks, B1, were evident throughout the leaf litter, and Sparsely Vegetated Concave Surfaces, B8, were observed intermittently throughout the wetland. Two secondary wetland hydrology indicators were also present.

8.3 TP2

Discussion. TP2 was excavated approximately 90 feet south of TP1U at the transition from willow to meadow. Only the hydrophytic vegetation parameter was observed; therefore, it is only considered a Coastal Act wetland site. This site, beginning ten feet west of the road edge, was designated Wetland (Coastal Act) #2.

Data. TP2 vegetation contained coastal willow and *Juncus brewerii*, which dominated the California blackberry.

No hydrology or hydric soil indicators were observed.

8.4 TP3

Discussion. TP3 lies at the south end of the meadow, 123 feet south of TP2. This TP was almost identical to TP2 with only the hydrophytic vegetation parameter observed; therefore, it is only considered a Coastal Act wetland site. This site, beginning at the edge of the asphalt, was designated Wetland (Coastal Act) #3.

Data. TP3 vegetation contained a dominance of hydrophytic vegetation across three strata. The dominant species were coastal willow, Himalayan blackberry, and slough sedge.

No hydrology or hydric soil indicators were observed.

8.5 TP4

Discussion. TP4 is in the mid-section of the thicket, approximately 151 feet south of TP3. This section of the willow grove sits low enough amidst the dunes to warrant site-specific investigation. Additionally, the herb stratum contained 97% bare ground, which sometimes indicates wetland conditions. There was no wetland parameter observed; therefore, it is not considered a wetland site. (Appendix 3, Photo 6).

Data. TP4 vegetation contained a dominance of upland vegetation, with plants occupying three strata. This site does not qualify as having the hydrophytic vegetation parameter, despite the thick willow growth.

No hydrology or hydric soil indicators were observed.

8.6 TP5

Discussion. TP5 lies in a slough sedge-filled geomorphic depression between several shore pines and the road. This point is approximately 187 feet south of TP4. Lacking a tree stratum, this TP contained only herbaceous and sapling/shrub strata. Since only the hydrophytic vegetation parameter was met, it is considered a Coastal Act wetland site. This site, beginning at the edge of pavement, was designated Wetland (Coastal Act) #6.

Data. TP5 vegetation was dominated by hydrophytic slough sedge and twinberry (*Lonicera involucrata* var. *ledebourii*).

No hydrology or hydric soil parameters were met.

8.7 TP6

Discussion. TP6 is located in a willow grove across from the transfer station, approximately 569 feet south of TP5. This pit lies within a Sparsely Vegetated Concave Surface which looks similar to TP1W as shown in Photo 4. Sitting significantly lower than the surrounding terrain, this TP met all three wetland parameters; therefore, it is considered a PSS wetland site. This site, beginning at the edge of pavement, was designated Wetland #7.

Data. TP6 vegetation lacked only the woody vine stratum. Three-fourths of the dominant species were hydrophytic, including coastal willow, Himalayan blackberry, and scarlet pimpernel (*Lysimachia arvensis*).

Along with a Redox Dark Surface, hydric soil indicator F6, this TP had four primary, and four secondary hydrology indicators.

8.8 TP7

Discussion. TP7 is located across the road and approximately 50 feet south of TP6. It is within one of the man-made ditches along the road and is filled with slough sedge. This site was investigated due to its geomorphic position; however, no wetland parameters were found (aside from the secondary hydrology indicator D2); therefore, it is not considered a wetland site.

Data. TP7 vegetation was balanced by slough sedge in the herb stratum and California blackberry in the sapling/shrub stratum. Only the secondary hydrology indicator D2 (Geomorphic Position) was noted. Two or more secondary indicators are necessary to qualify for the hydrology parameter; therefore, the hydrology parameter has not been met.

8.9 TP8

Discussion. TP8 is located within the willow patch 290 feet south of TP6, across from the entrance to the transfer station access road. This was a unique location with hydrophytic vegetation and wetland hydrology present, but no hydric soil indicator. The primary wetland hydrology indicator observed at this site, in conjunction with secondary indicator Geomorphic Position, was B2, Sediment Deposits. This site appears to be receiving stormwater runoff from the road and surrounding active sites to the east, which is loading the depression with more water and sediment than the surrounding areas. However, the sandy loam soils

appear too well drained to hold water long enough to develop hydric soils or additional wetland hydrology indicators. Additionally, the sediment deposits could be directly or indirectly (wind-blown and then washed) from adjacent construction during the rainy season. In other words, this could be a recent phenomenon as opposed to long-term wetland conditions. This location is considered a Coastal Act wetland. This site, beginning at the edge of pavement, was designated Wetland (Coastal Act) #8.

Data. TP8 vegetation was dominated by willow and creeping bentgrass (*Agrostis stolonifera*) to qualify as hydrophytic. B2, Sediment Deposits placed the pit in the wetland hydrology parameter.

No hydric soil indicators were observed.

8.10 TP9

Discussion. TP9 is located at the northern-most tip of the willow grove encompassed by New Navy Base Road and the northern access road to the airstrip, approximately 12 feet southeast of the gate. It was chosen for having the most potential as a wetland site in that vicinity due to the vegetation and deep depression. All three parameters were present; therefore, it is considered a PSS wetland site. This site, beginning ten feet from the road surface, was designated Wetland #22.

Data. TP9 vegetation lacked only the woody vine stratum. The slough sedge and coastal willow dominated the California blackberry to qualify the vegetation as hydrophytic. This site was unique within the delineation because it contained 9 inches of muck, which qualified the TP under hydric soil indicator A2, Histic Epipedon. The pit also met indicator A11, Depleted Below Dark Surface. Two primary, and three secondary wetland hydrology indicators were met.

8.11 TP10

Discussion. TP10 is located in the western portion of the large willow grove-wetland east of New Navy Base Road, just north of Oyster Ranch. During the April 17 site visit, SHN staff traversed this wetland to determine the habitat character adjacent to this stretch of the study area. Staff waded through clear water averaging approximately 17 inches deep across the entire willow grove. The water clarity and lack of sediment indicates this wetland is fed from seasonally rising groundwater and direct precipitation. All three wetland parameters were observed; therefore, this site is a PSS wetland. This site, typically beginning 10 feet east of the roadway, was designated Wetland #23.

Data. Vegetation at TP10 contained three hydrophytic species out of four dominants. A total of five primary, and three secondary wetland hydrology indicators were observed, with B13 Aquatic Invertebrates, and Surface/High Water (A1 & A2) observed during the April 17 visit. Two inches of peat overlies three inches of muck. This organic material overlies a very dark gray sand with 2% distinct redox concentrations throughout, meeting hydric soil indicator S5, Sandy Redox.

