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I-80/Hiddenbrooke Parkway Interchange Project

Preliminary Delineation of Wetlands and Other Waters

Solano County, California

Project #3328-21

Prepared for:

Scott Steinwert
Circlepoint
200 Webster Street, Suite 200
Oakland, CA 94607

Prepared by:

H. T. Harvey & Associates

December 1, 2020

Executive Summary

On July 17, 22, and 28, 2020, H. T. Harvey & Associates wetland ecologists performed a delineation of potentially jurisdictional waters on the I-80/Hiddenbrooke Parkway Interchange Project site in Solano and Napa counties, California. Approximately 29.90 acres were surveyed for jurisdictional waters (wetlands and other waters) that may be subject to regulation under Section 404 of the Clean Water Act (CWA) administered by the U.S. Army Corps of Engineers (USACE). The survey also delineated the extent of waters of the state that may be subject to regulation under the Section 401 of the CWA and the Porter Cologne Water Quality Control Act administered by the Regional Water Quality Control Board (RWQCB) and California Department of Fish and Wildlife (CDFW). The on-site determination took into account drier than normal conditions during the 2019/2020 winter season relative to the 30-year normal, and the results are based on the conditions present at the time of the surveys. The study area is located in the Suisun Bay and San Pablo Bay (Hydrologic Unit Codes 18050001 and 18050002) watersheds.

In total, approximately 1.03 acres of potentially jurisdictional features were identified within the study area. These include approximately 0.75 acre of seasonal wetland, forested wetland (riparian trees rooted in wetlands), and perennial emergent wetland; 0.03 acre of unvegetated other waters as culvert; and 0.25 acre of other waters as an ephemeral drainage. However, all of these features are either ephemeral streams, are adjacent to ephemeral streams, or are only connected to the nearest waters of the U.S. via reaches of ephemeral stream and/or unchannelized sheet flow, and therefore under the current Navigable Waters Protection Rule would not be expected to be claimed as federal waters. Therefore, no Section 404 wetlands or waters of the U.S. were detected on-site.

Approximately 1.44 acres of potentially jurisdictional features as defined by the RWQCB were identified within the study area. These include seasonal wetland, forested wetland, perennial emergent wetland, mixed riparian woodland, riparian scrub, and culvert. CDFW jurisdictional features, as defined by bed and bank topography and including the mixed riparian woodland and riparian scrub, were also identified in the study area, totaling 0.66 acre.

Habitat Type	Acres
Total Waters of the U.S.	**0.00**
Total Waters of the State	**1.44**
Seasonal wetland	0.42
Forested wetland	0.20
Perennial emergent wetland	0.13
Mixed riparian woodland	0.49
Riparian scrub	0.17
Culvert	0.03
Total CDFW Jurisdictional Habitats	**0.66**
Mixed riparian woodland	0.49
Riparian scrub	0.17
Total Non-jurisdictional Areas	**28.46**
Wetland Delineation Study Area Total	**29.90**

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Contributors

Kelly Hardwicke, PhD, Principal, Senior Plant and Wetland Ecologist

Mark Bibbo, MS, Senior Plant Ecologist

Charles McClain, MS, Senior Ecologist

Robert Lee, MS, Plant Ecologist

Mark Lagarde, BS, Senior GIS Analyst

Section 1. Introduction

1.1 Study Area Description

The 29.90-acre delineation study area is located in unincorporated Solano and Napa counties along Interstate 80 (I-80) between postmiles 7.8 and 8.5 at Hiddenbrooke Parkway and American Canyon Road (Figure 1). The study area comprises the I-80/Hiddenbrooke Parkway/American Canyon Road interchange, as well as McGary Road, a frontage road that runs parallel to the existing I-80 ramps on the southeastern side of the interchange (Figure 2). Hiddenbrooke Parkway provides access to the Hiddenbrooke Golf Club and residential development surrounding the golf club. American Canyon Road provides access to predominantly residential areas of the City of American Canyon. The surrounding lands in Solano County are designated Exclusive Agricultural, and the surrounding lands in Napa County (at the southwest edge of the BSA) are designated Agriculture, Watershed, and Open Space. The wetland delineation described in this report focused on the undeveloped, vegetated areas of the study area, but the entirety of the study area was surveyed.

The study area is located within the *Cordelia, California* U.S. Geological Survey (USGS) 7.5-minute quadrangle (Figure 3). Elevations within the study area range from approximately 400 feet to 490 feet North American Vertical Datum of 1988 (NAVD88) (Google Earth 2020), with the highest elevations in the north-central and south-central portions of the study area. The climate in the vicinity of the study area is coastal Mediterranean, with most rain falling in the winter and spring, and summers being dry. Mild cool temperatures are common in the winter. Hot to mild temperatures are common in the summer. Climate conditions in the study area include a 30-year average of approximately 23.45 inches of annual precipitation with a monthly average temperature range from 47.8ºF to 69.6ºF (PRISM Climate Group 2020).

The site is predominantly underlain by one soil type, Dibble-Los Osos clay loams, 9–30% slopes (NRCS 2020a), which covers approximately 94.4% of the study area. The Dibble series contains clay loam texture down to a restrictive bedrock layer at 20–40 inches. The Los Osos series is similar with the exception of a transition from clay loam to clay before the restrictive layer. Both are considered well-drained soils. Two other soil types are present in in small amounts: Dibble-Los Osos clay loams, 30–50% slopes, eroded; and Rincon clay loam, 2–9% slopes. Figure 4 shows the soil units mapped by the National Resource Conservation Service (NRCS) within the study area, and Table 1 summarizes the associated texture, drainage classification, landform setting, and hydric soil status (NRCS 2020a, 2020b) for the four soil types found within the study area.

N:\Projects3300\3328-01\21\Reports\Prelim Wetland Delineation\Fig 1 Vicinity Map.mxd mlagarde

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Figure 1. Vicinity Map
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N:\Projects3300\3328-01\21\Reports\Prelim Wetland Delineation\Fig 2 Study Area Map.mxd

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Figure 2. Study Area Map

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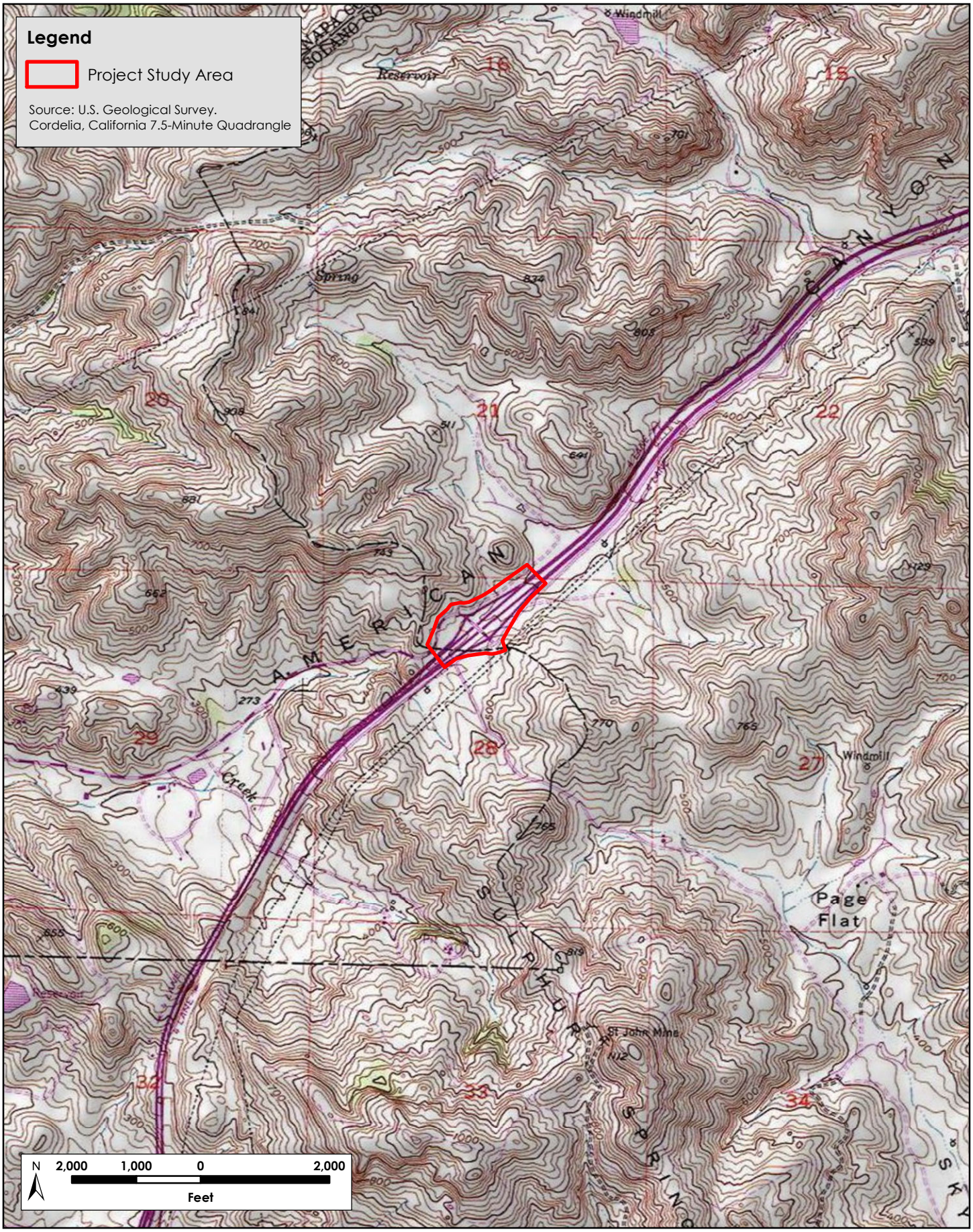

