JOHNSON MARIGOT
CONSULTING, LLC

U.S. Army Corps of Engineers
San Francisco District, Regulatory Division
Mr. William Connor
450 Golden Gate Ave, 4th floor
San Francisco, CA 94102

July 6, 2021

Attention: Kasey Sirkin

Regarding: Request for Preliminary Jurisdictional Determination for Digital 299 Broadband Project Delineation

Dear Mr. Connor,

Johnson Marigot Consulting, LLC, on behalf of Vero Fiber Networks and Transcon Environmental, Inc., requests a Preliminary Jurisdictional Determination (PJD) from the U.S. Army Corps of Engineers, San Francisco District (USACE). The approximately 1,004-acre study area traverses Humboldt, Trinity, and Shasta Counties in northern California.

Please see the enclosed documents in support of the PJD request. If you have any questions, please feel free to contact Nicole Dunlap of Transcon at ndunlap@transcon.com.

Sincerely,

Naomi Schowalter
Regulatory Specialist

Enclosure 1: Aquatic Resources Delineation Report (July 2021)
Enclosure 2: RGL 16-01, Appendix 1 and 2
Enclosure 3: ORM Aquatic Resources Upload Sheet

Ec: Nicole Dunlap, ndunlap@transcon.com

Enclosure 1

Aquatic Resources Delineation Report (July 2021)

AQUATIC RESOURCE DELINEATION REPORT

Digital 299 Broadband Project
Humboldt, Trinity, and Shasta Counties, California

Prepared for:

Vero Fiber Networks
1023 Walnut Street
Boulder, CO 80302

For Submittal to:

U.S. Army Corps of Engineers
San Francisco District
450 Golden Gate Avenue
San Francisco, California 94102

Prepared by:

Transcon Environmental, Inc.
802 Montgomery Street
San Francisco, California 94133

TRANSCON
environmental

July 2021

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ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CWA	Clean Water Act
dbh	diameter at breast height
DEM	Digital Elevation Model
F	Fahrenheit
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
HTL	High Tide Line
HUC	Hydrologic Unit Code
MHW	Mean high water
NAVD 88	North American Vertical Datum of 1988
NHD	National Hydrography Dataset
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate
OHWM	Ordinary high water mark
ORM	OMBIL Regulatory Module
RHA	Rivers and Harbors Act
UPL	Upland
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WMVC	Western Mountains, Valleys, and Coast
WOTUS	Waters of the United States

SECTION 1 INTRODUCTION

1.1 Contact Information

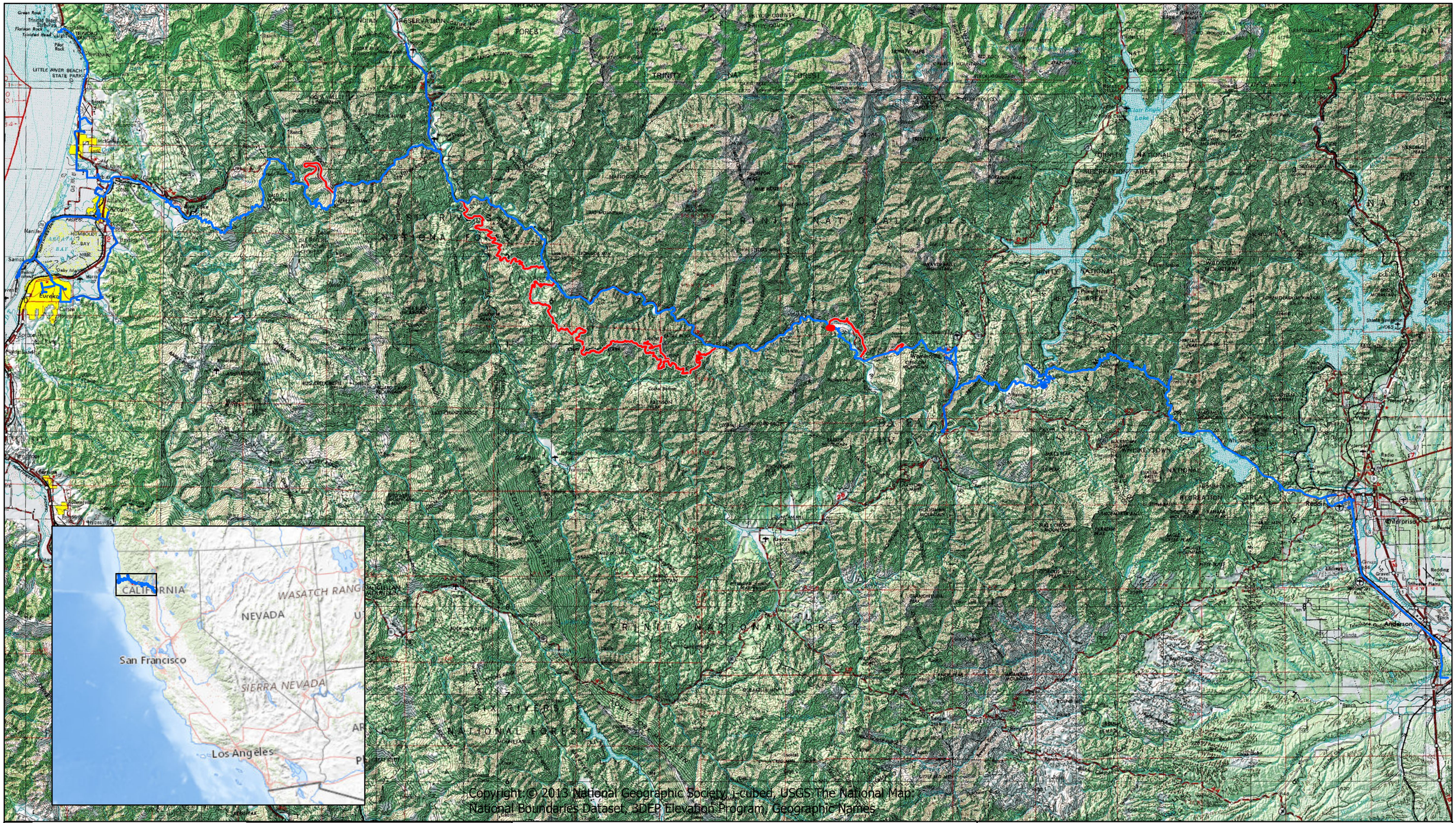
Josh Nelson
Vero Networks
1023 Walnut Street
Boulder, CO 80302
(850) 490-0409

1.2 Purpose of Assessment

The Digital 299 Broadband Project (Digital 299) is a proposed regional telecommunications network that will support portions of Humboldt, Trinity, and Shasta counties between Cottonwood and Eureka, California, known to have no or poor broadband infrastructure. On behalf of Vero Networks, Transcon Environmental, Inc., has prepared this Aquatic Resource Delineation Report to determine the extent of potential U.S. Army Corps of Engineers (USACE) jurisdictional waters within the proposed Project corridor. The purpose of this report is to: 1) delineate any potential Waters of the United States (WOTUS) subject to federal jurisdiction of the USACE pursuant to Section 404 of the Clean Water Act (CWA) and 2) delineate any potential navigable waters subject to federal jurisdiction of the USACE pursuant to Section 10 of the Rivers and Harbors Act (RHA). This delineation is based on currently available data and site conditions at the time of the site visits. The results of this delineation are preliminary until verified by USACE.

1.3 Project Location

The delineation survey area extends through three counties in northern California: Humboldt, Trinity, and Shasta (Figure 1). The network route generally follows California State Route 299, with portions of the route traveling over federally managed public land, state-owned or controlled property, privately owned property, and Tribal lands. The proposed alignment includes the main backbone of the network route and various aerial attachments, or "spurs," that branch from the main backbone to connect to outlying communities along the route. The survey area covers approximately 1,004 acres, including 43 staging areas and a 25-foot corridor centered on the proposed alignment, five alternative alignments, and 12 alternative bore paths under the Trinity River crossing located northwest of Junction City. Due to the extensive size of the survey area, directions, contact information of property owners, and signed approval to access specific locations will be furnished upon request.



JOHNSON MARIGOT CONSULTING, LLC

Map Created 7/6/2021
by N. Schowalter

Legend

- Alternative Alignments
- Proposed Alignment

Figure 1 - Digital 299 Project Overview

0 5 10
Miles

N

SECTION 2 REGULATORY FRAMEWORK

2.1 Section 404 of the Clean Water Act

The USACE has regulatory and permitting authority over discharge of dredged or filled material into WOTUS pursuant to Section 404 of the CWA. Section 328 of Chapter 33 in the Code of Federal Regulations (CFR) defines WOTUS as they apply to the jurisdictional limits of USACE authority under the CWA. A summary of this definition in 33 CFR 328.3 includes: 1) the territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide; 2) tributaries; 3) lakes and ponds, and impoundments of jurisdictional waters; and 4) adjacent wetlands.

The limits of USACE jurisdiction under Section 404, as given in 33 CFR 328.4, are as follows: (a) territorial seas—three nautical miles in a seaward direction from the baseline; (b) tidal WOTUS—high tide line; (c) non-tidal WOTUS—ordinary high water mark (OHWM) or to the limit of adjacent wetlands; and (d) wetlands—to the limit of the wetland.

2.2 Section 10 of the Rivers and Harbor Act

The USACE also has jurisdiction over "navigable waters" under Section 10 of the RHA of 1899. Section 10 of this Act applies to tidal areas below mean high water (MHW) and includes tidal areas currently subject to tidal influence, as well as historic tidal areas behind levees that both historically and presently reside at or below MHW. "Navigable Waters of the United States," as defined in 33 CFR Part 329, are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. The Act prohibits any unauthorized action that obstructs the "navigable capacity of any Waters of the United States." These actions can include building of structures, excavation, fill, and alterations and modifications to navigable waters (33 USC 403).