8.12 TP11

Discussion. TP11 is located in the roadside swale, due east of the Samoa Airstrip entrance, approximately 120 feet north of the Oyster Bay entrance. This site was selected because of its geomorphic position and herb stratum composed solely of slough sedge. There was no wetland parameter observed; therefore, it is not considered a wetland site.

Data. TP11 vegetation contained a balance of two upland and two hydrophytic species. With the exception of secondary wetland hydrology indicator D2, no hydrology or hydric soil indicators were observed.

8.13 TP12

Discussion. TP12 is located at the northeastern corner of the palustrine emergent wetland that sits just south of the airstrip, between the airfield and Oyster Bay. This site typically holds some surface water all year, providing ideal nesting habitat for waterfowl. TP12 sits on the boundary of the wetland, ten feet west of the roadway.

There were three wetland parameters present (hydric soils, hydrology, and vegetation). This site, beginning 10 feet west of the roadway, was designated Wetland #27, qualifying as both PSS and Palustrine Emergent (PEM) wetland classifications.

Data. TP12 vegetation contained the tree, sapling/shrub, and herb strata. The dominant species for the tree stratum was 32-percent coastal willow [FACW]. The dominant sapling/shrub species was composed of 41-percent CA blackberry [FACU]. The dominant herb species was 86-percent slough sedge. With two of three dominants being hydrophytic, this site met the dominance test.

Two secondary hydrology indicators were observed including D2 (Geomorphic Position) and D5 (FAC-Neutral Test), along with Saturation (A3) at 8 inches. Therefore, the hydrology parameter has been met.

A five-inch layer of mucky sand met the S1 (Mucky Sandy Mineral) hydric soil indicator.

8.14 Ordinary High Water Mark (OHWM)

No OHWM was observed within the study area.

9.0 Conclusions

Wetland and OHWM site investigations occurred on April 11 and 17, May 31, and June 16, 2018. The excavations were performed during a generally normal rainfall season, with only the May 17 visit slipping into an above-normal rainfall period (Section 3.2 Site Hydrology and Climatic Conditions). Following the USACE 3-parameter guidelines, nine potentially jurisdictional wetlands were found within or adjacent to the study area. Under the California Coastal Act, 32 wetlands were found within or adjacent to the study area meeting at least one parameter. Table 2 describes the type and location of the wetlands. Figures 3A through 3D portray the size and location of these wetland features.

No OHWMs were observed onsite. Four of the nine USACE jurisdictional wetlands were not described on data sheets due to a lack of access or because of their location outside of the study area. However, these four sites met the rapid test for hydrophytic vegetation and held standing water or saturation throughout the study period, meeting the definition of a wetland. TPs 1W, 6, 9, 10, and 12 all displayed three wetland parameters. Of the thirty-two locations identified as Coastal Act wetlands, only TP#8 contained two parameters. Nine locations had all three parameters, and the remaining 22 locations contained one wetland parameter (hydrophytic vegetation). The majority of the one-parameter sites were characterized by a dominance of *Salix hookeriana* or *Morella californica*. Table 2 indicates the location and type of wetlands documented. Data sheets are included in Appendix 2.

**Table 2. Wetland Delineation and OHWM¹ Results
Samoa Peninsula Wastewater Project
Samoa, CA**

Waterbodies	TP#	Cowardin Type (USACE)	Coastal Act	Latitude/Longitude
Wetland #1	1W	PSS1C ³	3-Parameter	40.803809° / -124.197066°
Wetland #2	2	NA	1-Parameter	40.803498° / -124.196941°
Wetland #3	3	NA	1-Parameter	40.803136° / -124.196852°
Wetland #4	NA	NA	1-Parameter	40.802708° / -124.196663°
Wetland #5	NA	NA	1-Parameter	40.802457° / -124.196663°
Wetland #6	5	NA	1-Parameter	40.802218° / -124.196862°
Wetland #7	6	PSS1C	3-Parameter	40.800684° / -124.196860°
Wetland #8	8	NA	2-Parameter	40.799842° / -124.196882°
Wetland #9	NA	NA	1-Parameter	40.800047° / -124.196687°
Wetland #10	NA	NA	1-Parameter	40.799783° / -124.196720°
Wetland #11	NA	NA	1-Parameter	40.797041° / -124.197095°
Wetland #12	NA	NA	1-Parameter	40.797024° / -124.196604°
Wetland #13	NA	NA	1-Parameter	40.792998° / -124.197727°
Wetland #14	NA	NA	1-Parameter	40.784147° / -124.201104°
Wetland #15	NA	NA	1-Parameter	40.783966° / -124.200709°
Wetland #16	NA	NA	1-Parameter	40.784328° / -124.196687°
Wetland #17	NA	PSS1C/PEM1F ⁴	3-Parameter	40.784111° / -124.202061°
Wetland #18	NA	PEM1F	3-Parameter	40.783839° / -124.201358°
Wetland #19	NA	PEM1F	3-Parameter	40.782726° / -124.202100°
Wetland #20	NA	NA	1-Parameter	40.782697° / -124.205639°
Wetland #21	NA	NA	1-Parameter	40.782663° / -124.207336°
Wetland #22	9	PSS1C	3-Parameter	40.782461° / -124.207226°
Wetland #23	10	PSS1C	3-Parameter	40.781159° / -124.206806°
Wetland #24	NA	NA	1-Parameter	40.781032° / -124.208495°
Wetland #25	NA	NA	1-Parameter	40.780906° / -124.207529°
Wetland #26	NA	NA	1-Parameter	40.780962° / -124.207225°
Wetland #27	12	PEM1F/PSS1C	3-Parameter	40.777713° / -124.209770°
Wetland #28	NA	E2EM1P ⁵	3-Parameter	40.776493° / -124.209910°
Wetland #29	NA	NA	1-Parameter	40.775191° / -124.211934°
Wetland #30	NA	NA	1-Parameter	40.773341° / -124.213357°
Wetland #31	NA	NA	1-Parameter	40.772332° / -124.214300°
Wetland #32	NA	NA	1-Parameter	40.772181° / -124.213879°

1. OHWM: ordinary high water mark
2. PSS1C: Palustrine Scrub-Shrub Broad-Leaved Deciduous
3. PEM1F: Palustrine Emergent Persistent Semi-Permanently Flooded
4. E2EM1P: Estuarine Intertidal Emergent Persistent Irregularly Flooded

10.0 Limitations

The conclusions in this report represent a “snapshot in time” and it is possible that some species were not present at the time of the fieldwork. This Report documents the investigation by using the best professional judgment of SHN’s botanists and soil scientists. The conclusions should be verified by the USACE through receipt of a jurisdictional determination letter.