N:\Projects3300\3328-012\1\Reports\Prelim Wetland Delineation\Fig 3 USGS Topo Map.mxd mlagarde

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Figure 3. USGS Topographic Map
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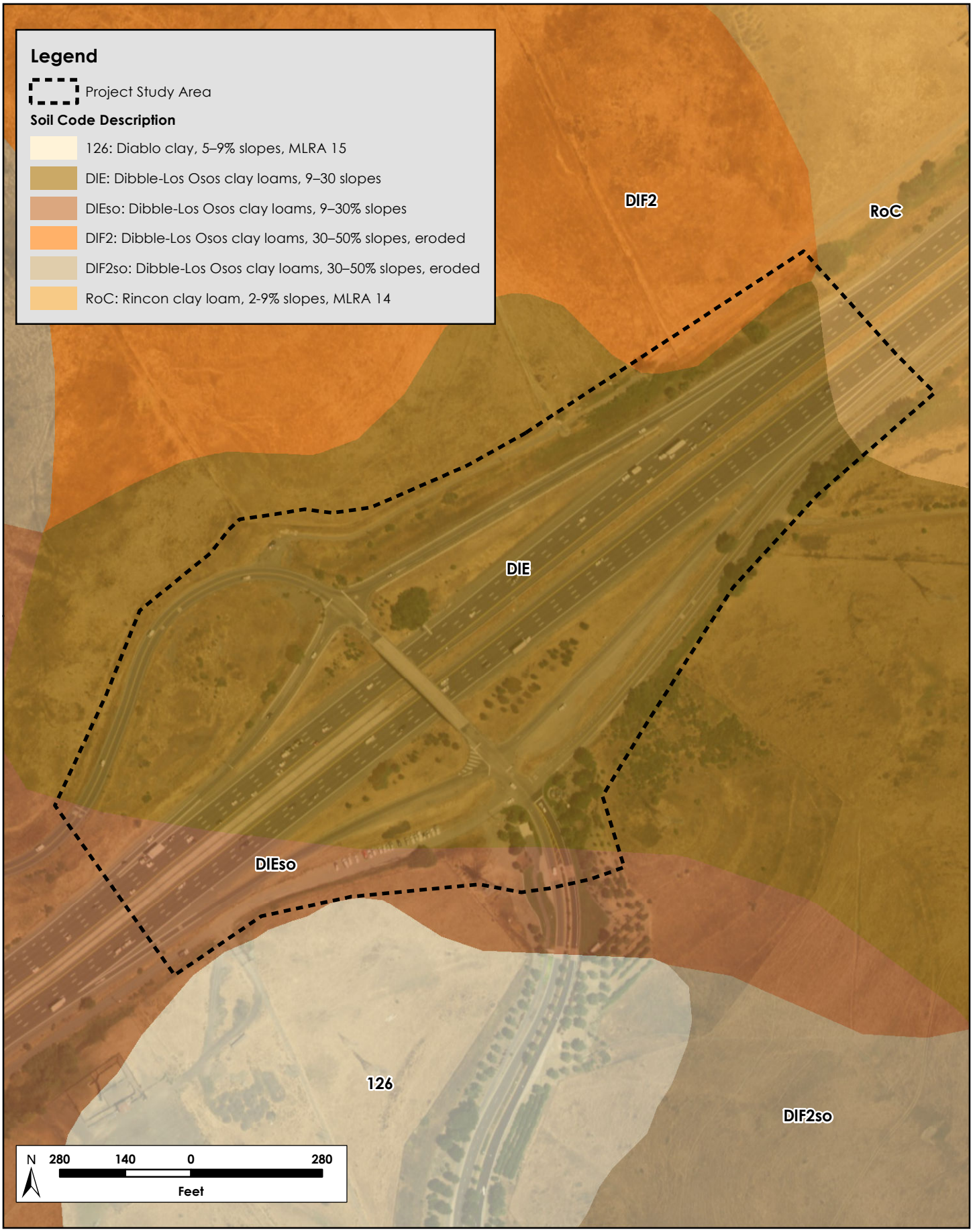

N:\Projects3300\3328-0121\Reports\Prelim Wetland Delineation\Fig 4 NRCS Soils Map.mxd mlagarde

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Figure 4. NRCS Soils Map
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Table 1. Soil Type, Texture, Drainage Classification, and Hydric Soil Status for Soil Types Occurring within the Study Area

Soil Symbol	Soil Name	Soil Texture	Drainage Classification	Landform	Hydric Status
126	Diablo clay, 5–9% slopes, MLRA 15	Clay	Well drained	Hillslopes, mountain slopes	No
DIE	Dibble-Los Osos clay loams, 9–30% slopes	Clay loam	Well drained	Mountains, summit	No
DIF	Dibble-Los Osos clay loam, 30–50% slopes	Clay loam	Well drained	Hills, summit	No
RoC	Rincon clay loam, 2–9% slopes, MLRA 14	Clay loam	Well drained	Terrace, alluvial fans	No

Source: NRCS 2020

Note: MLRA = major land resource area

The U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) map of the study area is depicted in Figure 5. The NWI identified four aquatic feature within the study area (NWI 2020). The features are mapped as a riverine (R4SBA and R4SBAx). NWI maps are based on interpretation of aerial photography, limited verification of mapped units, and/or classification of wetland types using the classification system developed by Cowardin et al. (1979). These data are available for general reference purposes and do not necessarily correspond to the actual presence or absence of jurisdictional waters.