A determination of navigability, once made, applies laterally over the entire surface of the waterbody and is not extinguished by later actions or events which impede or destroy navigable capacity. The upper limit of navigable water is at the point along its length where the character of the river changes from navigable to non-navigable, such as at a major fall or rapids. Since the upper limit of navigability of waterways under Section 10 jurisdiction is sometimes difficult to discern, determinations of navigability under Section 10 are often made by the USACE and kept on file, independent of submitted permit applications or delineations.

SECTION 3 METHODOLOGY

3.1 Survey Area

The survey area includes all areas that may be impacted by project activities, including all staging areas and a 25-foot corridor centered on the proposed alignment, five alternative alignments, and 12 alternative bore paths under the Trinity River. All accessible areas within the survey area were investigated on foot. Portions of the survey area with right-of-entry access restrictions or safety concerns (those areas adjacent to major highways or roads) were surveyed from the public right-of-way or from adjacent parcels where access was granted.

3.2 Delineation Methods

Office Review

Prior to conducting field surveys, the following resources were reviewed to determine the presence of potentially jurisdictional aquatic resources within the survey area:

- Current and historical aerial imagery (Google Earth 2021; Esri 2021)
- U.S. Geological Survey (USGS) topographic maps
- MHW digital elevation model (DEM) data from the *Humboldt Bay Shoreline Inventory, Mapping, and Sea Level Rise Vulnerability Assessment* (Laird 2013)
- National Wetlands Inventory (NWI) data from the U.S. Fish and Wildlife Service (USFWS) (USFWS 2017)
- National Hydrography Dataset (NHD) data from USGS (USGS 2019)
- Soil data from the Natural Resource Conservation Service (NRCS) (NRCS 2021)

Field Surveys

Field surveys were conducted between April 1 and July 1, 2019, followed by a second round of field surveys conducted between August 12 through August 20, 2019, and a final field survey on April 8, 2021. Primary investigators included Benjamin Lardiere (senior biologist), Molly Dodge (senior biologist), Elissa Blair (biologist), Bethany Baibak (biologist), Iris Koski (biologist), and Marisa Ishimatsu (biologist).

During field surveys, accessible portions of the survey area were traversed on foot. Potential wetlands and other waters identified during the office review were mapped with a GPS, if present, as well as any previously unidentified wetlands and other waters. The investigators used iPads to record all photos, GPS data, and datasheet information. Spatial data was collected using a sub-meter accurate Trimble R1 GPS antenna paired to the iPad via Bluetooth technology. Spatial data and data point images were uploaded to ArcGIS Online, a secure internet-based Esri application, via the Collector application.

The methods used to delineate potentially jurisdictional wetlands and other waters within the survey area were based on the following:

- USACE Regulatory Guidance Letter Number 05-05, OHWM Identification (USACE 2005)
- A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008)
- Corps of Engineers Wetland Delineation Manual (USACE 1987)
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast (WMVC) Region (USACE 2010)

- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008)

CWA "Waters of the United States"

WOTUS are defined by 33 CFR 328.3(a) as:

- The territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide
- Tributaries
- Lakes and ponds, and impoundments of jurisdictional waters
- Adjacent wetlands

This delineation evaluated the presence of all waters potentially subject to USACE jurisdiction under Section 404 of the CWA. Waters potentially subject to USACE jurisdiction include lakes, rivers, and streams (including intermittent streams), in addition to all areas below the high tide line in areas subject to tidal influence. Jurisdiction in non-tidal areas extends to the OHWM, defined as:

> *…that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the characteristics of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*
>
> 33 CFR 328.3 (c)(7)

Additionally, if adjacent wetlands are present, USACE jurisdiction extends beyond the OHWM to the limit of the adjacent wetlands.

Ordinary High Water Mark

Identification of the OHWM followed the USACE Regulatory Guidance Letter Number 05-05, OHWM Identification (USACE 2005), and/or *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (Lichvar and McColley 2008). Most of the survey area was accessible by foot, except for those portions that were inaccessible due to safety concerns from adjacent highways and roads or due to right-of-entry constraints. The extent of the OHWM was determined in the field by identifying a break between upland and wetland characteristics, as identified in the WMVC and Arid West Regional supplements.

Channel lengths were approximated along the centerline of main channel flow. Feature widths and depths are representative averages and were measured from cross channel measurements conducted with ArcGIS, general field observations, and post-field calculations. Delineations of the OHWM were conducted using handheld GPS with submeter accuracy and are an accurate representation of the OHWM at the time of survey.

Clean Water Act Wetlands

The study area was evaluated for the presence or absence of indicators of the three wetland parameters described in the USACE manual (USACE 1987) and regional supplements (USACE 2008, 2010): 1) hydrophytic vegetation, 2) wetland hydrology, and 3) hydric soils. Federal regulations at 33 CFR 328.3(c)(16) define wetlands as:

> *…areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation*

typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

According to the 1987 USACE manual, for areas not considered "problem areas" or "atypical situations:"

…evidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination.

Data on vegetation, hydrology, and soils collected were collected at a sub-sample of locations during the site visit and were reported on Wetland Determination Data Forms (**Appendix A**). Once an area was determined to be a potential jurisdictional wetland, its boundaries were delineated using the aforementioned GPS methodology. Indicators described in the regional supplements were used to make wetland determinations at each sample point in the study area, as summarized below.

Vegetation

This report discusses botanical species with both their scientific and common names. Plant species identified within the study area are assigned a wetland status based on the USACE list of plant species that occur in wetlands (USACE 2018). This wetland classification system is based on the expected frequency of species occurrence in wetlands (**Table 1**).

TABLE 1
WETLAND CLASSIFICATION SYSTEM BASED ON EXPECTED FREQUENCY OF SPECIES OCCURRENCE IN WETLANDS

Class*	Description	Frequency percentage
OBL	Occur almost always in wetlands under natural conditions	Greater than 99
FACW	Usually occur in wetlands	67 to 99
FAC	Equally likely to occur in wetlands or non-wetlands	34 to 66
FACU	Usually occur in non-wetlands	1 to 33
UPL	Occur almost always in non-wetlands under natural conditions	Less than 1

***Note:** OBL=Obligate; FACW=Facultative Wetland; FAC=Facultative; FACU=Facultative Upland; UPL=Obligate Upland

The USACE manual describes a three-step process to determine if hydrophytic vegetation is present. The procedure first requires the delineator to apply the 50/20 rule (Indicator 1), wherein species are chosen independently for each of the 4 vegetation strata: tree, sapling/shrub, herbaceous, and woody vine.[1] In general, dominant species are determined for each vegetation stratum from a sampling plot of an appropriate size surrounding the sample point (typically 30 feet in diameter). Dominants are the most abundant species that individually or collectively account for more than 50 percent of total vegetative cover in the stratum, plus any other species that by itself accounts for at least 20 percent of the total cover. If greater than 50 percent of the dominant species has an OBL, FACW, or FAC status, the sample point meets the hydrophytic vegetation criterion.

[1]The tree stratum includes woody plants, excluding woody vines, approximately 20 feet or more in height and 3 inches or larger in diameter at breast height (DBH). The sapling/shrub stratum includes woody plants, excluding woody vines less than three inches DBH, regardless of height. The herb stratum includes all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines less than approximately 3 feet in height. The woody vine stratum includes all woody vines regardless of height (USACE 2008).

If the sample point fails the application of Indicator 1, and both hydric soils and wetland hydrology are absent, then the sample point does not meet the hydrophytic vegetation criterion (unless the site is a problematic wetland situation). However, if the sample point fails Indicator 1 but hydric soils and wetland hydrology are both present, the delineator must apply Indicator 2.

Indicator 2 is the Prevalence Index, which is a weighted average of the wetland indicator status for all plant species within the sampling plot. Each indicator status is given a numeric code: OBL=1, FACW=2, FAC=3, FACU=4, and UPL=5. Application of Indicator 2 requires the delineator to estimate the percent cover of each species in every stratum of the community and sum the cover estimates for any species that are present in more than one stratum. The delineator must then organize all species into groups according to their wetland indicator status and calculate the Prevalence Index using the following formula, where "A" equals total percent cover:

$$PI = \frac{A_{OBL} + 2A_{FACW} + 3A_{FAC} + 4A_{FACU} + 5A_{UPL}}{A_{OBL} + A_{FACW} + A_{FAC} + A_{FACU} + A_{UPL}}$$

The Prevalence Index will yield a number between 1 and 5. If the Prevalence Index is equal to or less than 3, the sample point meets the hydrophytic vegetation criterion; however, if the Prevalence Index is greater than 3, the delineator must proceed to Indicator 3.

Application of Indicator 3 assesses presence of morphological adaptations. If more than 50 percent of the individuals of a FACU species have morphological adaptations for life in wetlands, that species is considered a hydrophyte and its indicator status should be reassigned to FAC. If such observations are made, the delineator must recalculate Indicators 1 and 2 using a FAC indicator status for this species. The sample point meets the hydrophytic vegetation criterion if either test is satisfied.

This three-step process was utilized to determine if sample points within the survey area met the hydrophytic vegetation criterion.