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**National Wetlands
Inventory**

1



June 19, 2018

Wetlands

- | | | | | | |
|---|--------------------------------|---|-----------------------------------|---|----------|
|  | Estuarine and Marine Deepwater |  | Freshwater Emergent Wetland |  | Lake |
|  | Estuarine and Marine Wetland |  | Freshwater Forested/Shrub Wetland |  | Other |
| | |  | Freshwater Pond |  | Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



U.S. Fish and Wildlife Service, National Standards and Support Team,
wetlands_team@fws.gov

April 10, 2018

Wetlands

- | | | |
|--|---|--|
|  Estuarine and Marine Deepwater |  Freshwater Emergent Wetland |  Lake |
|  Estuarine and Marine Wetland |  Freshwater Forested/Shrub Wetland |  Other |
| |  Freshwater Pond |  Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

**Wetland and OHWM
Delineation Data Forms 2**

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

Project/Site: Samoa Peninsula City/County: Humboldt Sampling Date: 4-11-18
 Applicant/Owner: County of Humboldt State: CA Sampling Point: 14
 Investigator(s): SP, JS Section, Township, Range: SE 1/4, NE 1/4, Sec 20, T5N, R1W HBM
 Landform (hillslope, terrace, etc.): Sand spit Local relief (concave, convex, none): none Slope (%): 76
 Subregion (LRR): A, MLRA 4B Lat: 40.80350 Long: -124.19691 Datum: WGS84
 Soil Map Unit Name: ISS Samoa - Clam beach complex, 0-50% Slopes NWI classification: PSSIC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland?	Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u> No <u>X</u>		
Wetland Hydrology Present?	Yes <u> </u> No <u>X</u>		

Remarks: ~ 69m SW of cream tank by 2 round green pine boxes; N. end of 2.51mi analysis area
PEMIC = Palustrine emergent persistent seasonally flooded vs PSSIC = scrub-shrub leaved Broad Decid

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Salix hookeriana</u>	<u>40</u>	<u>✓</u>	<u>FACV</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____				Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>33</u> (A/B)
4. _____				Prevalence Index worksheet:	
<u>40</u> = Total Cover				Total % Cover of:	Multiply by:
Sapling/Shrub Stratum (Plot size: _____) 1. <u>Rubus ursinus</u> <u>46</u> <u>✓</u> <u>FACU</u> 2. _____ 3. _____ 4. _____ 5. _____ <u>46</u> = Total Cover				OBL species _____ x 1 = _____	
Herb Stratum (Plot size: _____) 1. <u>Anthoxanthum odoratum</u> <u>37</u> <u>✓</u> <u>FACU</u> 2. <u>Rumex acetosella</u> <u>3</u> <u> </u> <u>FACU</u> 3. <u>Briqua minor</u> <u>3</u> <u> </u> <u>FAC</u> 4. <u>Cornus maculatum</u> <u>2</u> <u> </u> <u>FAC</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ <u>45</u> = Total Cover <u>22.5%</u>				FACW species _____ x 2 = _____	
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ <u>0</u> = Total Cover				FAC species _____ x 3 = _____	
% Bare Ground in Herb Stratum _____				FACU species _____ x 4 = _____	
Remarks: <u>Adjacent wetland = 70% Salix, 81% Carex diandra, 5% Rubus sanguinolentus, 5% Cornus sericea, 7% Rubus ursinus, 0-1" duff 1-2" mucky sand (S1) w/ water table 1" ± sat & soft; geomorph posn 100ft ± 20' W. of road; Poison hemlock encroaching road/TP 1</u>				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 <u> </u> No <u>X</u>	

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		
0-6	10YR 2/1	100					O+SL	0.2m w/ 6" duff
6-24+	2.5Y 3/3	100					S	

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks: *Extremely well-drained loose duff over loose sand, duff has much identifiable material such as roots, leaves, stems*

Note: Soils east of road = MU 1014 Urban Land-Anthracitic Xerorthents assoc., 0-2% slopes

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"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<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? (includes capillary fringe) Yes _____ No Depth (inches): _____

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: Samoa Peninsula City/County: Humboldt Sampling Date: 4-11-18
 Applicant/Owner: _____ State: CA Sampling Point: 1w
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: PSS1C
 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 _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No _____	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No _____	
Remarks: <u>Wetland located @ bottom of slope west of road + TPLu</u>			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Salix hookeriana</u>	<u>70</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</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>40</u> (A/B)																
2. _____																				
3. _____																				
4. _____																				
= Total Cover																				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Ribes sanguineum</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>81</u></td> <td>x 1 = <u>81</u></td> </tr> <tr> <td>FACW species <u>70</u></td> <td>x 2 = <u>140</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>12</u></td> <td>x 4 = <u>48</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>168</u> (A)</td> <td><u>294</u> (B)</td> </tr> <tr> <td align="center" colspan="2">Prevalence Index = B/A = <u>1.75</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>81</u>	x 1 = <u>81</u>	FACW species <u>70</u>	x 2 = <u>140</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>12</u>	x 4 = <u>48</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>168</u> (A)	<u>294</u> (B)	Prevalence Index = B/A = <u>1.75</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>81</u>	x 1 = <u>81</u>																			
FACW species <u>70</u>	x 2 = <u>140</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>12</u>	x 4 = <u>48</u>																			
UPL species <u>5</u>	x 5 = <u>25</u>																			
Column Totals: <u>168</u> (A)	<u>294</u> (B)																			
Prevalence Index = B/A = <u>1.75</u>																				
2. <u>Cornus sericea</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>NL</u>																	
3. <u>Rubus ursinus</u>	<u>7</u>	<input checked="" type="checkbox"/>	<u>FACU</u>																	
4. _____																				
5. _____																				
= Total Cover																				
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Carex obnupta</u>	<u>81</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is $\leq 3.0^1$ ___ 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.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
= Total Cover																				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____																
2. _____																				
= Total Cover																				
% Bare Ground in Herb Stratum <u>19</u>																				
Remarks: <u>Cornus sericea not listed but should be hydrophytic</u>																				

SOIL

Sampling Point: 1w

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		
0-1	10YR 2/2	100					0	Forest Duff
1-7"	10YR 2/2	100					ms	
7"+							s	

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 checked="" type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

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

Field Observations:

Surface Water Present?	Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>1"</u>	
Saturation Present?	Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>surface</u>	
(includes capillary fringe)			