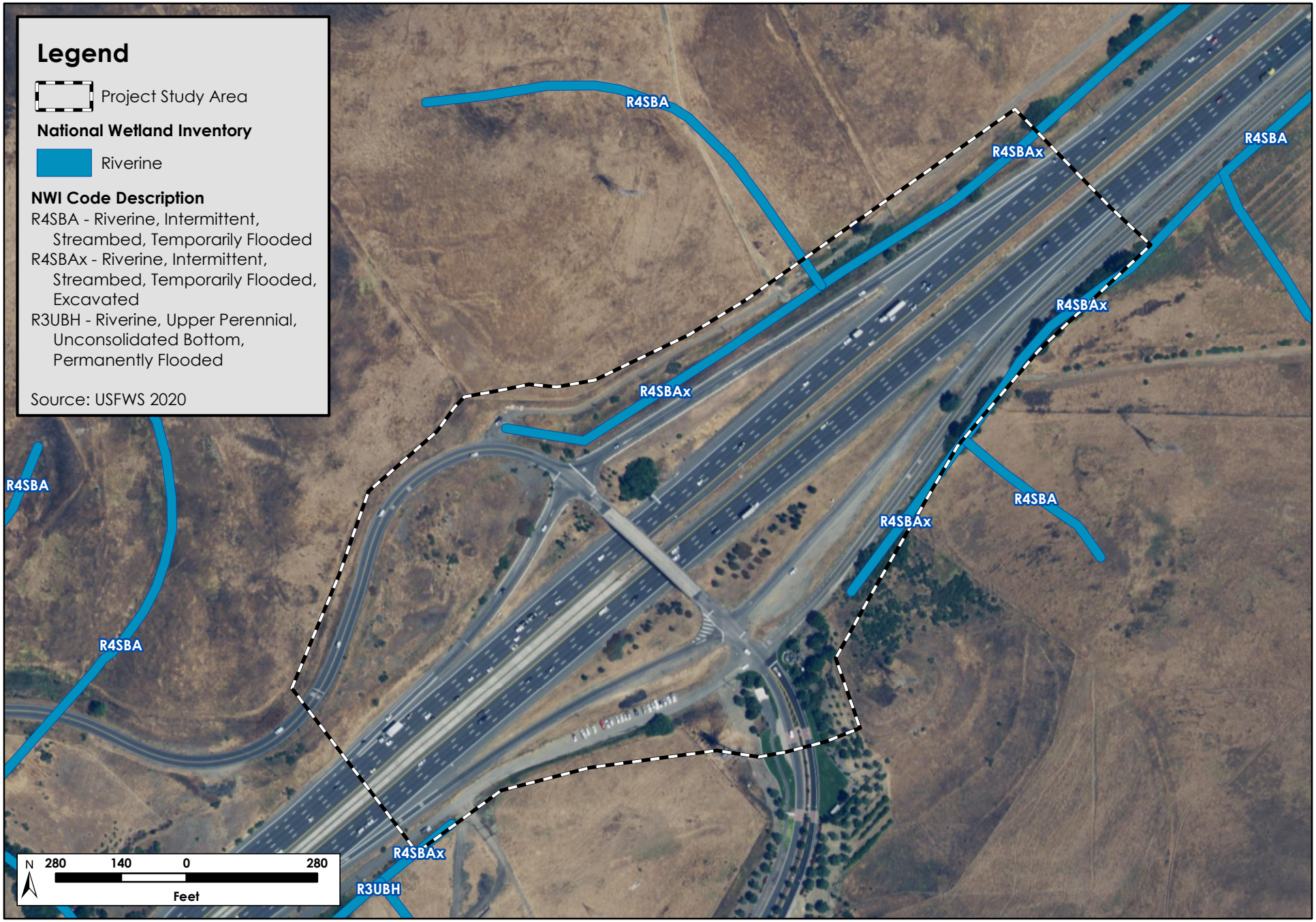

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Figure 5. NWI Map

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Section 2. Survey Methods

Before the delineation survey was conducted, topographic maps and aerial photos of the study area were obtained and reviewed from several sources, such as the USGS topographic map (Figure 3), NRCS soils map (Figure 4), NWI (Figure 5), Google Earth software (Google Earth 2020), and UC Santa Barbara Library's collection of historic aerial photography (UCSB 2020).

On July 17 and 22, 2020, H. T. Harvey & Associates plant ecologist Robert Lee, MS, surveyed the study area identified in Figures 1 and 2. On July 28, 2020, Mr. Lee continued his investigation with assistance from H. T. Harvey & Associates senior ecologist Charles McClain, MS. The purpose of the survey was to identify the extent and distribution of wetlands and other waters that may be subject to regulation by the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (CDFW). Weather conditions on all survey dates were warm, dry, and clear.

Mr. McClain and Mr. Lee performed a technical delineation of wetlands and other waters in a 29.90-acre area identified on the accompanying figures as the wetland delineation study area. The delineation was performed in accordance with the *Corps of Engineers 1987 Wetlands Delineation Manual* (Corps Manual; Environmental Laboratory 1987). Additionally, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West (Version 2.0)* (Regional Supplement) (USACE 2008a) was followed to document site conditions relative to hydrophytic vegetation, hydric soils, and wetland hydrology. Further guidance contained in the Navigable Waters Protection Rule was consulted to make determinations on likely jurisdictional status of features that met wetland parameters. Mr. McClain and Mr. Lee performed preliminary mapping of the extent and distribution of wetlands and other waters of the U.S. that may be subject to regulation under Section 404 of the Clean Water Act (CWA) as well as waters of the state that may be subject to regulation under the Porter Cologne Water Quality Control Act, which is administered by the RWQCB. The following sections present descriptions of the methods used to identify Section 404 jurisdictional waters (wetlands and other waters).

2.1 Identification of Jurisdictional Waters

The "Routine Determination Method, On-Site Inspection Necessary (Section D)" outlined in the Corps Manual (Environmental Laboratory 1987), and the updated data forms, vegetation sampling methods, and hydric soil and hydrology indicators developed for the Arid West Regional Supplement (USACE 2008a) were used to examine the vegetation, soils, and hydrology on site. This three-parameter approach to identifying wetlands is based on the presence of a prevalence or dominance of hydrophytic vegetation, hydric soils, and wetland hydrology.

In addition to applying these survey methods, we compiled this report in accordance with guidance provided in *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program* (USACE 2016a) and *Information Requested for Verification of Corps Jurisdiction* (USACE 2016b). These documents list the information that must be submitted as part of a request for a jurisdictional determination, including:

- Vicinity map (Figure 1)
- Study area map (Figure 2)
- USGS quadrangle map (Figure 3)
- Soils map (Figure 4)
- NWI map (Figure 5)
- Biotic habitats map (Figure 6)
- Preliminary identification of waters map (Figure 7)
- Plant species observed (Appendix A)
- Current soil survey report (Appendix B)
- Data forms for wetlands sample points and ordinary high water mark (OHWM) datasheet (Appendix C)
- Written rationale for sample point choice (Section 3.1, "Observations, Rationales, and Assumptions")
- Color photos (Appendix D)
- Aquatic resources table (Appendix E)

During the survey, the study area was examined for topographic features, drainages, alterations to site hydrology or vegetation, and recent significant disturbance. A determination was then made as to whether normal environmental conditions were present at the time of the field survey. In the field, the techniques used to identify wetlands included digging soil pits to sample soil from various depths, observing the vegetation growing near the soil sample points, and characterizing the current surface and subsurface hydrologic features present near the sample points through both observation of indicators and direct observation of hydrology. Features meeting wetland vegetation, soil, and hydrology criteria were then mapped in the field using a Trimble GeoXT™ GPS unit capable of submeter accuracy. Connectivity or adjacency to waters of the U.S. were determined using the new guidance provided by the Navigable Waters Protection Rule.

2.1.1 Identification of Section 404 Jurisdictional Wetlands (Special Aquatic Sites)

Where wetland field characteristics were present, the surveyors examined vegetation, soils, and hydrology using the Routine Determination Method outlined in the Corps Manual (Environmental Laboratory 1987) and the updated data forms, vegetation sampling methods, and hydric soil and hydrology indicators developed for the Arid West Regional Supplement (USACE 2008a).

Hydrophytic Vegetation. Plants that can grow in soils that are saturated or inundated for long periods of time, which contain little or no oxygen when wetted, are considered adapted to those soils and are called hydrophytic. There are different levels of adaptation, as summarized in Table 2. Some plants can only grow in soils saturated with water (and depleted of oxygen), some are mostly found in this condition, and some are found equally in wet soils and in dry soils. Plants observed at each of the sample sites were identified to species,

where possible, using *The Jepson Manual, Vascular Plans of California, Second Edition* (Baldwin et al. 2012). The wetland indicator status of each species was obtained from the *Arid West 2016 Regional Wetland Plant List* (Lichvar *et al.* 2016). Wetland indicator species are designated according to their frequency of occurrence in wetlands. For instance, a species with a presumed frequency of occurrence of 67–99% in wetlands is designated a facultative wetland indicator species. The wetland indicator groups, indicator symbol, and the frequencies of occurrence of species within wetlands, provided as a percentage, are shown in Table 2.

Table 2. Wetland Indicator Status Categories for Vascular Plants

Indicator Category	Symbol	Frequency (%) of Occurrence in Wetlands[1]
Obligate	OBL	>99 (Almost always is a hydrophyte, rarely in uplands)
Facultative wetland	FACW	67–99 (Usually a hydrophyte but occasionally found in uplands)
Facultative	FAC	34–66 (Commonly occurs as either a hydrophyte or non-hydrophyte)
Facultative upland	FACU	1–33 (Occasionally is a hydrophyte, but usually occurs in uplands)
Upland	UPL	<1% (Rarely is a hydrophyte, almost always in uplands)
Not Listed	NI	Considered to be an upland species

[1] Based on information contained in the Corps Manual (Environmental Laboratory 1987).

[2] Plant species that are not listed in the Arid West 2016 Regional Wetland Plant List (Lichvar et al. 2016) are considered UPL species in Appendix A—Plants Observed in the Study Area

Obligate and facultative wetland indicator species are hydrophytes that occur "in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987). Facultative indicator species may be considered wetland indicators when found growing in hydric soils that experience periodic saturation. Plant species that are not on the regional list of wetland indicator species are considered upland species. A complete list of the vascular plants observed within the study area, including their current indicator statuses, has been provided in Appendix A.