Hydrology

The USACE jurisdictional wetland hydrology criterion is satisfied if an area is inundated or saturated long enough to create anoxic soil conditions during the growing season (i.e., a minimum of 14 days in the Arid West Region). Evidence of wetland hydrology can include primary indicators, such as visible inundation or saturation, drift deposits, oxidized root channels, or salt crusts; or secondary indicators such as the FAC-neutral test, the presence of a shallow aquitard, or frost-heave hummocks. The Arid West Regional Supplement contains 18 primary hydrology indicators and 9 secondary hydrology indicators, while the WMVC Regional Supplement contains 19 primary hydrology indicators and 9 secondary hydrology indicators. Only one primary indicator is required to meet the wetland hydrology criterion. If secondary indicators are used, at least two secondary indicators must be present to conclude that an area has wetland hydrology.

The presence or absence of the primary or secondary indicators described in the Arid West Regional Supplement was utilized to determine if sample points within the delineation study area met the wetland hydrology criterion.

Soils

NRCS defines a hydric soil as follows:

> *A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.*

Vasilas et al. 2010

Soils formed over prolonged periods of time under wetland (anaerobic) conditions often possess characteristics that indicate they meet the definition of hydric soils. Hydric soils can have a hydrogen sulfide (i.e., rotten egg) odor; low chroma matrix color (0, 1, or 2); presence of redox concentrations; gleyed or depleted matrix; or high organic matter content.

Specific indicators that can be used to determine whether a soil is hydric for wetland delineation are provided in the NRCS Field Indicators of Hydric Soils in the United States (Vasilas et al. 2010). The Arid West Regional Supplement provides a list of 19 hydric soil indicators that are known to occur in the Arid West Region. Where possible, soil samples were collected and described according to the methodology provided in the Arid West Regional Supplement. Soil chroma and values were determined by utilizing a standard Munsell soil chart (Munsell 2009). Hydric soils were determined to be present if any of the soil samples met one or more of the 19 hydric soil indicators described in the Arid West or WMVC Regional Supplements.

Non-Jurisdictional Features

Some areas that meet the technical criteria for wetlands or other waters may not be jurisdictional under the CWA. Per the Navigable Waters Protection Rule (85 FR 22250) that became effective in June 2020, there are 12 categories of exclusions (i.e., features that are not "waters of the United States"). Examples of non-jurisdictional waters include features that only contain water in direct response to rainfall (e.g., ephemeral features), groundwater, many ditches, prior converted cropland, and waste treatment systems.

Section 10 Navigable Waters

This delineation study also determined the extent of areas subject to USACE jurisdiction under Section 10 of the RHA of 1899. USACE jurisdiction under Section 10 applies to any "navigable Waters of the United States." Navigable waters are generally determined by USACE and kept on file at the USACE district offices. In tidally influenced areas, such as those within the survey area near Humboldt Bay, the upper limit of "navigable waters" is defined as the elevation of the MHW (FR Doc 86-25301, 329.12.b). Section 10 navigable waters within the study area were therefore mapped for this delineation as areas below the elevation of MHW. MHW was mapped using spatial data developed during the *Humboldt Bay Shoreline Inventory, Mapping, and Sea Level Rise Vulnerability Assessment* (Laird 2013).

SECTION 4 EXISTING SITE CONDITIONS

4.1 Climate

The survey area overlaps two Mediterranean subtype climate zones. The warm-summer Mediterranean climate subtype exists primarily along the immediate coast and coastal mountain ranges. Known for its warm (but not hot) and dry summers, average summer temperatures rarely exceed 70 degrees Fahrenheit (F), while average winter temperatures rarely drop below 40 degrees F. Much of the yearly precipitation in warm-summer Mediterranean climates, averaging 40 inches annually, occurs during the colder winter months (USCD 2019).

The hot-summer Mediterranean climate subtype exists primarily in some of the inland mountain valleys and Central Valley portion of the survey area. Known for its very hot, dry summers and cool, wet winters, average summer temperatures often exceed 90 degrees F, while average winter temperatures occasionally drop below 40 degrees F. Precipitation primarily occurs during the winter months, averaging 35 inches annually (USCD 2019).

4.2 Land Use

The survey area overlaps three counties with a variety of zoned land use types. In Humboldt County, the survey area overlaps both public and private lands that are zoned for residential development, commercial/industrial development, agriculture (primarily livestock), recreation, and forest resources/timber production (Humboldt County 2017). In Trinity County, the alignment primarily crosses public and private lands primarily dedicated to forest resources/timber production and recreation, with limited residential development along the State Route 299 corridor and around the communities of Douglas City, Weaverville, Junction City, and Lewiston (Trinity County 2002). In Shasta County, the alignment primarily crosses public and private lands with limited forest resources/timber production, recreation (Whiskeytown National Recreation Area), and increased residential development around the City of Redding and surrounding communities (Shasta County 2004).

4.3 Landscape Setting

The survey area overlaps three main ecoregions, including the Coast Range on the western end, the Klamath Mountains/California High North Coast Range in the center of the alignment, and the Central California Foothills and Coastal Mountains on the eastern end. The Coast Range region consists of coastal headlands, marine terraces, sand dunes, and beaches on the immediate coast and the inland coastal mountain range, which is dominated by highly productive evergreen forests. The Klamath Mountains/California High North Coast Range region consists of highly dissected mountains and valleys of the Klamath and Siskiyou mountains dominated by mixed conifer and hardwood forests. The Central California Foothills and Coastal Mountains region primarily consists of low mountains, foothills, and narrow valleys dominated by chaparral and oak woodlands (Griffith et al. 2016).

Topography varies considerably along the entire length of the survey area. On the western end of the alignment, topography is generally flat in and around Humboldt Bay and inland until the community of Korbel, rarely exceeding 200 feet in elevation. Between Korbel and Shasta (the majority of the alignment), the topography varies between 1,000 to 5,000 feet in elevation, reaching its maximum elevation near Monument Peak. On the eastern end of the alignment near the city of Redding, topography is fairly flat, varying between 500 and 1,000 feet in elevation.

4.3.1 Vegetation Communities

The survey area is located within the Northwestern California Region of the California Floristic province. Based on observations made in the field, vegetation communities found within and adjacent to the survey

area are briefly described below. Further details on vegetation communities are described in the Digital 299 Biological Evaluation (Transcon 2021).

Conifer Forest

Conifer forest communities dominate the majority of the survey area. These conifer forest communities are typically dominated or co-dominated by Douglas-fir (*Pseudotsuga menziesii*), redwood (*Sequoia sempervirens*), and ponderosa pine (*Pinus ponderosa*). Other species that may be present in the overstory include Pacific madrone (*Arbutus menziesii*), California black oak (*Quercus kelloggii*), canyon live oak (*Quercus chrysolepis*), bigleaf maple (*Acer macrophyllum*), tanoak (*Lithocarpus densiflorus* var. *densiflorus*), and incense cedar (*Calocedrus decurrens*). Species in the understory may include California huckleberry (*Vaccinium ovatum*), manzanita (*Arctostaphylos* spp.), ceanothus (*Ceanothus* spp.), and poison oak (*Toxicodendron diversilobum*).

Hardwood Forest

Hardwood forest communities can be found throughout the survey area, often interspersed with the conifer forest communities. On drier sites, hardwood forest communities are typically dominated by oak species such as canyon live oak, California black oak, and tan oak with an understory of low growing shrubs like manzanita, deerbrush (*Ceanothus integerrimus*), and Brewer oak (*Quercus garryana breweri*). In riparian and moister areas, these communities are typically dominated by willows (*Salix* spp.), cottonwoods (*Populus* spp.), alders (*Alnus* spp.), and California bay (*Umbellularia californica*).

Shrub and Chaparral

Shrub and chaparral communities can be found intermittently throughout the survey area. These communities are typically dominated by various species of ceanothus and manzanita. Ultramafic shrub communities, located on nutrient-poor serpentine soils, are also present in some areas. These communities are typically dominated by Jepson ceanothus (*Ceanothus cuneatus*), huckleberry oak (*Quercus vacciniifolia*), and other serpentine-adapted species.

Annual Grasses and Forbs

Annual grasses and forb communities can be found in the survey area interspersed throughout the other community types. These communities are typically dominated by both native and non-native grasses such as brome (*Bromus* spp.), bluegrass (*Poa* spp.), wildoats (*Avena* spp.), fescue (*Vulpia* spp.), dogtail (*Cynosurus* spp.), barley (*Hordeum murinum*), needlegrass (*Nassella* spp.), oatgrass (*Danthonia* spp.), and a variety of forbs such as checker mallow (*Sidalcea* spp.), brodiaea (*Brodiaea* spp.), wild hyacinth (*Dichelostemma* spp.), yampah (*Perideridia* spp.) and Mariposa Lily (*Calochortus* spp.).

Developed/Non-Vegetated

Developed and non-vegetated areas found throughout the survey area include those areas devoid of vegetation (barren), areas used primarily for agriculture, and urban or developed areas.

Salt Marsh

This vegetation community commonly occurs within coastal brackish and saltwater marshes. Usually dominated by common pickleweed (*Salicornia virginica*) and California cordgrass (*Spartina foliosa*), these communities may also include invasive non-native species such as saltwater and dense-flowered cordgrasses (*Spartina alterniflora, Spartina densiflora*). Pickleweed-cordgrass communities are present on the western portion of the survey area adjacent to Humboldt Bay.

Freshwater Marsh

This vegetation community consists of permanently flooded freshwater areas dominated by bulrush (*Scirpus* spp.) and/or cattails (*Typha latifolia, T. domingensis, T. angustifolia*). Tule/cattail communities, usually near inland rivers, lakes, and springs, are present in a few areas adjacent to the survey area.