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

Remarks: B8 present in patchy pattern near TP 4 throughout wetland

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

Project/Site: Samoa Peninsula City/County: Humboldt Sampling Date: 4-11-18
 Applicant/Owner: _____ State: CA Sampling Point: 2
 Investigator(s): SP, JS Section, Township, Range: SHT 1
 Landform (hillslope, terrace, etc.): Sand Spit Local relief (concave, convex, none): none Slope (%): 3
 Subregion (LRR): SHT 1 Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: SHT 1 NWI classification: PEM1C
 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 _____	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. <u>Salix hookeriana</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)	
2. _____					
3. _____					
4. _____					
				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 = _____	
<u>20</u> = Total Cover					
Sapling/Shrub Stratum (Plot size: _____)					
1. <u>Rubus ursinus</u>	<u>9</u>	<input checked="" type="checkbox"/>	<u>FACU</u>		
2. _____					
3. _____					
4. _____					
5. _____					
<u>9</u> = Total Cover					
Herb Stratum (Plot size: _____)					
1. <u>Carex dynupata</u>	<u>5</u>		<u>OBL</u>	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.	
2. <u>Juncus breweri</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACW</u>		
3. <u>Conium maculatum</u>	<u>5</u>		<u>FAC</u>		
4. <u>Anthoxanthum odoratum</u>	<u>6</u>		<u>FACU</u>		
5. <u>Galium aparine</u>	<u>1</u>		<u>FACU</u>		
6. <u>Cardamine oligosperma</u>	<u>3</u>		<u>FAC</u>		
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
<u>70</u> = Total Cover <u>35/14</u>					
Woody Vine Stratum (Plot size: _____)					
1. _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
2. _____					
<u>0</u> = Total Cover					
% Bare Ground in Herb Stratum _____					
Remarks:					

SOIL

Sampling Point: 2

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		
0-4	60YR 2/2	10P					SL	TO _h
4-24+	2.5Y 3/3	10D					S	

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)	

Indicators for Problematic Hydric Soils³:

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"/> Salt Crust (B11)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Field Observations:

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

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: Santa Rosa Peninsula WWTF City/County: Humboldt Sampling Date: 4-11-18
 Applicant/Owner: _____ State: CA Sampling Point: 3
 Investigator(s): SP, JS Section, Township, Range: SHT 1
 Landform (hillslope, terrace, etc.): Sand spit Local relief (concave, convex, none): none Slope (%): 3
 Subregion (LRR): SHT 1 → Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: SHT 1 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 _____, 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 _____	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. <u>Salix hookeriana</u>	<u>55</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</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>60</u> (A/B)
2. _____				
3. _____				
4. _____				
<u>55</u> = Total Cover				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 = _____
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Rubus ursinus</u>	<u>4</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
2. <u>Rubus armenicus</u>	<u>4</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. _____				
4. _____				
<u>8</u> = Total Cover				
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	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.
1. <u>Carex obnupta</u>	<u>29</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	
2. <u>Geranium dissectum</u>	<u>3</u>		<u>NL</u>	
3. <u>Anthoxanthum odoratum</u>	<u>22</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
4. <u>Bromus diandrus</u>	<u>7</u>		<u>NL</u>	
5. <u>Tuncus breweri</u>	<u>12</u>		<u>FACW</u>	
6. <u>Achillea millefolium</u>	<u>3</u>		<u>FACU</u>	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
<u>76</u> = Total Cover <u>38/15.2</u>				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. _____				
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks:				

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		
0-15	10YR 2/2	100					SL	
15-25+	2.5Y 3/2	100					LS	

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

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

Indicators for Problematic Hydric Soils³:

- 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)

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- 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)

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"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | |
| <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? (includes capillary fringe) Yes _____ No Depth (inches): _____

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: Santa W/WTF City/County: Humboldt Sampling Date: 6/12/18
 Applicant/Owner: _____ State: CA Sampling Point: TP4
 Investigator(s): Joseph Saker, Sam Polly Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Sand dunes Local relief (concave, convex, none): None Slope (%): 2
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: PSS1C

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: 1st pit of dug just S. of water tanks/ponds next S. from initial pits @ S. end of willow patch where dug rainy day pit @ N. end ~ middle of willows

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</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>40%</u> (A/B)
1. <u>Salix hookeriana</u>	<u>80</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	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.
1. <u>Rubus armeniacus</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>Rubus ursinus</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. <u>Hedera helix</u>	<u>1</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
2. <u>Fragaria chiloensis</u>	<u>2</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum <u>97% (litter)</u>	_____	_____	_____	

Remarks: _____

SOIL

Sampling Point: TP4

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		
0-2	7.5YR 2.5/1	100					Organic	forest duff
2-10	10YR 3/2	100					Sand	
10-18	10YR 3/2	100					GrLS	Fill Layer, old
18-24+	10YR 3/2	100					Sand	

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"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Dark Surface (F6)	³ indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Depleted Dark Surface (F7)	
	<input type="checkbox"/> Redox Depressions (F8)	

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

Field Observations:

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

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: Samoa MWTF City/County: Humboldt Sampling Date: 6/12/18
 Applicant/Owner: _____ State: CA Sampling Point: TP5
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope (%): 0-1
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ 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 _____, 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 _____	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	
Sapling/Shrub Stratum (Plot size: <u>5ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Lonicera involucrata</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FAC</u>		
2. <u>Rubus ursinus</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACU</u>		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
				= Total Cover <u>70</u>	
Herb Stratum (Plot size: <u>5ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Carex obnupta</u>	<u>65</u>	<input checked="" type="checkbox"/>	<u>Obl</u>		
2. <u>Juncus breweri</u>	<u>10</u>	_____	<u>FACW</u>		
3. <u>Arthoxanthum odoratum</u>	<u>2</u>	_____	<u>FACU</u>		
4. <u>Vicia hirsuta</u>	<u>3</u>	_____	<u>NL</u>		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
				= Total Cover <u>80</u>	
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
				= Total Cover _____	
% Bare Ground in Herb Stratum <u>20</u> = Total Cover _____					

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (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: TP 5

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		
0-2	10YR 3/1	100					LS	
2-8	10YR 3/1	97	10YR 3/3	1	C		S	
			10YR 3/2	1	C			
8-24+	10YR 3/1	100					S	

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)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

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

Field Observations:

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

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: Samoa WWTF City/County: Humboldt Sampling Date: 6/12/18
 Applicant/Owner: _____ State: CA Sampling Point: TP6
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope (%): 0-1
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ 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 _____, 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: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix hookeriana</u>	<u>75</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
2. _____				
3. _____				
4. _____				
<u>75</u> = Total Cover				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 = _____
<u>75</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>5ft</u>)				
1. <u>Rubus ursinus</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
2. <u>Rubus armeniacus</u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
<u>8</u> = Total Cover <u>4/6</u>				
Herb Stratum (Plot size: <u>5ft</u>)				
1. <u>Hedera helix</u>	<u>trace</u>		<u>FACU</u>	
2. <u>Lysimachia arvensis</u>	<u>1</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
<u>1</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
<u>99%</u> (Duff/litter) = Total Cover				
% Bare Ground in Herb Stratum				
<u>99%</u> (Duff/litter)				
Remarks:				

SOIL

Sampling Point: TP 6

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		
0-3	10YR 2/1	100					Organic	
3-8	10YR 2/1	89	5YR 3/4	11	C	PL	SL	
9-15	10YR 2/1	100					Gr SL	
15-24+	5Y 2.5/1	96	10YR 2/1	4	C	M	LS	

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 checked="" type="checkbox"/> Redox Dark Surface (F6)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<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)	

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

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>19 in</u>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>15 in</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

Remarks: Note: Inundated during recent storm event.