Hydric Soils. Up to 18 inches of the soil profile were examined for hydric soil indicators. The National Technical Committee for Hydric Soils (NTCHS) defines a hydric soil as one formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper 12 inches of soil (NRCS 2010). Hydric soils include soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. In general, evidence of a hydric soil includes characteristics such as reducing soil conditions, soils with bright mottles and/or low matrix chroma, and soils listed as hydric by the U.S. Department of Agriculture (USDA) on the National Hydric Soils List (NRCS 2020b). Reducing soil conditions can also include circumstances where there is evidence of frequent ponding for long or very long duration. A long duration is defined as a period of inundation for a single event that ranges from 7 days to a month and very long is greater than 1 month (Environmental Laboratory 1987).

Munsell Soil Notations (Munsell 2009) were recorded for the soil matrix of each soil sample. The Munsell color system is based on three color dimensions: hue, value, and chroma. A brief description of each component of the system is described below, in the order they are used in describing soil color (i.e., hue/value/chroma):

1. **Hue.** The Munsell Soil Color Chart is divided into five principal hues: yellow (Y), green (G), purple (P), blue (B), and red (R), along with intermediate hues such as yellow-red (YR) and green-yellow (GY). Example of commonly encountered hue numbers include 2.5YR, 10YR, and 5Y.

2. **Value.** *Value* refers to lightness, ranging from white to grey to black. Common numerical values for value in the Munsell Soil Color Chart range from 2 for saturated soils to 8 for faded or light colors. Hydric soils often show low-value colors when soils have accumulated sufficient organic material to indicate development under wetland conditions, but can show high-value colors when iron depletion has occurred, removing color value from the soil matrix. Value numbers are commonly reported as 8/, 2.5/, and 6/.

3. **Chroma.** *Chroma* describes the purity of the color, from "true" or "pure" colors to "pastel" or "washed out" colors. Chromas commonly range from 1 to 8, but can be higher for gleys. Soil matrix chroma values that are 1 or less, or 2 or less when mottling is present, are typical of soils that have developed under anaerobic conditions. Chroma numbers are listed, for example, as /1, /5, and /8.

The NRCS Web Soil Survey (NRCS 2020a) was consulted to determine which soil types have been mapped in the study area (Table 1, Figure 4). Detailed descriptions of these soil types are provided in Appendix B.

Wetland Hydrology. Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Wetland hydrology indicators provide evidence that the site has a continuing wetland hydrologic regime. Primary indicators might include visual observation of surface water (A1), high water table (A2), soil saturation (B1), and hydrogen sulfide odor (C1). Secondary indicators might include a passing score for the FAC-neutral test (D5) and saturation visible on aerial imagery (C9). Each of the sample points was examined for positive field indicators (primary and secondary) of wetland hydrology, following the guidance provided in the Regional Supplement.

2.1.2 Identification of Section 404 Jurisdictional Other Waters

Surveys were also conducted within the study area for "other waters", which includes lakes, slough channels, seasonal ponds, tributary waters, non-wetland linear drainages, and salt ponds. Such areas are identified by the (seasonal or perennial) presence of standing or running water and generally lack hydrophytic vegetation. In non-tidal or muted tidal waters, USACE jurisdiction extends to the ordinary high water mark (OHWM), which is defined in 33 CFR Part 328.3 as "the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation or the presence of litter and debris." Potential other waters were mapped within the study area.

In concert with USACE's efforts to revise the wetland delineation manuals and make them more specific to different geographic regions of the United States, as described above, efforts have been initiated by USACE to develop an OHWM delineation manual. In particular, two relatively recent publications have attempted to further refine the definition of OHWM and the delineation of the OHWM in the Arid West (including California):

- A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (USACE 2008b)

- Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (USACE 2010)

For purposes of the current study, the identification of the OHWM in the field was based on observation of a suite of natural geomorphic field indicators that have formed during channel-forming events. These features included staining of rocks and culverts, erosion of soil to bedrock, and channel bed morphology, among other factors.

The presence of one or more of the natural geomorphic field indicators listed above, taking into consideration such factors as size of the watershed, channel slope, landscape setting, elevation, gradient, land use practices, and soil type, was taken as direct evidence of an OHWM, and such channels, if exhibiting intermittent or perennial hydrology, were identified as "other waters."

2.2 Identification of Waters of the State

The Porter Cologne Water Quality Control Act (Porter-Cologne) broadly defines waters of the State as "any surface water or groundwater, including saline waters, within the boundaries of the state." Because Porter-Cologne applies to any water, whereas the CWA applies only to certain waters, California's jurisdictional reach overlaps and may exceed the boundaries of waters of the U.S. For example, Water Quality Order No. 2004-0004-DWQ states that "shallow" waters of the state include headwaters, wetlands, and riparian areas. Where forested riparian habitat is not present, jurisdiction is taken to the top of bank or levee. Where forested habitat occurs, the outer canopy of any riparian trees rooted within top of bank may be considered jurisdictional as these trees can provide allochthonous input to the channel below.

On April 2, 2019, the SWRCB adopted the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. In these new guidelines, riparian habitats are not specifically described as waters of the state but instead as important buffer habitats to streams that do conform to the State Wetland Definition. The Procedures describe riparian habitat buffers as important resources that may both be included in required mitigation packages for permits for impacts to waters of the state, as well as areas requiring permit authorization from the RWQCB to impact.

The 2019 Procedures also clarify that wetland-upland boundaries for wetlands comprising waters of the state should be set using the USACE delineation framework (Environmental Laboratory 1987, USACE 2008a), with

one important distinction. Some areas in California function as wetlands despite lacking abundant wetland vegetation. For example, non-vegetated playas, tidal flats, and some types of seasonal wetlands provide a variety of wetland functions, including water filtration, groundwater recharge, and the support of wetland wildlife. While USACE procedures require 5% vegetative cover to be considered a wetland rather than "other waters," the RWQCB has determined that no such minimum vegetative cover is necessary for an area to be considered a wetland under the State Wetland Definition. Waters of the state were identified within the study area.

2.3 Identification of CDFW Jurisdiction

Ephemeral and intermittent streams, rivers, creeks, dry washes, sloughs, blue line streams on USGS maps, and watercourses with subsurface flows fall under CDFW jurisdiction. Canals, aqueducts, irrigation ditches, and other means of water conveyance may also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. A stream is defined in Title 14, California Code of Regulations §1.72, as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish and other aquatic life. Jurisdiction does not include tidal areas such as tidal sloughs unless there is freshwater input. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." Using this definition, CDFW extends its jurisdiction to encompass riparian habitats that function as a part of a watercourse. California Fish and Game Code §2786 defines riparian habitat as "lands which contain habitat which grows close to and which depends upon soil moisture from a nearby freshwater source." The lateral extent of a stream and associated riparian habitat that would fall under the jurisdiction of CDFW can be measured in several ways, depending on the particular situation and the type of fish or wildlife at risk. At minimum, CDFW would claim jurisdiction over a stream's bed and bank. Where riparian habitat is present, the outer edge of riparian vegetation is generally used as the line of demarcation between riparian and upland habitats. CDFW jurisdictional habitats were mapped within the study area.

Section 3. Survey Results and Discussion

The following vegetation/land cover types were mapped within the study area: (1) California annual grassland, (2) developed/landscaped, (3) ditch, (4), ephemeral drainage, (5) perennial emergent wetland, (6), riparian woodland/scrub, and (7) seasonal wetland (Figure 6). Thirteen sample points (SPs) and one OHWM transects were examined to identify jurisdictional features (Figure 7; Appendix C). Within the study area, we detected 0.00 acres of potential federal jurisdictional waters regulated by USACE, 1.44 acres of potentially jurisdictional waters regulated by RWQCB, and 0.66 acre of potentially jurisdictional riparian habitat regulated by CDFW (Figures 7 and 8, Table 3). The results of the delineation are described below.