Freshwater Emergent Wetlands

This perennial or seasonal vegetation community commonly occurs on grasslands or gently sloping areas that are adjacent to perennial streams, seeps, springs, or lakes. These are usually small sites that are dominated by obligate hydrophytes such as sedges (*Carex* spp.), rushes (*Juncus* spp.), and bulrushes, as well as perennial grasses such as bluegrass, brome, fescue, oniongrass (*Melica* spp.), and reedgrass (*Calamagrostis* spp.). Wet meadows are present sporadically along the entire length of the survey area.

4.3.2 Hydrology

The survey area crosses 15 watersheds (Hydrologic Unit Code [HUC] 10) and 37 subwatersheds (HUC 12) (USGS 2019) (**Table 2**).

TABLE 2
WATERSHEDS WITHIN THE SURVEY AREA

Watershed (HUC 10)	10-digit code
Ash Creek-Sacramento River	1802015405
Big French Creek-Trinity River	1801021111
Big Lagoon-Frontal Pacific Ocean	1801010205
Canyon Creek	1801021108
Churn Creek-Sacramento River	1802015403
Clear Creek	1802015401
Cottonwood Creek	1802015208
Horse Linto Creek-Trinity River	1801021112
Humboldt Bay-Frontal Pacific Ocean	1801010206
Lower Hayfork Creek	1801021203
Lower Mad River	1801010204
Lower South Fork Trinity River	1801021205
North Fork Trinity River	1801021109
Redwood Creek	1801010201
Weaver Creek-Trinity River	1801021107

There are several major waterbodies and waterways in the survey area, including Humboldt Bay, Mad River, Little River, Trinity River, and Whiskeytown Lake, as well as numerous perennial, intermittent, and ephemeral waterways. Additionally, several seeps and springs that often emerge from roadcuts are present along portions of the alignment on some of the more remote dirt roads.

A map depicting potential waterways and wetlands in the survey area based on NHD and NWI data provided by the USFWS is included in **Appendix B** (USFWS 2017; USGS 2019). The NWI feature types

that intersect the survey area, along with the wetland classification code and acreages within the survey area, are listed below (**Table 3**).

TABLE 3
NWI FEATURES WITHIN THE SURVEY AREA

NWI Feature Type	Wetland Classification Codes*	Mapped Area (Acres)
Estuarine and Marine Deepwater	E1UB	0.89
Estuarine and Marine Wetland	E2AB, E2EM, E2US	0.96
Freshwater Emergent Wetland	PEM	5.10
Freshwater Forested/Shrub Wetland	PFO, PSS	4.92
Lake	L1UB, L2US	0.53
Riverine	R2UB, R3RB, R3RS, R3UB, R3US, R4SB, R5UB	14.58
	TOTAL	**26.98**

* **Note:** Wetlands and Deepwater Habitats Classification (Cowardin et al. 1979): **System:** E=Estuarine, L=Lacustrine, P=Palustrine, R=Riverine; **Estuarine Subsystem:** 1=Subtidal, 2=Intertidal; **Lacustrine Subsystem**: 1=Limnetic; **Riverine Subsystem**: 2=Lower perennial, 3=Upper perennial, 4=Intermittent, 5=Unknown perennial; **Class:** EM=Emergent, FO=Forested, SB=Streambed, SS=Scrub-shrub, UB=Unconsolidated bottom, US=Unconsolidated shore, RB=Rock Bottom, RS=Rocky Shore.
Subclasses and Modifiers not included.

4.3.3 Soils

NRCS soil survey data for Humboldt, Trinity, and Shasta Counties, California, indicated 206 soil map units within the survey area (NRCS 2021) (**Appendix B**). The soil map units and whether they meet the NRCS hydric soil criteria are listed below (**Table 4**).

TABLE 4
NRCS SOIL TYPES WITHIN THE SURVEY AREA

Map Unit Name	Acres	% of Survey Area	NRCS Hydric Soil
Anderson gravelly sandy loam	3.90	0.39	Yes
Arcata and Candymountain soils, 0 to 2 percent slopes	3.24	0.32	Yes
Arcata and Candymountain soils, 2 to 9 percent slopes	7.18	0.72	Yes
Arlynda, 0 to 2 percent slopes	1.09	0.11	Yes
Arlynda, 0 to 9 percent slopes	0.53	0.05	Yes
Atter extremely gravelly loamy sand, 9 to 15 percent slopes	5.47	0.55	Yes
Atter family, 0 to 20 percent slopes.	1.83	0.18	Yes
Atter-Dumps, dredge tailings-Xerofluvents complex, 2 to 9 percent slopes	11.49	1.14	Yes

TABLE 4 NRCS SOIL TYPES WITHIN THE SURVEY AREA			
Map Unit Name	**Acres**	**% of Survey Area**	**NRCS Hydric Soil**
Atwell-Ladybird complex, 30 to 50 percent slopes	1.66	0.17	No
Auburn loam, 0 to 8 percent slopes	3.78	0.38	No
Auburn very rocky clay loam, 50 to 70 percent slopes, eroded	3.28	0.33	No
Auburn very stony clay loam, 30 to 50 percent slopes, eroded	2.31	0.23	No
Auburn very stony loam, 8 to 30 percent slopes	3.91	0.39	No
Bagul-Burroin-Redtop complex, 15 to 50 percent slopes	4.83	0.48	No
Bamtush-Brownbear-Weaverville complex, 30 to 75 percent slopes	1.07	0.11	No
Behemotosh very rocky loam, 50 to 70 percent slopes, eroded	0.14	0.01	No
Boomer very stony clay loam, 30 to 50 percent slopes, severely eroded	0.46	0.05	No
BROCKGULCH-DEDRICK-BROWNBEAR COMPLEX, 50 TO 75 PERCENT SLOPES	24.67	2.46	Yes
BROWNBEAR-BAMTUSH COMPLEX, 30 TO 50 PERCENT SLOPES	0.37	0.04	No
BROWNSCREEK GRAVELLY LOAM, 50 TO 75 PERCENT SLOPES	0.20	0.02	No
BROWNSCREEK-DEDRICK COMPLEX, 50 TO 75 PERCENT SLOPES	0.26	0.03	Yes
BROWNSCREEK-DOUGCITY COMPLEX, 50 TO 75 PERCENT SLOPES	8.80	0.88	Yes
Burgsblock-Coolyork-Tannin complex, 30 to 50 percent slopes	17.37	1.73	No
Burroin-Redtop complex, 9 to 30 percent slopes	11.33	1.13	No
Canalschool, 0 to 2 percent slopes	6.07	0.60	Yes
Candymountain, 30 to 75 percent slopes	0.88	0.09	Yes
CARGENT-DEMOGUL ASSOCIATION, 50 TO 75 PERCENT SLOPES	0.54	0.05	Yes

TABLE 4 NRCS SOIL TYPES WITHIN THE SURVEY AREA			
Map Unit Name	**Acres**	**% of Survey Area**	**NRCS Hydric Soil**
CARIS EXTREMELY GRAVELLY SANDY LOAM, 50 TO 75 PERCENT SLOPES	0.78	0.08	Yes
Chaix coarse sandy loam, 50 to 70 percent slopes, severely eroded	0.22	0.02	No
Chaix family, 60 to 80 percent slopes.	4.56	0.45	No
Chaix sandy loam, 30 to 50 percent slopes	2.34	0.23	No
Chaix sandy loam, 5 to 30 percent slopes, eroded	1.69	0.17	No
Chaix sandy loam, 50 to 70 percent	7.01	0.70	No
Chaix-Chawanakee families, complex, 60 to 80 percent slopes.	8.35	0.83	No
Chawanakee family, 60 to 80 percent slopes.	1.85	0.18	No
Churn gravelly loam, 0 to 3 percent slopes	6.55	0.65	Yes
Churn gravelly loam, 3 to 8 percent slopes	4.37	0.44	Yes
Churn gravelly loam, deep, 0 to 3 percent slopes	10.98	1.09	Yes
Churn loam, 0 to 3 percent	2.17	0.22	Yes
Clallam family, deep, extremely gravelly-Deawood family association, 35 to 75 percent slopes	4.92	0.49	No
Clallam-Hugo-Holland families association, deep, 35 to 70 percent slopes	10.04	1.00	No
Clallam-Hugo-Holland families association, deep, dry, 35 to 70 percent slopes	26.82	2.67	No
Cobbly alluvial land	0.96	0.10	Yes
Cobbly alluvial land, frequently flooded	0.41	0.04	Yes
Colluvial land	6.55	0.65	No
Coppercreek-Slidecreek-Tectah complex, 15 to 30 percent slopes	8.96	0.89	No
Coppercreek-Slidecreek-Tectah complex, 30 to 50 percent slopes	8.27	0.82	No
Coppercreek-Tectah-Slidecreek complex, 9 to 30 percent slopes	0.26	0.03	No