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

Project/Site: Samoa WWTF City/County: Humboldt Sampling Date: 6/12/18
 Applicant/Owner: _____ State: CA Sampling Point: TP7
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope (%): 0-1
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: none ✓
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
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>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
4. _____				Prevalence Index worksheet:
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>5ft</u>)				OBL species _____ x 1 = _____
1. <u>Rubus ursinus</u>	<u>7</u>	<u>✓</u>	<u>FACU</u>	FACW species _____ x 2 = _____
2. <u>Salix hookeriana</u>	<u>1</u>		<u>FACW</u>	FAC species _____ x 3 = _____
3. _____				FACU species _____ x 4 = _____
4. _____				UPL species _____ x 5 = _____
5. _____				Column Totals: _____ (A) _____ (B)
= Total Cover <u>8</u> 4%				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>5ft</u>)				Hydrophytic Vegetation Indicators:
1. <u>Carex obnupta</u>	<u>90%</u>	<u>✓</u>	<u>Obl</u>	___ 1 - Rapid Test for Hydrophytic Vegetation
2. <u>Rumex acetosa</u>	<u>1</u>		<u>FACU</u>	___ 2 - Dominance Test is >50%
3. _____				___ 3 - Prevalence Index is ≤3.0 ¹
4. _____				___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____				___ 5 - Wetland Non-Vascular Plants ¹
6. _____				___ Problematic Hydrophytic Vegetation ¹ (Explain)
7. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
9. _____				
10. _____				
11. _____				
<u>91</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
= Total Cover <u>9%</u>				
% Bare Ground in Herb Stratum <u>9%</u>				
Remarks:				

SOIL

Sampling Point: TP 7

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		
0-14+ 19-	10YR 2/2	100					SL	

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)	

Indicators for Problematic Hydric Soils³:

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"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<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? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

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: Samoa WWTF City/County: Humboldt Sampling Date: 6/2/18
 Applicant/Owner: _____ State: CA Sampling Point: TP8
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope (%): 0-1
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ 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 _____, 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 <input 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 <input checked="" type="checkbox"/>	No _____				
Remarks:						

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. <u>Salix hookeriana</u>	<u>70</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>2</u> (A)		
2. _____				Total Number of Dominant Species Across All Strata:	<u>3</u> (B)		
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>67%</u> (A/B)		
4. _____							
				<u>70%</u> = Total Cover			
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:			
1. <u>Rubus ursinus</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>			Total % Cover of:	Multiply by:
2. _____				OBL species _____	x 1 = _____		
3. _____				FACW species _____	x 2 = _____		
4. _____				FAC species _____	x 3 = _____		
5. _____				FACU species _____	x 4 = _____		
				UPL species _____	x 5 = _____		
				Column Totals: _____	(A) _____ (B) _____		
				Prevalence Index = B/A = _____			
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:			
1. <u>Agrostis stolonifera</u>	<u>50%</u>	<input checked="" type="checkbox"/>	<u>FAC</u>			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.	
2. <u>Viola sativa</u>	<u>1</u>		<u>UPL</u>				
3. <u>Holcus lanatus</u>	<u>2</u>		<u>FAC</u>				
4. <u>Conium maculatum</u>	<u>1</u>		<u>FAC</u>				
5. _____							
6. _____							
7. _____							
8. _____							
9. _____							
10. _____							
11. _____							
				<u>54</u> = Total Cover <u>22/10.8</u>			
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?			
1. _____						Yes <input checked="" type="checkbox"/>	No _____
2. _____							
				_____ = Total Cover			
% Bare Ground in Herb Stratum <u>46%</u>							
Remarks:							

SOIL

Sampling Point: TP8

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		
0-6	10YR 2/2	100					SL	
6-18	2.5Y 3/2	00					GrSL	
18-24	5Y 3/2	100					S	

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 checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input checked="" 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)	
<input 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)	

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:

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

Project/Site: Samoa WWTF City/County: Fairhaven, Humboldt Sampling Date: 5/31/18
 Applicant/Owner: _____ State: CA Sampling Point: TP9
 Investigator(s): Sam Polly, Joseph Sater Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Distortion plain Local relief (concave, convex, none): Concave Slope (%): 0-1
 Subregion (LRR): A, MLRA, 4B Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: PSS1C

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>TP just south of northern (locked gate) airport access</u>			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
1. <u>Salix hookeriana</u>	<u>70%</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>5ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	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.
1. <u>Rubus ursinus</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				
Herb Stratum (Plot size: <u>5ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. <u>Carex obnupta</u>	<u>50%</u>	<input checked="" type="checkbox"/>	<u>Obl</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
= Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
= Total Cover				
% Bare Ground in Herb Stratum <u>50% (litter)</u> = Total Cover				
Remarks: _____				

SOIL

Sampling Point: TP9

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		
0-9	10YR 2/1	100					Muck	
9-23+	10YR 4/1	82	10YR 3/4	18	C	PL	LS	

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 checked="" 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) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input checked="" 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 checked="" 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)	

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

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: Samoa WWTF City/County: Humboldt Sampling Date: 6/12/18
 Applicant/Owner: _____ State: CA Sampling Point: TP 10
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope (%): 0-1
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: PSS1C ✓

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>Large wooded wetland, waded through boot-deep water on 4/17/18 throughout between N. & S. Airport entrances on E. side of road</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Morella californica</u>	<u>65</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)																
2. <u>Salix lasiantha</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FACW</u>																	
3. <u>Salix hookeriana</u>	<u>15</u>		<u>FACW</u>																	
4. _____																				
<u>100</u> = Total Cover <u>100%</u>				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	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 = _____	
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 = _____																				
Sapling/Shrub Stratum (Plot size: _____)																				
1. <u>Rubus ursinus</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>																	
2. _____																				
3. _____																				
4. _____																				
5. _____																				
<u>5</u> = Total Cover																				
Herb Stratum (Plot size: _____)																				
1. <u>Carex obnupta</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>Obl</u>																	
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
<u>15</u> = Total Cover																				
Woody Vine Stratum (Plot size: _____)																				
1. _____																				
2. _____																				
_____ = Total Cover																				
% Bare Ground in Herb Stratum <u>85% (litter)</u> = Total Cover																				
Remarks: _____																				

SOIL

Sampling Point: TP10

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		
0-5	10YR 2/1	100					Muck	Top 2 inches Peat.
5-24+	10Y 3/1	98	7.5YR 2.5/3	2	C	PL	S	

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.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input checked="" 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:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Salt Crust (B11)
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Aquatic Invertebrates (B13) 4/17/18
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Field Observations:

Surface Water Present? Yes No Depth (inches): 17" on 4/17/18, 0" on 6/12/18

Water Table Present? Yes No Depth (inches): Surface on 4/17, 16" on 6/12/18

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

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: Samoa WWTP City/County: Humboldt Sampling Date: 6/12/18
 Applicant/Owner: _____ State: CA Sampling Point: TP II
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ 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 _____, 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"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Caution: Dense tick population</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Hesperosperis macrocarpa</u>	<u>3%</u>	<input checked="" type="checkbox"/>	<u>NL</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
2. <u>Salix Suleriana</u>	<u>5%</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. _____	_____	_____	_____	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 = _____
4. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: <u>5ft</u>)				
1. <u>Rubus ursinus</u>	<u>8</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
2. _____	_____	_____	_____	
Herb Stratum (Plot size: <u>5ft</u>)				
1. <u>Carex obnupta</u>	<u>90</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	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.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum <u>10 (litter)</u>				
Remarks: _____				

SOIL

Sampling Point: TP11

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		
0-2	10YR 2/2	100					SL/LS+O	High organic content/roots
2-16	10YR 3/2	92	10YR 3/3	8	C	M	LS/SL	
16-24+	10Y 3/1	89	10YR 3/6	11	C	M	S	

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.)		Indicators for Problematic Hydric Soils ³ :
<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 X

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"/> 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 checked="" 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)	<input type="checkbox"/> Other (Explain in Remarks)

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): ~16 in

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: Samoq Peninsula City/County: Humboldt Sampling Date: 4-17-18
 Applicant/Owner: _____ State: CA Sampling Point: TP12
 Investigator(s): SP, JS Section, Township, Range: center of NW 1/4 Sec 32, TSN, R1W HBM
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 1
 Subregion (LRR): A Lat: 40.7777 Long: -124.2096 Datum: WGS 84
 Soil Map Unit Name: ISS Samoq - Clambeach Complex, 0-50% Slopes NWI classification: PEM1F ✓
 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 _____	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No _____			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No _____			

Remarks: Palustrine Emergent Persistent Semipermanently Flooded
Right at 10' W. of road
Marsh just Southeast of airstrip across road from Oyster Ranch; NE corner of marsh

VEGETATION – Use scientific names of plants.

Trees Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Salix hookeriana</u>	<u>32</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>66</u> (A/B)
4. _____				Prevalence Index worksheet:	
	<u>32</u> = Total Cover			Total % Cover of:	Multiply by:
Sapling/Shrub Stratum (Plot size: _____)				OBL species	x 1 = _____
1. <u>Rubus ursinus</u>	<u>41</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	FACW species	x 2 = _____
2. _____				FAC species	x 3 = _____
3. _____				FACU species	x 4 = _____
4. _____				UPL species	x 5 = _____
5. _____				Column Totals:	(A) _____ (B) _____
	<u>41</u> = Total Cover			Prevalence Index = B/A = _____	
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators:	
1. <u>Carex obtusata</u>	<u>86</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	1 - Rapid Test for Hydrophytic Vegetation	
2. <u>Epilobium ciliatum</u>	<u>2</u>		<u>FACW</u>	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
3. <u>Juncus brewerii</u>	<u>1</u>		<u>FACW</u>	3 - Prevalence Index is ≤3.0 ¹	
4. _____				4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
5. _____				5 - Wetland Non-Vascular Plants ¹	
6. _____				Problematic Hydrophytic Vegetation ¹ (Explain)	
7. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
8. _____					
9. _____					
10. _____					
11. _____					
	<u>89</u> = Total Cover			Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
% Bare Ground in Herb Stratum _____					

Remarks: _____

SOIL

Sampling Point: TP 12

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		
0-1	7.5YR 2.5/3	100						
1-6	10YR 2/2	100					MS	
6-18+	2.5Y 3/2	63	2.5YR 3/6	5	C	PL	LS	
			10YR 3/3	32	C	M		

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 checked="" 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)	

Indicators for Problematic Hydric Soils³:

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: Pond adjacent to west has standing H₂O w/ nesting waterfowl & aquatic invertebrates

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 checked="" 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 checked="" 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 checked="" 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>14</u>	
Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>8</u>	

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

Remarks:

Site Photographs **3**



Photo 1: Typical dune swale wetland area, as found at TP1U and TP1W, between roadway and dune habitat in the upper right. Notice upland vegetation transitioning from upland grasses, to coastal willow/CA blackberry complex, to hydrophytic willow domination.



Photo 2: Typical upland area along roadside, as seen at TP1U.



Photo 3: Typical dune swale wetland photo showing willow overstory with slough

sedge understory. Wetlands 1W, 5, 14, 20, 21, and 25 all contained similar habitat.



Photo 4: Closeup of TP1W showing Water-Stained Leaves, Water Marks, Sparsely Vegetated Concave Surface, and dominance of slough sedge and willow.



Photo 5: Closeup of soil pit at TP1W showing saturation to surface and shallow groundwater table. Similar conditions found at Wetlands 1W, 5, 14, 20, 21, and 25.



Photo 6: Upland soil observed at TP1U. Similar sandy, well-drained soils were observed at TPs 4, 7, 11, and 13, along with Wetland numbers 2, 3, 4, 6-10, 12, 13, 17, 18, 19, 23, 24, and 27-30.

Plant List **4**

Table 3
Botanical Species Observed 4/11,17, 5/31 and 6/12/2018
Samoa WWTF, Samoa Peninsula, Humboldt County