Table 3. Summary of Potential Jurisdictional Waters and Wetlands within the Delineation Study Area

Habitat Type	Acres
Total Waters of the U.S.	**0.00**
Total Section 401 Waters of the State	**1.44**
Seasonal wetland	0.42
Forested wetland	0.20
Perennial emergent wetland	0.13
Mixed riparian woodland	0.49
Riparian scrub	0.17
Culvert	0.03
Total CDFW Jurisdictional Habitats	**0.66**
Mixed riparian woodland	0.49
Riparian scrub	0.17
Total Non-jurisdictional Areas	**28.46**
Wetland Delineation Study Area Total	**29.90**

N:\Projects\3300\3328-01\21\Reports\Prelim Wetland Delineation\Fig 6 Biotic Habitats.mxd mlagarde

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Figure 6. Biotic Habitats Map
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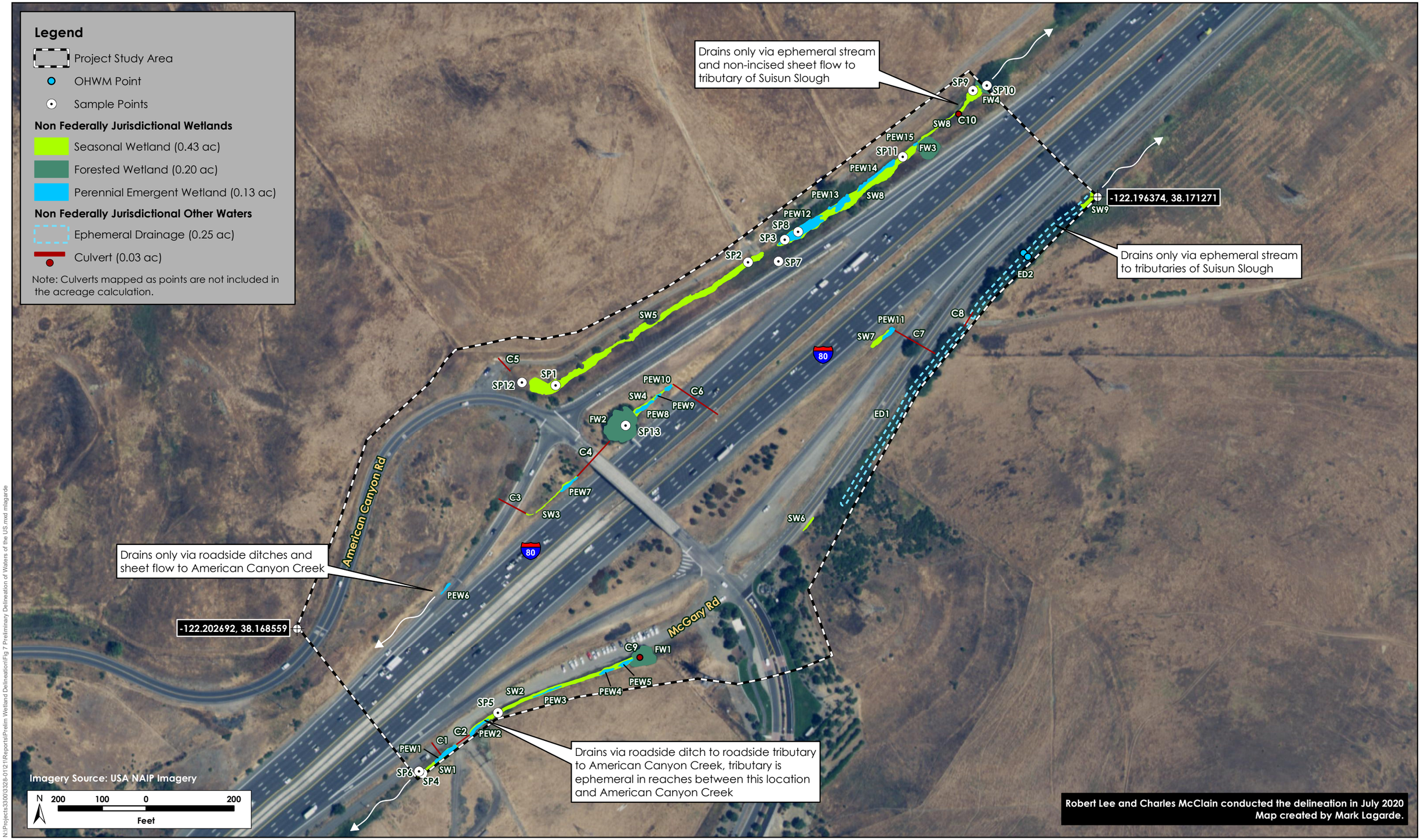

N:\Projects3300\3328-01\21\Reports\Prelim Wetland Delineation\Fig 7 Preliminary Delineation of Waters of the US.mxd mlagarde

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Figure 7. Preliminary Delineation of Waters of the U.S.

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Information assembled during this investigation and pertinent to the identification of jurisdictional wetlands and other waters is presented in the first five appendices of this report. In addition, Appendix E provided at the end of this document is included as an electronic attachment in Microsoft Excel format, per USACE (2016b) guidelines.

- Appendix A—Plants observed in the study area
- Appendix B—NRCS Soil Survey of Solano County, California
- Appendix C—USACE Arid West Wetland Data Forms and OHWM Transect Forms
- Appendix D—Photos of the study area
- Appendix E—Aquatic Resources Table

3.1 Observations, Rationales, and Assumptions

Site conditions observed during the delineation survey are reported here, along with pertinent background information and precipitation data.

3.1.1 Background Information

The preliminary delineation assumes that normal circumstances prevailed at the time of the July 2020 survey, and results are based upon the conditions present at the time of the survey. The survey was performed using the "Routine Method of Determination" using three parameters, as outlined in the Regional Supplement, and utilizing 2020 guidance on the Navigable Waters Protection Rule.

Elevations in the study area range approximately 400–490 feet above sea level (Figure 3) (Google 2020). The topography of the study area ranges from relatively flat along I-80, to gently rolling hills to the north and south. The topography slopes downhill southwestward on the western portion of the study area and downhill northeastward on the eastern portion of the study area. The study area is located within the Suisun Bay and San Pablo Bay (Hydrologic Unit Codes 18050001 and 18050002) watersheds (USGS 2020).

3.1.2 Precipitation Data

The survey took place in the summer of 2020, during the dry season. Relative to the 30-year climate normal (23.45 inches annually), precipitation in the study area was lower than the normal range of precipitation for the 12-month period leading up to the delineation. Total precipitation recorded in the area from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average (1981–2010) for that same time period (PRISM Climate Group 2020). Total precipitation recorded in the study area was drier than normal during the 2019/2020 winter season as well, which began with significant rains in December 2019, but then included a drier than usual January, February, March, and April. Total precipitation recorded in the area from December 2019 through April 2020 was 9.99 inches, which is approximately 54.5% of the 30-year average (1981–2010) for that period, and would be considered below the normal range of precipitation (PRISM Climate

Group 2020). These conditions were taken into account when assessing the biotic habitats present on the site. Hydrology was considered naturally problematic. Despite the below average annual precipitation, boundaries of wetlands remained clear owing to the presence of hydrophytic vegetation and hydric soil indicators.

3.1.3 Site Conditions and Observations

The majority of the study area is California annual grassland and developed/landscaped (Figure 6). Developed/landscaped areas consist of roads, bare gravel along roadsides, a utility building, a steel transmission tower, an artificial waterfall, and landscaping/planted vegetation. Concrete ditches convey water from hillslopes near the entrance to the Hiddenbrooke development during and immediately following rain events, as well as runoff from irrigated landscape and overflow from the artificial waterfall. A concrete ditch situated between the eastbound and westbound lanes of I-80 conveys runoff to drainages on either side of the freeway. Earthen ditches excavated in uplands and situated along the I-80 westbound onramp and the I-80 eastbound offramp consist of California annual grassland and sparse facultative wetland vegetation. An ephemeral drainage situated below a series of concrete-lined ditches along the south side of McGary Road east of Hiddenbrooke Parkway has a distinct bed and banks, and an OHWM characterized by breaks-in-slope and exposed tree roots. Aerial imagery taken March 1, 1970 (USCB 2020) indicates this drainage was once a well-maintained, unvegetated irrigation ditch that conveyed natural and artificial runoff from surrounding uplands and pastures northeastward along I-80. Seasonal and perennial wetland vegetation occupies low-lying areas excavated in uplands alongside and between roads. These areas receive runoff from hillslopes, roads, ditches, culverts, and irrigated landscapes. Trickling flows and shallow standing water were observed in low-lying areas along the south side of McGary Road (Figure 6), however these appeared to be from irrigation runoff from nearby landscaping at the intersection rather than groundwater. No other flows were observed.

3.1.4 Rationale for Sample Point Choice

Thirteen sample points and one OHWM transect were selected to document conditions in representative jurisdictional and non-jurisdictional areas (Figure 7, Appendix C, Appendix D). Rationale for wetland data form sample point locations are summarized below.

- SP1 was chosen to investigate a low-lying area between the I-80 westbound offramp and an unpaved frontage road. The area receives seasonal runoff from hillslopes, roads (paved and unpaved), and a culvert situated beneath the frontage road. SP1 is dominated by a facultative species, beardless wildrye (*Elymus triticoides*). The location is in a landscape position that is likely to collect or concentrate water (concave surface) and is subject to periodic sedimentation due to its proximity to a culvert. The vegetation is bent in the direction of flow, which is an indicator of wetland hydrology (B10, Drainage Patterns).