TABLE 4 NRCS SOIL TYPES WITHIN THE SURVEY AREA			
Map Unit Name	**Acres**	**% of Survey Area**	**NRCS Hydric Soil**
Darkwoods-Firmountain-Oakside complex, 50 to 75 percent slopes	3.95	0.39	No
Darkwoods-Firmountain-Oakside complex, 75 to 110 percent slopes	3.43	0.34	No
Deadwood family, 60 to 80 percent slopes.	7.27	0.72	No
Deadwood family-Rock outcrop complex, 60 to 80 percent slopes.	0.70	0.07	No
Deadwood-Neuns families complex, 20 to 40 percent slopes.	3.88	0.39	No
Deadwood-Neuns fasmilies complex, 60 to 80 percent slopes	3.50	0.35	No
DEDRICK-ROCK OUTCROP COMPLEX, 50 TO 75 PERCENT SLOPES	0.58	0.06	No
Diamond Springs very rocky sandy loam, 30 to 50 percent slopes, eroded	2.69	0.27	No
Diamond Springs very stony sandy loam, 8 to 30 percent slopes, eroded	6.30	0.63	No
Dolason-Countshill complex, 30 to 50 percent slopes	1.34	0.13	No
Dolason-Countshill-Airstrip complex, 9 to 30 percent slopes	5.37	0.53	No
Dungan, 0 to 2 percent slopes	14.67	1.46	Yes
Etsel family, 40 to 80 percent slopes.	14.94	1.49	No
ETSEL VERY GRAVELLY LOAM, 30 TO 50 PERCENT SLOPES	0.57	0.06	No
ETSEL-BAMTUSH COMPLEX, 50 TO 75 PERCENT SLOPES	2.70	0.27	No
Etsel-Neuns families association, 60 to 80 percent slopes.	9.16	0.91	No
ETSEL-WEITCHPEC COMPLEX, 50 TO 75 PERCENT SLOPES	2.91	0.29	Yes
Ferndale, 0 to 2 percent slopes	5.08	0.51	Yes
Fluvaquents, 0 to 2 percent slopes	0.93	0.09	Yes
Gencey, 0 to 2 percent slopes	2.77	0.28	Yes

TABLE 4 NRCS SOIL TYPES WITHIN THE SURVEY AREA			
Map Unit Name	**Acres**	**% of Survey Area**	**NRCS Hydric Soil**
Goulding family, 40 to 60 percent slopes.	0.50	0.05	No
Goulding family, 60 to 80 percent slopes	0.66	0.07	No
Goulding family-Rock outcrop complex, 50 to 80 percent slopes	18.89	1.88	No
Goulding very rocky loam, 30 to 50 percent slopes, eroded	6.02	0.60	No
Goulding very rocky loam, 50 to 70 percent slopes, eroded	0.50	0.05	No
Goulding very stony loam, 10 to 30 percent slopes	3.54	0.35	No
Goulding-Marpa families association, 40 to 60 percent slopes	2.16	0.22	No
Gravel pits	0.12	0.01	Yes
Grizzlybluff, 0 to 2 percent slopes	19.81	1.97	Yes
Halfbluff-Tepona-Urban Land, 2 to 9 percent slopes	6.24	0.62	Yes
HAPLOXEROLLS, WARM, 0 TO 2 PERCENT SLOPES	0.83	0.08	Yes
HAYSUM GRAVELLY LOAM, 5 TO 9 PERCENT SLOPES	3.41	0.34	Yes
HAYSUM LOAM, 5 TO 9 PERCENT SLOPES	5.55	0.55	Yes
Hewent-Howler-Tellopeak complex, 50 to 75 percent slopes	3.67	0.37	No
Hohmann-Hugo families complex, 40 to 60 percent slopes.	12.17	1.21	No
HOLKAT VARIANT-DEDRICK ASSOCIATION, 50 TO 75 PERCENT SLOPES	1.57	0.16	No
Holland family, 60 to 80 percent slopes	0.21	0.02	No
Holland family, deep, 20 to 40 percent slopes.	4.43	0.44	No
Holland family, deep, 40 to 60 percent slopes.	5.85	0.58	No

TABLE 4 NRCS SOIL TYPES WITHIN THE SURVEY AREA			
Map Unit Name	**Acres**	**% of Survey Area**	**NRCS Hydric Soil**
Holland family, deep, 60 to 80 percent slopes.	0.69	0.07	No
Holland, deep-neuns families complex, 40 to 60 percent slopes.	5.78	0.58	No
Holland-Goldridge families association, deep, 5 to 35 percent slopes	4.24	0.42	No
Honcut gravelly loam	1.06	0.11	No
Hookton-Tablebluff complex, 2 to 9 percent slopes	24.57	2.45	No
HOOSIMBIM-BAMTUSH-MARPA COMPLEX, 30 TO 50 PERCENT SLOPES	0.89	0.09	Yes
Hospiter-Hewent complex, 30 to 50 percent slopes	0.57	0.06	No
HOTAW LOAM, 15 TO 30 PERCENT SLOPES	0.78	0.08	No
HOTAW LOAM, 30 TO 50 PERCENT SLOPES	1.87	0.19	No
Hullygully, 2 to 15 percent slopes	2.43	0.24	No
Hullygully-Burroin complex, 50 to 75 percent slopes	0.09	0.01	No
Hungry, 35 to 70 percent slopes	4.67	0.47	No
Hydraquents mucky silt loam, strongly saline, 0-1 percent slopes, very frequently flooded	1.83	0.18	Yes
Hydraquents-Wassents mucky silt loam, strongly saline, 0-3 percent slopes, very frequently flooded	1.07	0.11	Yes
INDLETON-CARIS-HOOSIMBIM COMPLEX, 50 TO 75 PERCENT SLOPES	1.90	0.19	Yes
Jafa gravelly loam, 2 to 9 percent slopes	2.56	0.26	No
Jollygiant, 0 to 2 percent slopes	7.30	0.73	Yes
Josephine gravelly loam, 50 to 70 percent slopes	0.58	0.06	No
Kanaka rocky sandy loam, 50 to 70 percent slopes, eroded	1.29	0.13	No

TABLE 4 NRCS SOIL TYPES WITHIN THE SURVEY AREA			
Map Unit Name	**Acres**	**% of Survey Area**	**NRCS Hydric Soil**
Kidd very rocky loam, 10 to 60 percent slopes, eroded	5.55	0.55	No
Kinseyridge-Titlow complex, 9 to 50 percent slopes	0.10	0.01	No
Lanphere, 2 to 75 percent slopes	1.19	0.12	Yes
Lepoil-Candymountain complex, 2 to 15 percent slopes	15.62	1.56	Yes
Lepoil-Espa-Candymountain complex, 15 to 50 percent slopes	4.32	0.43	Yes
Loleta, 2 to 5 percent slopes	2.60	0.26	Yes
Madden family, moderately deep, 20 to 50 percent slopes	6.70	0.67	No
Madriver, 0 to 2 percent slopes	2.84	0.28	Yes
Marpa family, 40 to 60 percent slopes.	4.78	0.48	No
Marpa gravelly loam, 50 to 75 percent slopes	0.16	0.02	No
Marpa variant-Goulding-Holkat variant complex, 30 to 50 percent slopes	7.50	0.75	No
MARPA-HOOSIMBIM COMPLEX, 30 TO 50 PERCENT SLOPES	4.16	0.41	No
Marpa-Hoosimbim-Bamtush complex, 50 to 75 percent slopes	11.61	1.16	Yes
Marpa-Neuns families complex, 60 to 80 percent slopes	1.61	0.16	No
MARPA-VITZTHUM COMPLEX, 50 TO 75 PERCENT SLOPES	0.32	0.03	No
Maymen family-Rock outcrop, metasedimentary complex, 60 to 80 percent slopes	5.76	0.57	No
Maymen very stony loam, 30 to 80 percent slopes, eroded	5.86	0.58	No
Megwil and Cannonball soils, 0 to 5 percent slopes	4.37	0.44	Yes
Moda loam, shallow, 0 to 5 percent slopes	2.94	0.29	Yes

TABLE 4 NRCS SOIL TYPES WITHIN THE SURVEY AREA			
Map Unit Name	**Acres**	**% of Survey Area**	**NRCS Hydric Soil**
MUSSERHILL GRAVELLY LOAM, 30 TO 50 PERCENT SLOPES	2.78	0.28	No
MUSSERHILL-WEAVERVILLE COMPLEX, 15 TO 30 PERCENT SLOPES	0.22	0.02	Yes
Musserhill-Weaverville complex, 30 to 50 percent slopes	1.62	0.16	Yes
Musserhill-Weaverville-Urban land complex, 9 to 30 percent slopes	2.46	0.24	Yes
Neer family, 40 to 60 percent slopes.	8.93	0.89	No
Neuns family, 40 to 60 percent slopes.	13.68	1.36	No
Neuns family, 60 to 80 percent slopes.	13.16	1.31	No
Neuns-Deadwood families complex, 60 to 80 percent slopes.	1.35	0.13	No
Neuns-Goulding families association, 60 to 80 percent slopes.	6.10	0.61	No
Newtown gravelly loam, 30 to 50 percent slopes, eroded	1.71	0.17	No
Newtown gravelly loam, 8 to 15 percent slopes	0.00	0.00	No
Newtown stony loam, 8 to 50 percent slopes, eroded	0.21	0.02	No
Occidental, 0 to 2 percent slopes	18.19	1.81	Yes
Pardaloe-Goulding complex, 50 to 75 percent slopes	1.93	0.19	Yes
Perkins gravelly loam, 3 to 8 percent slopes	5.17	0.52	No
Perkins gravelly loam, 8 to 15 percent slopes	2.64	0.26	No
Perkins gravelly loam, gravelly clay loam substratum, 0 to 3 percent slopes, MLRA 17	5.07	0.51	Yes
Perkins gravelly loam, gravelly clay loam substratum, 8 to 30 percent slopes, MLRA 17	1.22	0.12	No
Perkins gravelly loam, moderately deep, 3 to 8 percent slopes	0.60	0.06	No
Perkins gravelly loam, seeped, 0 to 3 percent slopes	0.41	0.04	Yes