Scientific Name	Common Name	Family	Native?
Trees			
<i>Acacia dealbata</i>	silver wattle	Fabaceae	N
<i>Alnus rubra</i>	red alder	Betulaceae	Y
<i>Eucalyptus globulus</i>	bluegum eucalyptus	Myrtaceae	N
<i>Hesperocyparis macrocarpa</i>	Monterrey cypress	Cupressaceae	N
<i>Picea sitchensis</i>	Sitka spruce	Pinaceae	Y
<i>Pinus contorta</i> ssp. <i>contorta</i>	beach pine	Pinaceae	Y
<i>Pinus radiata</i>	Monterrey pine	Pinaceae	N
<i>Pittosporum tenuifolium</i>	shortleaf box	Pittosporaceae	N
<i>Salix hookeriana</i>	Hooker's willow	Salicaceae	Y
<i>Salix lasiandra</i>	pacific willow	Salicaceae	Y
<i>Salix sitchensis</i>	Sitka willow	Salicaceae	Y
Shrubs			
<i>Arctostaphylos uva-ursi</i>	bearberry manzanita	Ericaceae	Y
<i>Baccharis pilularis</i> ssp. <i>consanguinea</i>	coyote brush	Asteraceae	Y
<i>Cornus sericea</i>	American dogwood	Cornaceae	Y
<i>Cytisus scoparius</i>	scotch broom	Fabaceae	N
<i>Frangula purshiana</i>	casacara	Rhamnaceae	Y
<i>Garrya elliptica</i>	coast silk-tassel	Garryaceae	Y
<i>Lonicera involucrata</i> var. <i>ledebourii</i>	twinberry	Caprifoliaceae	Y
<i>Lupinus arboreus</i>	yellow bush lupine	Fabaceae	N
<i>Morella californica</i>	California wax-myrtle	Myricaceae	Y
<i>Rosa rubiginosa</i>	sweetbriar	Rosaceae	N
<i>Rubus armeniacus</i>	Himalayan blackberry	Rosaceae	N
<i>Rubus ursinus</i>	California blackberry	Rosaceae	Y
Sedges and Rushes			
<i>Carex harfordii</i>	Harford's sedge	Cyperaceae	Y
<i>Carex obnupta</i>	slough sedge	Cyperaceae	Y
<i>Carex pansa</i>	sand-dune sedge	Cyperaceae	Y
<i>Cyperus eragrostis</i>	tall flatsedge	Cyperaceae	Y
<i>Cyperus involucratus</i>	umbrella plant	Cyperaceae	N
<i>Eleocharis macrostachya</i>	spike rush	Cyperaceae	Y
<i>Eleocharis palustris</i>	spikerush	Cyperaceae	Y
<i>Juncus brewerii</i>	Brewer's rush	Juncaceae	Y
<i>Juncus bufonius</i>	toad rush	Juncaceae	Y
<i>Juncus effuses</i> ssp. <i>pacificus</i>	common rush	Juncaceae	Y
<i>Juncus lescurii</i>	dune rush	Juncaceae	Y
Ferns			
<i>Polypodium scolieri</i>	leather-leaf fern	Polypodiaceae	Y
<i>Polystichum munitum</i>	sword fern	Dryopteridaceae	Y
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken fern	Dennstaedtiaceae	Y
Grasses			
<i>Agrostis stolonifera</i>	creeping bentgrass	Poaceae	N

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Botanical Species Observed 4/11,17, 5/31 and 6/12/2018
Samoa WWTF, Samoa Peninsula, Humboldt County

Scientific Name	Common Name	Family	Native?
<i>Aira caryophyllaea</i>	silver hair grass	Poaceae	N
<i>Alopecurus geniculatus</i>	march foxtail	Poaceae	N
<i>Ammophila arenaria</i>	beach grass	Poaceae	N
<i>Anthoxanthum odoratum</i>	sweet vernal grass	Poaceae	N
<i>Avena barbata</i>	wild oat	Poaceae	N
<i>Briza maxima</i>	large quaking grass	Poaceae	N
<i>Bromus catharticus</i>	rescue grass	Poaceae	N
<i>Bromus diandrus</i>	ripgut brome	Poaceae	N
<i>Bromus hordeaceus</i>	soft chess	Poaceae	N
<i>Cortaderia jubata</i>	jubata grass	Poaceae	N
<i>Cynosurus echinatus</i>	dogtail grass	Poaceae	N
<i>Dactylis glomerata</i>	orchard grass	Poaceae	N
<i>Deschampsia cespitosa</i> ssp. <i>holciformes</i>	tufted hairgrass	Poaceae	Y
<i>Distichlis spicata</i>	salt grass	Poaceae	Y
<i>Ehrharta erecta</i>	panic veldt grass	Poaceae	N
<i>Festuca arundinacea</i>	tall fescue	Poaceae	N
<i>Festuca bromoides</i>	brome-fescue	Poaceae	N
<i>Festuca perennis</i>	wildrye	Poaceae	N
<i>Festuca rubra</i>	red fescue	Poaceae	Y
<i>Holcus lanatus</i>	velvet grass	Poaceae	N
<i>Hordeum marinum</i> ssp. <i>leporinum</i>	farmers foxtail	Poaceae	N
<i>Poa annua</i>	annual grass	Poaceae	N
<i>Poa bulbosa</i>	bulbous blue-grass	Poaceae	N
<i>Poa confinis</i>	beach bluegrass	Poaceae	Y
<i>Poa unilateralis</i>	ocean bluff beachgrass	Poaceae	Y
Herbs			
<i>Abronia latifolia</i>	yellow sand verbena	Nyctaginaceae	Y
<i>Achillea millefolium</i>	common yarrow	Asteraceae	Y
<i>Acmispon americanus</i>	American bird's-foot	Fabaceae	Y
<i>Agapanthus praecox</i>	African lily	Liliaceae	N
<i>Allium triquetrum</i>	three cornered leek	Alliaceae	N
<i>Ambrosia chamissonis</i>	beach bur-sage	Asteraceae	Y
<i>Arctotheca calendula</i>	capweed	Asteraceae	N
<i>Armeria maritima</i> ssp. <i>californica</i>	sea thrift	Plumbaginaceae	Y
<i>Artemisia pycnocephala</i>	beach sagewort	Asteraceae	Y
<i>Atriplex prostrata</i>	fat hen	Chenopodiaceae	N
<i>Bellis perenne</i>	English daisy	Asteraceae	N
<i>Bellardia trixago</i>	Mediterranean linseed	Orobanchaceae	N
<i>Brassica nigra</i>	black mustard	Brassicaceae	N
<i>Brodiaea terrestris</i> ssp. <i>terrestris</i>	dwarf brodiaea	Themidaceae	Y
<i>Cakile maritima</i>	sea rocket	Brassicaceae	N
<i>Camissoniopsis cheiranthifolia</i>	beach primrose	Onagraceae	Y
<i>Cardamine oligosperma</i>	bittercress	Brassicaceae	Y
<i>Cardionema ramosissimum</i>	sandmat	Caryophyllaceae	Y
<i>Castilleja exserta</i> ssp. <i>latifolia</i>	purple owl's clover	Orobanchaceae	Y
<i>Cerastium glomeratum</i>	mouse-ear chickweed	Caryophyllaceae	N
<i>Chamerion angustifolium</i>	fireweed	Onagraceae	Y
<i>Cirsium arvense</i>	Canada thistle	Asteraceae	N

Table 3
Botanical Species Observed 4/11,17, 5/31 and 6/12/2018
Samoa WWTF, Samoa Peninsula, Humboldt County