- SP2 was selected to characterize a concave surface in the same low-lying area as SP1, but at a lower elevation and in an area dominated by an obligate species, iris leaved rush (*Juncus xiphioides*).

- SP3 was selected to characterize a concave surface in the same low-lying area as SP1 and SP2, but at a lower elevation and in an area dominated by an obligate and a facultative wetland species, iris leaved rush and slender willow herb (*Epilobium ciliatum*). Saturation was encountered 17 inches below the soil surface.

- SP4 was placed to investigate a concave surface in a low-lying area along the south side of McGary Road south of Hiddenbrooke Parkway. The low-lying area receives seasonal runoff and landscape irrigation runoff from hillslopes, paved roads, and culverts. SP4 is dominated by a facultative species, bristly ox-tongue (*Helminthotheca echioides*). Surface soil cracks are present, which is an indicator of wetland hydrology (B6).

- SP5 was chosen to investigate a concave surface in the same low-lying area as SP4, but at a higher elevation and in an area dominated by bird's foot trefoil (*Lotus corniculatus*), a facultative species. Algal mats are present, which is an indicator of wetland hydrology (B12, Biotic Crust).

- SP6 was taken in a hillslope next to SP4. The location is dominated by an upland and a facultative species, ripgut brome (*Bromus diandrus*) and bristly ox-tongue.

- SP7 was selected to investigate a hillslope next to SP2 and SP3 downslope of the westbound I-80 offramp. The location is dominated by a facultative species, wild teasel (*Dipsacus fullonum*).

- SP8 was selected to investigate a concave surface in the same low-lying area as SP1, SP2, and SP3, but at a lower elevation and in an area dominated by an obligate species, cattail (*Typha* sp.). Saturation was encountered 12 inches below the soil surface, which is an indicator of wetland hydrology (A3).

- SP9 was selected to investigate a concave surface in the same low-lying area as SP1, SP2, SP3, SP8, and SP11, but at a lower elevation and in an area dominated by an obligate species, iris leaved rush. The vegetation is bent in the direction of flow, which is an indicator of wetland hydrology (B10, Drainage Patterns).

- SP10 was chosen to investigate a concave surface in the same low-lying area as SP1, SP2, SP3, SP8, SP9, and SP11, but at a lower elevation and in a forested area dominated by arroyo willow (*Salix lasiolepis*), a facultative wetland species. Oxidized rhizospheres were observed along living roots, which is an indicator of wetland hydrology (C3).

- SP11 was placed to investigate a concave surface in the same low-lying area as SP1, SP2, SP3, SP8, SP9, and SP10, but at an elevation between SP8 and SP9 and in an area dominated by bristly ox-tongue, a facultative species. Oxidized rhizospheres were observed along living roots, which is an indicator of wetland hydrology (C3).

- SP12 was chosen to investigate a concave surface in the same low-lying area as SP1, SP2, SP3, SP8, SP9, SP10, and SP11 but at a higher elevation and in an area dominated by ripgut brome, an upland species.

- SP13 was taken to investigate a concave surface in a forested low-lying area between the westbound I-80 offramp and westbound I-80. The low-lying area receives seasonal runoff from hillslopes, paved roads, and culverts situated beneath I-80 and the I-80/Hiddenbrooke Parkway overpass. SP13 is dominated by red willow (*Salix laevigata*), a facultative wetland species.

- OHWM-1 was chose to characterize an ephemeral drainage south of and parallel to McGary Road, east of Hiddenbroke Parkway.

3.1.5 Photo Points

Photo point labels, coordinates, and rationales for photodocumentation are presented in Table 4 and depicted on Figure 6. Photos are presented in Appendix D.

Table 4. Coordinates and Rationale for Photo Points

Label	Latitude, Longitude	Depiction
Photo 1	38.17009, -122.20067	Seasonal wetland (SW5) dominated by beardless wild rye (*Elymus triticoides*) at SP1.
Photo 2	38.17086, -122.19915	Seasonal wetland (SW5) dominated by iris leaved rush (*Juncus xiphioides*) at SP2.
Photo 3	38.17100, -122.19886	Perennial emergent wetland (PEW12) dominated by iris leaved rush and slender willow herb (*Epilobium ciliatum*) at SP3.
Photo 4	38.16766, -122.20172	Seasonal wetland (SW1) dominated by bristly ox-tongue (*Helminthotheca echioides*) at SP4.
Photo 5	38.16804, -122.20112	Seasonal wetland (SW2) dominated by bird's foot trefoil (*Lotus corniculatus*) at SP5.
Photo 6	38.16767, -122.20175	Upland at SP6 next to Photo 4 (SP4).
Photo 7	38.17087, -122.19891	Upland at SP7 next to Photo 2 (SP2) and Photo 3 (SP3).
Photo 8	38.17105, -122.19876	Perennial emergent wetland (PEW12) dominated by cattail (*Typha* sp.) at SP8.
Photo 9	38.17194, -122.19737	Seasonal wetland (SW8) dominated by iris leaved rush at SP9.
Photo 10	38.17197, -122.19726	Forested wetland (FW4) dominated by arroyo willow (*Salix lasiolepis*) at SP10.
Photo 11	38.17152, -122.19793	Seasonal wetland (SW8) dominated by bristly ox-tongue at SP11.
Photo 12	38.17010, -122.20094	Upland at SP12 next to Photo 1 (SP1).
Photo 13	38.16984, -122.20012	Forested wetland (FW2) dominated by red willow (*Salix laevigata*) at SP13.
Photo 14	38.17092, -122.19694	Ordinary high-water mark of the ephemeral drainage (ED2) at OHWM-1, defined by presence of break in slope.

Label	Latitude, Longitude	Depiction
Photo 15	38.17092, -122.19694	Ordinary high-water mark of the ephemeral drainage (ED2) at OHWM-1, defined by presence of exposed tree roots.

Note: FW = forested wetland, OWHM = ordinary high-water mark, PEW = perennial emergent wetland, SP = sample point, SW = seasonal wetland.

3.2 Identification of Potential Section 404 Wetlands

Approximately 0.75 acre of potential USACE jurisdictional wetlands occupy the study area, consisting of three wetland types: seasonal wetland, forested wetland, and perennial emergent wetland (Figure 7). However, although these features conformed to the physical definition of three-parameter wetlands, they are all either adjacent to ephemeral streams not expected to be claimed as waters of the U.S. under the Navigable Waters Protection Rule, or only have connection to navigable waters or their tributaries via ephemeral stream, roadside ditch, or sheet flow. Therefore, of the 0.75 acres of potential jurisdictional wetlands, none are considered USACE jurisdictional. A summary of the wetland data form results is presented in Table 5. Completed data forms are provided in Appendix C.

3.2.1 Seasonal Wetland

Nine seasonal wetlands (SW1 through SW9) (Figure 7 and Appendix E) occupying 0.42 acre have sufficient three-parameter characteristics to be considered potentially jurisdictional. These features are represented by SP1, SP2, SP4, SP5, SP9, and SP11. The seasonal wetlands are dominated by hydrophytic vegetation, including beardless wildrye (FAC), iris leaved rush (OBL), bristly ox-tongue (FAC), and bird's foot trefoil (FAC). The soils are predominantly clay and exhibit hydric soil indicators, including prominent redox concentrations in the top 12 inches of a dark soil (F6) and depleted matrix (F3). The soil at SP1 is subject to sediment accumulation due to its proximity to a culvert, and is considered problematic. The soil at SP4 is disturbed, consisting of fill. Indicators of wetland hydrology are generally absent due to drier than average conditions; however, each feature is situated in a landscape position that is likely to collect water (concave surface), and primary and secondary wetland hydrology indicators were observed, including algal mats (B6) and vegetation bent in the direction of flow (B10).

3.2.2 Forested Wetland

Four forested wetlands (FW1 through FW4) (Figure 7 and Appendix E) occupying 0.20 acre have sufficient three-parameter characteristics to be considered potentially jurisdictional. These features are represented by SP10 and SP13. The forested wetlands are dominated by hydrophytic vegetation, including arroyo willow (FACW), red willow (FACW), and Baltic rush (*Juncus balticus*). The soils are primarily clay loam and exhibit prominent redox concentrations in the top 12 inches of a dark soil (F6). Indicators of wetland hydrology are generally absent due to drier than average conditions; however, each feature is situated in a landscape position that is likely to collect water (concave surface), and a primary indicator of wetland hydrology—oxidized rhizospheres along living roots (C3)—was observed at SP10.