TABLE 4 NRCS SOIL TYPES WITHIN THE SURVEY AREA			
Map Unit Name	**Acres**	**% of Survey Area**	**NRCS Hydric Soil**
Perkins loam, moist, 0 to 3 percent slopes, MLRA 17	1.28	0.13	No
Red Bluff gravelly loam, moderately deep, 0 to 3 percent slopes	0.34	0.03	Yes
Red Bluff gravelly loam, moderately deep, 3 to 8 percent slopes	1.11	0.11	Yes
Red Bluff loam, 3 to 8 percent slopes	0.21	0.02	No
Redding gravelly loam, 0 to 15 percent slopes, moist, MLRA 17	0.61	0.06	No
Redding gravelly loam, 0 to 5 percent slopes, moist, MLRA 17	1.85	0.18	Yes
Reiff fine sandy loam, 0 to 3 percent slopes	0.35	0.04	No
Reiff gravelly fine sandy loam, deep, 0 to 3 percent slopes	0.50	0.05	No
Reiff loam, 0 to 3 percent slopes	1.22	0.12	No
Riverwash	1.30	0.13	Yes
ROCK OUTCROP-DEDRICK COMPLEX, 75 TO 90 PERCENT SLOPES	1.07	0.11	No
Rock outcrop-Goulding family complex, 40 to 80 percent slopes.	12.07	1.20	No
Rock outcrop-Neuns family association, 60 to 80 percent slopes.	0.31	0.03	No
Rockland	2.00	0.20	No
Salmoncreek-Tepona-Rootcreek complex, 2 to 15 percent slopes	1.16	0.12	Yes
Salmoncreek-Tepona-Rootcreek complex, 30 to 50 percent slopes	1.00	0.10	Yes
Samoa-Clambeach complex, 0 to 50 percent slopes	5.26	0.52	Yes
Samoa-Clambeach-Dune land complex, 0 to 50 percent slopes	12.17	1.21	Yes
Sasquatch-Yeti-Footstep complex, 5 to 30 percent	0.23	0.02	No
Sidehill-Oakside-Darkwoods complex, 50 to 100 percent slopes	7.99	0.80	No

TABLE 4 NRCS SOIL TYPES WITHIN THE SURVEY AREA			
Map Unit Name	**Acres**	**% of Survey Area**	**NRCS Hydric Soil**
Sites very rocky loam, 30 to 50 percent slopes	0.60	0.06	No
Skalan-Goldridge families complex, deep, 20 to 65 percent slopes	2.53	0.25	No
Skalan-Kristirn-Holland families association, deep, 35 to 70 percent slopes	37.11	3.70	No
Slidecreek-Lackscreek-Coppercreek complex, 50 to 75 percent slopes	2.95	0.29	No
Soctish 2 to 9 percent slopes	1.98	0.20	No
Soulajule family, 20 to 40 percent slopes.	1.24	0.12	No
Stonyford very stony loam, 30 to 50 percent slopes	1.79	0.18	No
Stonyford very stony loam, 50 to 75 percent slopes	0.05	0.01	No
Swainslough, 0 to 2 percent slopes	3.45	0.34	Yes
Tailings and placer diggings	6.82	0.68	Yes
TALLOWBOX-MINERSVILLE COMPLEX, 30 TO 50 PERCENT SLOPES	4.17	0.41	Yes
Tannin-Burgsblock-Rockyglen complex, 50 to 75 percent slopes	12.18	1.21	No
Tectah-Coppercreek-Trailhead complex, 0 to 30 percent slopes	2.73	0.27	No
Tehama loam, 0 to 3 percent slopes, MLRA 17	1.67	0.17	No
Timmons and Lepoil soils, 0 to 2 percent slopes	2.78	0.28	Yes
Timmons and Lepoil soils, 2 to 9 percent slopes	5.84	0.58	Yes
Tonnor, 2 to 9 percent slopes	0.39	0.04	No
Trailhead-Fortyfour complex, 30 to 50 percent slopes	0.24	0.02	No

TABLE 4 NRCS SOIL TYPES WITHIN THE SURVEY AREA			
Map Unit Name	**Acres**	**% of Survey Area**	**NRCS Hydric Soil**
Typic Xerofluvents-Riverwash association, 2 to 10 percent slopes	21.56	2.15	Yes
Udifluvents, 0 to 2 percent slopes	1.81	0.18	Yes
Urban land-Anthraltic Xerorthents association, 0 to 2 percent slopes	28.99	2.89	No
Urban land-Halfbluff-Redsands complex, 0 to 5 percent slopes	8.69	0.87	No
Urban land-Xeralfs complex, 5 to 30 percent slopes	23.21	2.31	Yes
Water	1.58	0.16	No
Water and Fluvents, 0 to 2 percent slopes	3.22	0.32	Yes
Water, marine	2.10	0.21	Yes
Water-Floaters-Typic Udifluvents complex, 0 to 2 percent slopes	4.26	0.42	Yes
WEAVERVILLE LOAM, 30 TO 50 PERCENT SLOPES	2.43	0.24	Yes
Weaverville loam, 9 to 30 percent slopes	0.44	0.04	Yes
Weitchpec family, 20 to 40 percent slopes.	4.88	0.49	No
Weitchpec family, 60 to 80 percent slopes	3.72	0.37	No
Weitchpec-Dunsmuir families association, 20 to 40 percent slopes.	23.39	2.33	No
Weott, 0 to 2 percent slopes	0.56	0.06	Yes
Wiregrass-Scaath complex, 30 to 50 percent slopes	1.23	0.12	No
Worswick, 0 to 2 percent slopes	0.94	0.09	Yes
Xeralfs-Xerorthents complex, 5 to 50 percent slopes	17.59	1.75	Yes
Xerofluvents-Riverwash association, 0 to 20 percent slopes	1.99	0.20	Yes
Xerofluvents-Riverwash complex, 0 to 5 percent slopes	12.25	1.22	Yes

TABLE 4 NRCS SOIL TYPES WITHIN THE SURVEY AREA			
Map Unit Name	**Acres**	**% of Survey Area**	**NRCS Hydric Soil**
XERORTHENTS-ROCK OUTCROP COMPLEX, 15 TO 75 PERCENT SLOPES	4.33	0.43	No
XERORTHENTS-ROCK OUTCROP COMPLEX, 2 TO 15 PERCENT SLOPES	2.93	0.29	No
Yorknorth-Witherell complex, 30 to 50 percent slopes	18.01	1.79	No
Grand Total	**1,004**		

SECTION 5 RESULTS

5.1 Overview

The entire survey area was evaluated for the presence of potentially jurisdictional waters and wetlands. Wetlands and other waters within accessible portions of the survey area were assessed directly in the field. Inaccessible areas were either viewed remotely via adjacent parcels or aerial imagery. Based on the desktop review and field surveys, multiple potentially jurisdictional waters and wetlands were identified within the survey area (**Appendix C**).

5.2 Other Waters of the United States

The pre-field desktop review of the survey area indicated the potential presence of numerous waterbodies and waterways within the survey area, including Whiskeytown Lake, several major rivers, sloughs, perennial waterways, intermittent waterways, and ephemeral drainages. Field verification, following USACE guidelines, confirmed the presence of many of these features and their potential status as WOTUS, in addition to several that were not identified by existing spatial data (e.g., NWI and NHD). Considering the large number of potential WOTUS identified within the survey area, similar features have been grouped into categories and summarized below and in **Table 5**. Each feature is detailed individually in the Operations and Maintenance Business Information Link (OMBIL) Regulatory Module (ORM) Upload Sheet, provided separately as a Microsoft Excel worksheet, and spatially represented in maps provided in **Appendix C**.

5.2.1 Freshwater Lakes

Whiskeytown Lake is a reservoir in Shasta County that intersects the survey area at one bridge location. The OHWM, which was mapped using aerial imagery and field verified, was well defined due to an abrupt break in slope. There is no discernible change in vegetation type along the banks of Whiskeytown Lake, with the mixed conifer upland community generally persisting to the water's edge. Approximately 0.45 acre and 786 linear feet of Whiskeytown Lake were mapped within the survey area, and water was present during the field survey.

5.2.2 Major Rivers

Six major rivers intersect the survey area: the Mad River, the North Fork Mad River, the Trinity River, the South Fork Trinity River, the North Fork Trinity River, and the Little River. These rivers intersect the survey area at 14 separate locations, including 12 bridge crossings, one aerial crossing, and one horizontal directional drill crossing with 12 alternative bore paths. The OHWM was mapped in the field when safe to do so or via desktop using existing aerial imagery. Approximately 2.00 acres and 593 linear feet of these major rivers were mapped within the survey area. The width of each river (as measured at the OHWM) where they intersect the survey area varies from approximately35 to 330 feet. The survey area intersects major rivers for a total of 4,130 linear feet. During the field surveys, flowing water was present in all of the major rivers. The banks of most of the major rivers are dominated by woody riparian plant species such as cottonwood, willow, and alders.

5.2.3 Tidal Waters

Humboldt Bay and six tidally-influenced channels intersect the survey area along Highway 255, Highway 101, and Myrtle Avenue at nine locations, including eight bridges and one culvert. The survey area crosses the main body of Humboldt Bay at three locations over Samoa Bridge. The tidally-influenced channels include the Mad River Slough, McDaniel Slough, Little River, and three unnamed channels tributary to Humboldt Bay.

The high tide line (HTL) or OHWM (per CWA Section 404) for each feature was mapped in the field when safe to do so or via desktop using existing aerial imagery. The MHW line of Humboldt Bay and Mad River Slough was also mapped (per RHA Section 10) using existing Humboldt Bay MHW data (Laird 2013). The MHW elevation measured at the closest National Oceanic and Atmospheric Administration (NOAA) tidal station to the survey area (North Spit, ID: 9418767) is 5.8 feet relative to North American Vertical Datum of 1988 (NAVD 88).