Scientific Name	Common Name	Family	Native?
<i>Clarkia davyi</i>	Davy's clarkia	Onagraceae	Y
<i>Claytonia perfoliata</i> ssp. <i>perfoliata</i>	miner's lettuce	Montiaceae	Y
<i>Claytonia rubra</i> ssp. <i>depressa</i>	redstem miner's lettuce	Montiaceae	Y
<i>Conium maculatum</i>	Poison hemlock	Apiaceae	N
<i>Crocasmia x crocosmiiflora</i>	montebretia	Iridaceae	N
<i>Cryptantha leiocarpa</i>	beach cryptantha	Boraginaceae	Y
<i>Daucus carota</i>	Queen Anne's lace	Apiaceae	N
<i>Epilobium ciliatum</i>	fringed willowherb	Onagraceae	Y
<i>Eriogonum latifolium</i>	coast buckwheat	Polygonaceae	Y
<i>Erodium cicutarium</i>	coastal heron's bill	Geraniaceae	N
<i>Erodium moschatum</i>	whitestem filaree	Geraniaceae	N
<i>Eschscholzia californica</i>	California poppy	Papaveraceae	Y
<i>Foeniculum vulgare</i>	fennel	Apiaceae	N
<i>Fragaria chiloensis</i>	beach strawberry	Rosaceae	Y
<i>Galium aparine</i>	cleaver plant	Rubiaceae	Y
<i>Gamochaeta ustulata</i>	featherweed	Asteraceae	Y
<i>Geranium dissectum</i>	cut-leaf geranium	Geraniaceae	N
<i>Geranium molle</i>	crane's bill geranium	Geraniaceae	N
<i>Gilia millefoliata</i>	dark-eyed gilia	Polemoniaceae	Y 1B.2
<i>Grindelia stricta</i> var. <i>stricta</i>	coastal gumplant	Asteraceae	Y
<i>Hesperervax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	Asteraceae	Y 1B.2
<i>Hirschfeldia incana</i>	hoary mustard	Brassicaceae	N
<i>Hyacinthoides non-scripta</i>	blue bells	Asparagaceae	N
<i>Hypochaeris radicata</i>	hairy cat's-ear	Asteraceae	N
<i>Iris pseudacorus</i>	yellow flag iris	Iridaceae	N
<i>Kniphofia uvaria</i>	firepoker	Asphodelaceae	N
<i>Lamium purpureum</i>	henbit	Lamiaceae	N
<i>Lathyrus latifolius</i>	sweet pea	Fabaceae	N
<i>Lepidium strictum</i>	peppergrass	Brassicaceae	Y
<i>Linum bienne</i>	flax	Linaceae	N
<i>Lobularia maritima</i>	sweet alyssum	Brassicaceae	N
<i>Logfia gallica</i>	daggerleaf cottonrose	Asteraceae	N
<i>Lotus corniculatus</i>	bird-foot trefoil	Fabaceae	N
<i>Lupinus bicolor</i>	annual lupine	Fabaceae	Y
<i>Lysimachia arvensis</i>	scarlet pimpernel	Myrsinaceae	N
<i>Lythrum hyssopifolia</i>	hyssop loosestrife	Lythraceae	N
<i>Malva parviflora</i>	cheeseweed	Malvaceae	N
<i>Matricaria discoidea</i>	pineapple weed	Asteraceae	Y
<i>Medicago lupulina</i>	black medic	Fabaceae	N
<i>Medicago polymorpha</i>	bur-clover	Fabaceae	N
<i>Melilotus albus</i>	white sweet clover	Fabaceae	N
<i>Nuttallanthus texanus</i>	blue toadflax	Plantaginaceae	Y
<i>Oenanthe sarmentosa</i>	water parsley	Apiaceae	Y
<i>Oenothera glazioviana</i>	red-sepal primrose	Onagraceae	N
<i>Oxalis pres-caprae</i>	Bermuda buttercup	Oxalidaceae	N
<i>Parentucellia viscosa</i>	yellow glandweed	Orobanchaceae	N
<i>Plantago californica</i>	California plantain	Plantaginaceae	Y
<i>Plantago coronopus</i>	buckhorn plantain	Plantaginaceae	N
<i>Plantago lanceolata</i>	English plantain	Plantaginaceae	N

Table 3
Botanical Species Observed 4/11,17, 5/31 and 6/12/2018
Samoa WWTF, Samoa Peninsula, Humboldt County

Scientific Name	Common Name	Family	Native?
<i>Plantago major</i>	common plantain	Plantaginaceae	N
<i>Platystemon californicus</i>	creamcups	Papaveraceae	Y
<i>Plectritis congesta</i> ssp. <i>brachystemon</i>	sea blush	Valerianaceae	Y
<i>Polygonum paronychia</i>	dune knotweed	Polygonaceae	Y
<i>Potentilla anserina</i> ssp. <i>pacifica</i>	silverweed	Rosaceae	Y
<i>Pseudognaphalium luteoalbum</i>	jersey cudweed	Asteraceae	N
<i>Ranunculus repens</i>	creeping buttercup	Ranunculaceae	N
<i>Raphanus sativa</i>	wild radish	Onagraceae	N
<i>Rumex acetosella</i>	sheep sorrel	Polygonaceae	N
<i>Rumex crispus</i>	curly dock	Polygonaceae	N
<i>Rumex pulcher</i>	fiddle dock	Polygonaceae	N
<i>Sanicula arctopoides</i>	footsteps of spring	Apiaceae	Y
<i>Scrophularia californica</i>	bee plant	Scrophulariaceae	Y
<i>Senecio vulgaris</i>	common groundsel	Asteraceae	N
<i>Silene gallica</i>	common catchfly	Caryophyllaceae	N
<i>Solidago spathulata</i>	dune goldenrod	Asteraceae	Y
<i>Soliva sessilis</i>	common soliva	Asteraceae	N
<i>Sonchus olereacus</i>	sow thistle	Asteraceae	N
<i>Sparaxis tricolor</i>	harlequin flower	Iridaceae	N
<i>Spergula arvensis</i>	corn spurry	Caryophyllaceae	N
<i>Stellaria media</i>	chickweed	Caryophyllaceae	N
<i>Symphyotrichum chilense</i>	pacific aster	Asteraceae	Y
<i>Tanacetum bipinnatum</i>	dune tansy	Asteraceae	Y
<i>Trifolium repens</i>	white clover	Fabaceae	N
<i>Trifolium subterraneum</i>	subterranean clover	Fabaceae	N
<i>Triphysaria eriantha</i> ssp. <i>eriantha</i>	butter 'n' eggs	Orobanchaceae	Y
<i>Typha latifolia</i>	cattail	Typhaceae	Y
<i>Veronica arvensis</i>	corn speedwell	Plantaginaceae	N
<i>Vicia hirsuta</i>	tiny vetch	Fabaceae	N
<i>Vicia sativa</i> ssp. <i>sativa</i>	spring vetch	Fabaceae	N
<i>Vicia villosa</i> ssp. <i>villosa</i>	hairy vetch	Fabaceae	N
<i>Vinca major</i>	periwinkle	Apocynaceae	N
<i>Zantedeschia aethiopica</i>	calla lily	Araceae	N
Vines			
<i>Delairea odorata</i>	cape ivy	Asteraceae	N
<i>Hedera helix</i>	English ivy	Araliaceae	N
168 Species			45% Native



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