3.2.3 Perennial Emergent Wetland

Fourteen perennial emergent wetlands (PEW1 through PEW14) (Figure 7 and Appendix E) occupying 0.13 acre have sufficient three-parameter characteristics to be considered potentially jurisdictional. These features are represented by SP3 and SP8. The perennial emergent wetlands are dominated by hydrophytic vegetation, including iris leaved rush (OBL), slender willow herb (FACW), and cattail (OBL). The soils are primarily clay and exhibit prominent redox concentrations in the top 12 inches of a dark soil (F6). Indicators of wetland hydrology are generally absent due to drier than average conditions; however, each feature is situated in a landscape position that is likely to collect water (concave surface), and a primary wetland hydrology indicator—saturation (A3)—was observed at SP8.

3.2.4 Drainage Connections to Waters of the U.S.

The wetlands discussed above are located on either side of I-80 and the on- and off-ramps and frontage roads in all four "quadrants" of the intersection (Figure 7). The topography on and surrounding the site includes hills to the northwest and southeast of I-80, which direct flows to the lower area near the highway, as well as the Hiddenbrooke interchange being the general high point in this area of I-80. Therefore, water collected in roadside ditches near the road drains generally to the southeast towards Green Valley Creek and tributaries feeding Suisun Slough for the areas on the eastern side of the interchange, and generally to the west or southwest toward American Canyon Creek for the areas on the western side of the interchange. In the northeast quadrant of the interchange, features such as SW5, SW8, FW8, and PEW12-15 drain along I-80 within roadside ditches and some areas of sheet flow before crossing to the south under I-80 to flow into tributaries to Suisun Slough. In the southeast quadrant SW6, SW7, and SW9 are adjacent or drain directly via culverts into ephemeral streams ED1 and ED2, which flows to the east to drain via Green Valley Creek to Suisun Slough. PEW6 and 7 and SW3 in the northwest quadrant drain via excavated ditches and sheet flow to American Canyon Creek to the west. Finally, features in the southwest quadrant including SW1 and SW2, PEW1-5, and FW1 drain in an excavated ditch to intercept a natural tributary to American Canyon Creek. However, this tributary is ephemeral in several reaches before intercepting American Canyon Creek. Because all features are adjacent directly to ephemeral streams or are located upstream of ephemeral streams prior to a connection to a navigable waters or jurisdictional tributary, none have been considered jurisdictional waters of the U.S.

3.3 Identification of Potential Section 404 Other Waters

Approximately 0.28 acre of potential USACE jurisdictional other waters occupy the study area as ED1 and ED2 (Figure 7). However, although these features conformed to the physical definition of a linear watercourse connected to downstream waters and bearing Ordinary High Water Marks and indicators of regular flows, they are both ephemeral streams not expected to be claimed as waters of the U.S. under the Navigable Waters Protection Rule. Culverts mapped on the site connected these streams and other wetlands on the project site, and are not connected intermittent or perennial tributaries to waters of the U.S. Therefore, of the 0.28 acres of potential jurisdictional other waters, none are considered USACE jurisdictional (see Section 3.2.4). A summary

of the other waters data form results is presented in Table 5. Completed data forms are provided in Appendix C.

3.3.1 Ephemeral Drainage

Two ephemeral drainage features (ED1 and ED2) (Figure 7 and Appendix E) occupy 0.25 acre within a low-lying drainage with a distinct bed and a bank. The ephemeral drainage segments are situated at the base of hillslopes in the remnants of a historic irrigation ditch that was maintained free of vegetation, as depicted on an aerial photograph dated March 1, 1970 (UCSB 2020). They receive seasonal runoff and landscape irrigation runoff from the hillslopes, paved roads, concrete-lined ditches, and landscaped areas. The features are separated by a culvert (C8) and appear to convey flow toward an unnamed tributary of Green Valley Creek to the east. A small amount of water was present in the drainage at the time of the survey, but irrigation in the nearby landscaping was draining to this area at the time and this hydrology was artificial rather than high groundwater. The soils are clay loam, and support primarily of coast live oak (*Quercus agrifolia*) (UPL), arroyo willow (FACW), Himalayan blackberry (*Rubus armeniacus*) (FAC), coyote brush (*Baccharis pilularis*) (UPL), and poison oak (*Toxicodendron diversilobum*) (FACU). The OHWM is 12-feet-wide and identified by a break in slope and exposed tree roots. The area below the OHWM generally lacks vegetation; however, the canopies of trees and shrubs rooted within the bank are dense and cover the low flow channel.

3.3.2 Culverts

Ten culvert features (C1 through C10) (Figure 7 and Appendix E) occupying approximately 0.03 acre and 563.0 linear feet were mapped within the study area; however, the extent of two culverts (C9 and C10) could not be determined during the field survey or on the basis of readily available information. The culverts are situated beneath roads and other developed areas. They drain water from hillslopes and landscaped areas to and away from low-lying areas, ditches, and ephemeral drainage adjacent roads.

Table 5. Summary of Sample Point Locations and Results

Name	Sampling Rationale	Hydrophytic Vegetation?	Hydric Soil?	Wetland Hydrology?	Overall Wetland Assessment
SP1	Seasonal wetland between the I-80 westbound offramp and an unpaved frontage road.	Yes	Yes	Yes	A 3-parameter wetland
SP2	Seasonal wetland between the I-80 westbound offramp and an unpaved frontage road.	Yes	Yes	Yes	A 3-parameter wetland
SP3	Perennial emergent wetland between the I-80 westbound offramp and an unpaved frontage road.	Yes	Yes	Yes	A 3-parameter wetland
SP4	Seasonal wetland along the south side of McGary Road south of Hiddenbrooke Parkway.	Yes	Yes	Yes	A 3-parameter wetland
SP5	Seasonal wetland along the south side of McGary Road south of Hiddenbrooke Parkway.	Yes	Yes	Yes	A 3-parameter wetland
SP6	Upland adjacent to SP4.	No	No	No	Not a 3-parameter wetland
SP7	Upland adjacent to SP2 and SP3.	Yes	No	No	Not a 3-parameter wetland
SP8	Perennial emergent wetland between the I-80 westbound offramp and an unpaved frontage road.	Yes	Yes	Yes	A 3-parameter wetland
SP9	Seasonal wetland between westbound I-80 and an unpaved frontage road.	Yes	Yes	Yes	A 3-parameter wetland
SP10	Forested wetland between westbound I-80 and an unpaved frontage road.	Yes	Yes	Yes	A 3-parameter wetland
SP11	Seasonal wetland between the I-80 westbound offramp and an unpaved frontage road.	Yes	Yes	Yes	A 3-parameter wetland
SP12	Upland adjacent to SP1.	No	No	No	Not a 3-parameter wetland
SP13	Forested wetland between westbound I-80 offramp and westbound I-80.	Yes	Yes	Yes	A 3-parameter wetland

3.4 Identification of Section 401 Potentially Jurisdictional Waters of the State

Approximately 1.44 acres of potential waters of the state (RWQCB jurisdiction) occupy the study area, consisting of areas meeting physical definitions of wetlands and waters per USACE guidance but outside Section 404 jurisdiction due to the Navigable Waters Protection Rule, as described above, and mixed riparian woodland and riparian scrub, which are described below (Figure 8; Appendix D, Photo 15).

3.4.1 Mixed Riparian Woodland

Mixed riparian woodland occupies 0.49 acre of the study area and is situated along the bed and banks of the ephemeral drainage. The mixed riparian woodland is dominated by arroyo willow, coast live oak, and Fremont cottonwood (*Populus fremontii*). The understory is mostly unvegetated and covered with leaf litter, but some portions contain patches of poison oak, Himalayan blackberry, and rushes (*Juncus* sp.).

3.4.2 Riparian Scrub

Riparian scrub occupies 0.17 acre of the study area and is situated along the bed and banks of the ephemeral drainage between stands of mixed riparian woodland. The riparian scrub lacks tree canopy and is dominated by Himalayan blackberry.

3.5 Identification of CDFW Potentially Jurisdictional Habitats

Approximately 0.66 acre of CDFW potentially jurisdictional habitats occupy the study area, consisting of mixed riparian woodland and riparian scrub along the ephemeral drainage (Figure 8). These habitats are described above in Section 3.4.