Approximately 0.76 acre and 219 linear feet of tidal channels were mapped within the survey area. The width of each slough (as measured at the HTL/OHWM) where they intersect the survey area varies from 15 to 470 feet. The survey area intersects a total of 1,329 feet of sloughs. Approximately 2.56 acres of Humboldt Bay was mapped within the survey area, and the survey area intersects Humboldt Bay for a total of 4,465 feet. During the field surveys, flowing water was present in all sloughs. The banks of most of the sloughs are dominated by emergent estuarine plant species such as common pickleweed, seaside arrowgrass, seablite, and cordgrass.

5.2.4 Perennial Waterways

Perennial waterways, including the above major rivers, named creeks, unnamed streams, and constructed channels, intersect the survey area at 109 separate locations, most of which consist of bridge or culvert crossings. Approximately 3.37 acres and 4,471 linear feet of perennial waterways were mapped within the survey area. The width of each waterway (as measured at the OHWM) where they intersect the survey area varies from 1 to 330 feet. The survey area intersects perennial waterways for a total of 6,598 feet.

During field surveys, flowing water was present in all the perennial waterways. In general, the streambed substrates for most of these waterways primarily consist of medium- to small-sized cobble (less than 6 inches in diameter) and silty-loam sediment. The larger of these waterways are dominated by a canopy of riparian tree species such as cottonwoods, willows, and alders. Most of the smaller perennial waterways were typically dominated by a canopy of upland trees (e.g., Douglas-fir, redwoods, or oaks) with the mid-story dominated by alders, willows, vine maple (*Acer circinatum*), and dogwood (*Cornus* spp.). Emergent wetland vegetation was present at many of these perennial waterways, including a variety of sedges (*Carex* spp., *Cyperus* spp.), rushes (*Juncus* spp., *Eleocharis* spp.), and other forbs and grasses.

5.2.5 Intermittent Waterways

Intermittent waterways, including natural and constructed channels, intersect the survey area at 210 separate locations, most of which consist of culvert crossings. Approximately 0.93 acre and 10,905 linear feet of intermittent waterways were mapped within the survey area. The width of each waterway (as measured at the OHWM) where they intersect the survey area varies from 1 to 30 feet. The survey area intersects intermittent waterways for a total of 1,512 feet.

During field surveys, flowing water was present in most of the intermittent waterways. In general, the streambed substrates for most of these waterways primarily consist of medium- to small-sized cobble (less than 6 inches in diameter) and silty-loam sediment. Most of the intermittent waterways were typically dominated by a canopy of upland trees (e.g., Douglas-fir, redwoods, or oaks) with the mid-story dominated by alders, vine maple, and dogwood. Emergent wetland vegetation was present at some intermittent waterways, including a variety of sedges, rushes, and other forbs and grasses.

5.3.1 Ephemeral Drainages

Ephemeral drainages intersect the survey area at 191 separate locations, mostly through culverts. The majority of these ephemeral drainages were mapped in the field as linear features, and the width of the feature was recorded. Approximately 0.33 acre and 6,862 linear feet of ephemeral drainages were mapped

within the survey area. The width of each drainage (as measured at the OHWM) where they intersect the survey area varies from 1 to 6 feet. The survey area intersects ephemeral drainages for a total of 594 feet.

During field surveys, flowing water was present in some of these ephemeral drainages. In general, the streambed substrates for most of these drainages primarily consist of medium- to small-sized cobble (less than 6 inches in diameter) and silty-loam sediment. Most of the ephemeral drainages were typically dominated by a canopy of upland trees (e.g., Douglas-fir, redwoods, or oaks) with the mid-story occasionally interspersed with alders, vine maple, and dogwood. Emergent wetland vegetation was rarely present at most of these ephemeral drainages.

TABLE 5 SUMMARY OF NON-WETLAND WATERS WITHIN THE SURVEY AREA						
Feature Type	**Number of Features Intersecting the Survey Area**	**Latitude/Longitude (Decimal Degrees)**	**Periodicity**	**Linear Feet of Alignment**	**Acreage of Aquatic Features**	**Linear Feet of Channels**
Freshwater Lakes	1	See ORM Upload Sheet	Perennial	786	0.45	N/A
Humboldt Bay	3	See ORM Upload Sheet	Perennial	4,465	2.56	N/A
Tidal Channels	6	See ORM Upload Sheet	Perennial	1,329	0.76	219
Perennial Waterways*	109	See ORM Upload Sheet	Perennial	6,598	3.37	4,471
Intermittent Waterways	210	See ORM Upload Sheet	Intermittent	1,512	0.93	10,905
Ephemeral Drainages	191	See ORM Upload Sheet	Ephemeral	594	0.33	6,862
			TOTAL	**15,284**	**8.4**	**22,457**

*Includes major rivers

5.3 Wetlands

The pre-field desktop review indicated the potential presence of multiple estuarine wetlands, freshwater forested and shrub wetlands, and freshwater emergent wetlands throughout the survey area. While field verification confirmed the presence of many of these features, it was also determined that several features (as predicted by NWI or aerial imagery) were not present and/or did not qualify as wetlands per USACE guidelines.

There were several areas identified within the survey area that exhibited potential wetland characteristics (based on vegetation, soil, and hydrology assessments following USACE guidelines) that were not evident from the pre-field desktop review. These wetlands were preliminarily mapped in the field in April and May and revisited during August surveys to collect site-specific data. Fieldwork included confirmation of the presence of both appropriate wetland plant species, hydrology, and/or hydric soils. The boundaries of these wetlands were delineated visually based on vegetation type and/or topography and, if possible, were confirmed from soil samples collected at the sampling sites. Sampling site data was collected at 62 locations (see **Table 7**). Sixteen solitary sampling points (3U, 4U, 6U, 11U, 12U, 13U, 14U, 15U, 16U, 23U, 24U, 28U, 35U, 36U, 37U, and 39U) were taken at several upland locations where existing NWI data showed the potential for wetlands but where field investigations did not find presence of any wetland indicators.

The Wetland Determination Data Forms in **Appendix A** document plant species and percentages, soil profile descriptions, hydric soil indicators, and wetland hydrology indicators for sampling points. A summary of the wetlands located within the survey area is provided below (**Table 6**), and representative photos of the wetlands are included in **Appendix D**. Wetland identifiers (e.g., WET-1, WET-2) were established based on where the wetland is located along the survey area (starting from west to east).

5.3.1 Freshwater Forested and Shrub Wetlands

Thirty-six freshwater forested and shrub wetlands, totaling 3.54 acres, were identified within the survey area. These wetlands range between 0.003 to 0.20 acre, with an average size of 0.10 acre. The majority of these wetlands were identified in coastal areas on the western end of the survey area around Humboldt Bay and along the Hammond Trail, often forming large complexes with similar plant composition, hydrology, and soil type.

These wetlands are primarily dominated by a willow overstory (*Salix hookeriana, S. exigua*) with an understory that typically consist of a variety of emergent grasses and forbs such as slough sedge (*Carex obnupta*), tall cyperus (*Cyperus eragrostis*), horsetail (*Equisetum arvense*), and wire rush (*Juncus balticus*). Adjacent upland habitats varied but generally consisted of coastal dune, beach pine, or annual grasslands. These wetlands are either permanently or intermittently flooded or saturated, as the majority of them had surface water or were saturated at the time of the field surveys. The soils for most of these forested/shrub wetlands are either sand, sandy-silt, or silty-loam.

Since many of these wetlands display similar characteristics to one another (e.g., species composition, topography, etc.), paired sampling points were taken at a subset of the wetlands and adjacent uplands. Specifically, nine pairs of sampling points (1W/1U, 2W/2U, 7W/7U, 9W/9U, 10W/10U, 18W/18U, 19W/19U, 21W/21U, and 22W/22U) were taken at freshwater forested/shrub wetland features. All wetland sampling points exhibited signs of hydrophytic vegetation (i.e., Hooker's willow), hydric soil indicators (sandy gleyed matrix [S4] or sandy redox [S5]), and wetland hydrology indicators (surface water [A1], high water table [A2], or saturation [A3]).

5.3.2 Freshwater Emergent Wetlands

Freshwater emergent wetlands, totaling 1.50 acres, intersect the survey area at 33 locations. These wetlands range between 0.005 to 0.22 acres, with an average size of 0.05 acre. These wetlands were identified along roadsides often associated with other WOTUS or seeps and springs emerging from uphill slopes.

These emergent wetlands are primarily dominated by a variety of emergent grasses and forbs such as wire rush, tall cyperus, slender flatsedge (*Cyperus bipartitus*), spike rush (*Eleocharis parishii*), horsetail, seep monkeyflower (*Erythranthe guttata*), and tall mannagrass (*Glyceria elata*). Adjacent upland habitats vary but generally consisted of conifer and hardwood forests, shrubland/chaparral, or annual grasslands. These wetlands are likely seasonally flooded or saturated, as the majority of them had surface water or were saturated (hydrology indicators A1 and A3) at the time of the field surveys. Soils at most of these freshwater emergent wetlands consist of silty-loam, often with an underlying restrictive layer of gravel that was frequently associated with the existing roadbed.

Thirteen pairs of sampling points (1W-A/1U-A, 5W/5U, 8W/8U, 17W/17U, 25W/25U, 26W/26U, 27W/27U, 29W/29U, 31W/31U, 33W/33U, 34W/34U, 38W/38U, and 40W/40U) were taken at freshwater emergent wetland features. All wetland sampling points exhibited signs of hydrophytic vegetation (i.e., sedges, rushes), hydric soil indicators (loamy gleyed matrix [F2], redox depressions [F8]), and wetland hydrology indicators (surface water [A1], high water table [A2], or saturation [A3]). Sampling points were not taken for some features that were either adjacent to a road where they could not be safely surveyed or where they were inaccessible.

5.3.3 Estuarine Wetlands

Two estuarine wetland features, totaling 0.11 acre (0.10 and 0.01 acre), were identified within the survey area. These wetlands were identified adjacent to the southern roadside on Highway 255 immediately west of the bridge that crosses Mad River slough.

These estuarine/marine wetlands are primarily dominated by common pickleweed (*Salicornia virginica*) and California cordgrass (*Spartina foliosa*) but may also include invasive non-native species such as saltwater and dense-flowered cordgrasses (*Spartina alterniflora, S. densiflora*). Adjacent upland habitats consist of roadside annual grasslands dominated by non-native forbs and grasses. Theses wetlands are tidally-influenced, saturated year-round and inundated during high tides. Sampling points were not taken at these estuarine/marine wetlands.

5.3.4 Pasture/Converted Wetlands

Of the 33 freshwater emergent wetlands discussed above, seven are pasture/converted wetlands, totaling 0.29 acre. These features range between 0.01 to 0.10 acre, with an average size of 0.04 acre. These features were identified adjacent to roads surrounding Humboldt Bay and are located in areas historically (pre-1900) dominated by salt marshes but have since been hydrologically disconnected (via a system of dikes) from tidal influences and converted to pastureland.

These pasture/converted wetlands are primarily dominated by grasses such as velvet grass (*Holcus lanatus*), rye grass (*Lolium perenne*), and reed fescue (*Festuca arundinacea*) interspersed with Pacific rush (*Juncus effuses*), creeping buttercup (*Ranunculus repens*), common teasel (*Dipsacus fullonum*), and California blackberry (*Rubus ursinus*)

The majority of these pastures/converted wetlands are located on private property outside of road and highway right of ways and were inaccessible during field surveys. Therefore, they were mapped via aerial imagery and visually confirmed from adjacent properties. No sampling points were taken at these locations.

TABLE 6
WETLAND FEATURES IDENTIFIED WITHIN THE SURVEY AREA

Wetland ID	Latitude/Longitude (Decimal Degrees)	Wetland Type	Wetland Classification Code**	Extent Within the Survey Area (Acres)
WET-1	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.003
WET-2	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.014
WET-3	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.014
WET-4	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.031
WET-5	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.042
WET-7	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.066
WET-8	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.019
WET-9	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.033
WET-11	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.010
WET-12	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.044
WET-14	See ORM Upload Sheet	Estuarine wetland	E2	0.101
WET-15	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.014
WET-16	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.193
WET-17	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.201
WET-18	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.013
WET-19	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.173
WET-20	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.026
WET-21	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.174
WET-22	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.009
WET-23	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.091
WET-24	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.026
WET-25	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.013
WET-26	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.011
WET-27	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.027

TABLE 6
WETLAND FEATURES IDENTIFIED WITHIN THE SURVEY AREA

Wetland ID	Latitude/Longitude (Decimal Degrees)	Wetland Type	Wetland Classification Code**	Extent Within the Survey Area (Acres)
WET-28	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.016
WET-29	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.032
WET-30	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.021
WET-31	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.098
WET-34	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.004
WET-36	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.023
WET-37	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.068
WET-38	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.034
WET-39	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.042
WET-41	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.020
WET-42	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.033
WET-43	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.007
WET-44	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.003
WET-45	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.044
WET-46	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.201
WET-47	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.015
WET-48	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.008
WET-49	See ORM Upload Sheet	Estuarine wetland	E2	0.005
WET-50	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.070
WET-52	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.034
WET-53*	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.035
WET-54	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.003
WET-55	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.012
WET-56	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.009
WET-58*	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.074

TABLE 6
WETLAND FEATURES IDENTIFIED WITHIN THE SURVEY AREA

Wetland ID	Latitude/Longitude (Decimal Degrees)	Wetland Type	Wetland Classification Code**	Extent Within the Survey Area (Acres)
WET-61*	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.011
WET-64	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.033
WET-65	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.058
WET-66*	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.103
WET-67	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.042
WET-68	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.005
WET-69	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.056
WET-70	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.030
WET-71	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.043
WET-73	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.112
WET-75	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.034
WET-76	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.044
WET-77	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.007
WET-79	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.047
WET-81	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.042
WET-82*	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.014
WET-83	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.039
WET-84	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.106
WET-91*	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.010
WET-94	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.062
WET-102	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.014
WET-103	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.004
WET-106	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.043
WET-108	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.006

TABLE 6
WETLAND FEATURES IDENTIFIED WITHIN THE SURVEY AREA

Wetland ID	Latitude/Longitude (Decimal Degrees)	Wetland Type	Wetland Classification Code**	Extent Within the Survey Area (Acres)
WET-112	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.031
WET-113	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.005
WET-115	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.013
WET-120	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.042
WET-121	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.031
WET-123	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.036
WET-124	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.004
WET-127	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.010
WET-136	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.147
WET-138	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.088
WET-140	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.087
WET-141	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.045
WET-142	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.073
WET-143	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.018
WET-144	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.173
WET-147	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.032
WET-149	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.044
WET-152*	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.039
WET-153	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.022
WET-154	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.095
WET-157	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.009
WET-158	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.012
WET-160	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.005
WET-161	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.011
WET-162	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.014

TABLE 6
WETLAND FEATURES IDENTIFIED WITHIN THE SURVEY AREA

Wetland ID	Latitude/Longitude (Decimal Degrees)	Wetland Type	Wetland Classification Code**	Extent Within the Survey Area (Acres)
WET-163	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.005
WET-164	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.104
WET-165	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.013
WET-166	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.012
WET-167	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.073
WET-168	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.112
WET-170	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.016
WET-171	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.038
WET-172	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.013
WET-178	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.108
WET-179	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.027
WET-180	See ORM Upload Sheet	Freshwater forested and shrub wetland	PSS	0.088
WET-181	See ORM Upload Sheet	Freshwater emergent wetland	PEM	0.225
		TOTAL		**5.145**

*Denotes wetland feature as a Pasture/Converted Wetland
**Wetlands and Deepwater Habitats Classification (Cowardin et al. 1979): System: P=Palustrine, E=Estuarine; Class: EM=Emergent, SS=Scrub-shrub. *Subclasses and Modifiers not included.*

TABLE 7 WETLAND DATAPOINTS		
Datapoint ID	**Lat**	**Long**
1W	40.8075359	-124.1957659
1U	40.80753146	-124.1956978
1W-A	40.81414073	-124.1941301
1U-A	40.81401507	-124.194224
2W	40.80987598	-124.195614
2U	40.80988688	-124.1955591
3U	40.81170563	-124.196186
4U	40.81376457	-124.1949186
5W	40.81527968	-124.1938631
5U	40.81502747	-124.194019
6U	40.82028287	-124.190401
7W	40.82272012	-124.1857302
7U	40.82266446	-124.1856365
8W	40.8638863	-124.1540663
8U	40.86394034	-124.153957
9W	40.86252186	-124.1565616
9U	40.86246426	-124.156553
10W	40.85932893	-124.1600399
10U	40.85942199	-124.1599711
11U	40.83935332	-124.1695432
12U	40.83356197	-124.1725154
13U	40.83184367	-124.1733639
14U	40.86600547	-124.1473165
15U	40.86761455	-124.1407571
16U	40.86830513	-124.1369667
17U	40.86827309	-124.1041836
18W	41.00759134	-124.1115997
18U	41.00769797	-124.1113347
19W	41.00112812	-124.112887
19U	41.0012964	-124.1128817
20W	40.99872075	-124.1132228
20U	40.99871621	-124.1134798
21W	40.99372491	-124.1144245
21U	40.99322516	-124.1143453

TABLE 7 WETLAND DATAPOINTS		
Datapoint ID	**Lat**	**Long**
22W	40.98701319	-124.1163248
22U	40.98615661	-124.1165041
23U	40.92811043	-124.1202757
24U	40.91608691	-124.1190613
25W	40.91006422	-124.1056858
26W	40.85377657	-123.9236311
26U	40.85368003	-123.9234901
27W	40.87871563	-123.8805822
27U	40.87886045	-123.880572
28U	40.88140115	-123.8701307
29W	40.87104492	-123.5839978
29U	40.8709683	-123.583779
30W	40.82622046	-123.530194
30U	40.82628843	-123.5301921
31W	40.77162467	-123.4765088
31U	40.77156059	-123.4763716
32W	40.68168186	-122.6406277
33W	40.72547579	-122.7021444
34W	40.71484716	-122.7605848
34U	40.71481554	-122.7609321
35U	40.72300921	-122.9272253
36U	40.69790785	-122.9284654
37U	40.73821456	-122.9253747
38W	40.74445418	-122.9761934
38U	40.74456452	-122.9760938
39U	40.75982329	-123.0955957
40W	40.43672107	-122.281365
40U	40.43693976	-122.2816259

SECTION 6 CONCLUSION

Based on field review, 631 potentially jurisdictional waters intersect the survey area, including 520 non-wetland waters and 111 wetland waters. The survey area intersects potentially jurisdictional non-wetland waters for a total of 8.41 acres and potentially jurisdictional wetlands for a total of 5.15 acres.

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