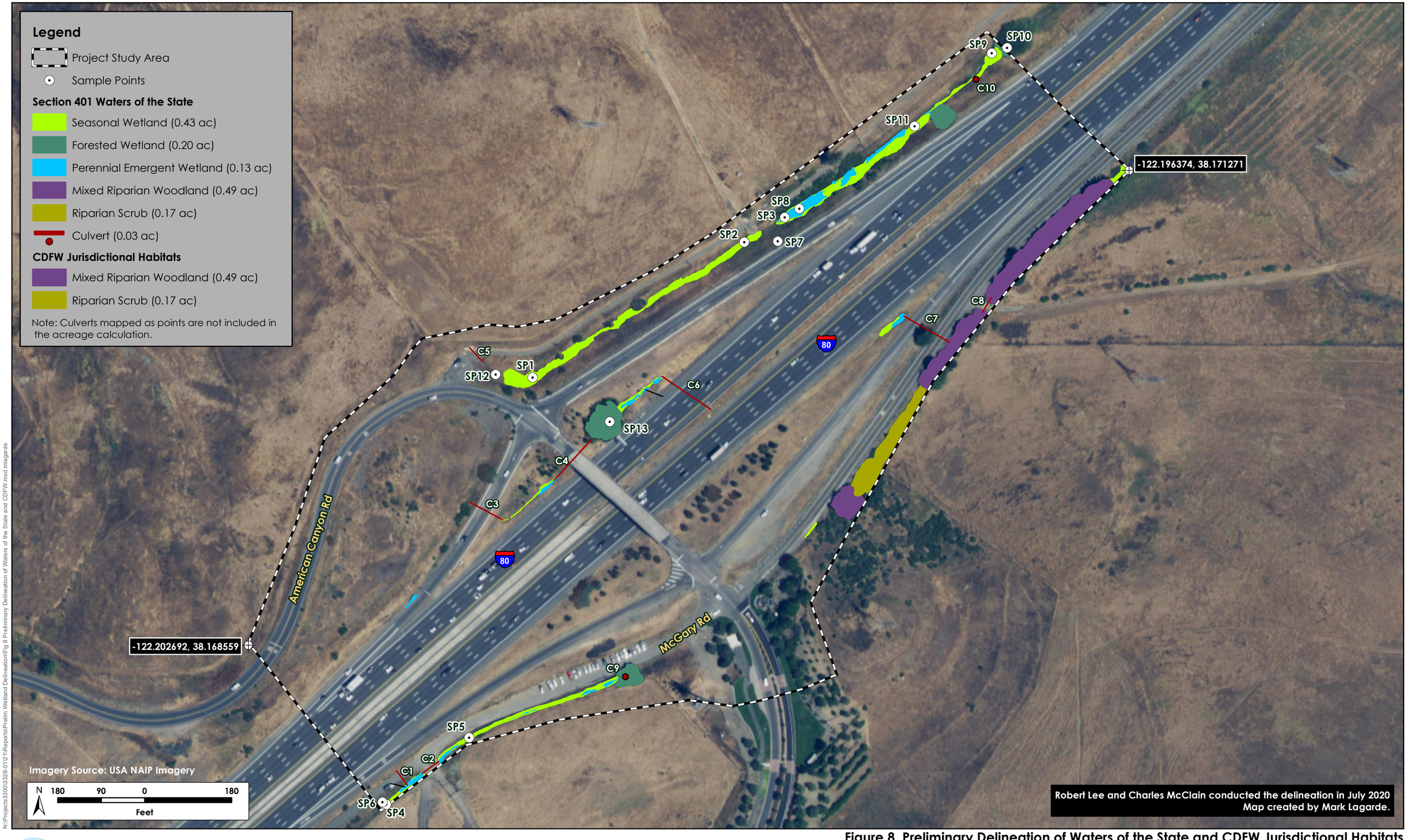
3.6 Areas Not Meeting the Regulatory Definition of Waters of the U.S./State/CDFW

Approximately 28.46 acres of the study area do not meet the regulatory definition of state or federal waters, wetlands, or riparian habitats. These portions of the study area consist of California annual grassland, developed/landscaped areas, and ditches excavated in uplands and carrying primarily roadside or irrigation runoff (Figure 6). These ditches occur in upland landscape positions and do not meet the USACE or RWQCB criteria for wetlands, or the CDFW criteria for riparian areas.

Three of the 13 sample points recorded in the study area were taken within California annual grassland (Figure 7). These areas are represented by SP6, SP7, and SP12 (Appendix C; Appendix D, Photos 6, 7, and 12). None have three-parameter characteristics sufficient to meet the definition of a jurisdictional wetland or be considered other waters by the USACE. Vegetation consists of upland and facultative species such as ripgut brome (UPL), bristly ox-tongue (FAC), wild teasel (FAC), bishop's weed (*Ammi majus*) (UPL), Italian thistle (*Carduus pycnocephalus*) (UPL), brome fescue (*Festuca bromoides*) (FACU), soft chess (*Bromus hordeaceus*) (FAC), and

Italian ryegrass (*Festuca perennis*). Soils are clay loam with few to no mottles and no other indicators of regular inundation (i.e., organic buildup or streaking). Wetland vegetation dominated by wild teasel (FAC) is present at SP7; however, the soil does not contain redox features, and no wetland hydrology indicators were observed. The hydrophytic vegetation at SP7 is supported by runoff from the I-80 westbound offramp. The California annual grassland also includes small patches of coyote brush, mostly along the margins of the seasonal wetland north of the I-80 eastbound offramp, and on the south side of McGary Road east of the artificial water feature. Plantings of native oak trees (*Quercus* spp.) (UPL) between Interstate 80 and the onramps and offramps, as well as a few isolated silver wattle (*Acacia dealbata*) (UPL) trees, were also mapped to this habitat type. Soils were observed to be clay loam with no mottles and no other indicators of regular inundation (i.e., organic buildup or streaking).

Ditches throughout the study area were dug in uplands, drain uplands, and do not appear to be re-constructions of historic drainages (Appendix D, Photos 16 and 17). Therefore, they were considered to be non-jurisdictional.



N:\Projects\3300\3328-01\21\Reports\Prelim Wetland Delineation\Fig 8 Preliminary Delineation of Waters of the State and CDFW.mxd mlagarde

H. T. HARVEY & ASSOCIATES
Ecological Consultants

Figure 8. Preliminary Delineation of Waters of the State and CDFW Jurisdictional Habitats

I-80/Hiddenbrooke Parkway Interchange Project – Preliminary Delineation of Wetlands and Other Waters, Solano County, California (3328-21)

December 2020

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Appendix A. Plants Observed in the Study Area

Family	*Botanical Name*	Common Name	Wetland Indicator Status
Asteraceae	*Leontodon saxatilis*	hawkbit	FACU
	Logfia gallica	narrowleaf cottonrose	UPL
	Madia gracilis	slender tarweed	NL
	Pseudognaphalium stramineum	cottonbatting plant	FAC
	Silybum marianum	milk thistle	NL
	Sonchus asper ssp. *asper*	sow thistle	FAC
	Sonchus oleraceus	sow thistle	UPL
	Tragopogon porrifolius	salsify	NL
Berberidaceae	*Nandina domestica* (ornamental)	heavenly bamboo	NL
Brassicaceae	*Brassica nigra*	black mustard	NL
	Brassica rapa	common mustard	FACU
	Cardamine oligosperma	bitter cress	FAC
	Hirschfeldia incana	hoary mustard	NL
	Nasturtium officinale	watercress	OBL
	Raphanus sativus	jointed charlock	NL
Caryophyllaceae	*Silene gallica*	common catchfly	NL
	Spergularia rubra	red sandspurry	FAC
Convolvulaceae	*Convolvulus arvensis*	field bindweed	NL
	Bolboschoenus maritimus ssp. *paludosus*	alkali bulrush	OBL
	Carex praegracilis	field sedge	FACW
	Cyperus eragrostis	tall flatsedge	FACW
Dipsacaceae	*Dipsacus fullonum*	Fuller's teasel	FAC
Fabaceae	*Acacia dealbata*	silver wattle	NL
	Acmispon americanus	Spanish lotus	UPL
	Lotus corniculatus	bird's foot trefoil	FAC
	Lupinus bicolor	annual lupine	NL
	Lupinus sp.	lupine	NL
	Medicago polymorpha	bur clover	FACU
	Melilotus albus	white sweetclover	FACU
	Melilotus indicus	annual yellow sweetclover	FACU
	Trifolium angustifolium	narrow leaved clover	NL

Family	*Botanical Name*	Common Name	Wetland Indicator Status
	Trifolium glomeratum	clustered clover	NL
	Trifolium hirtum	rose clover	NL
	Vicia sativa ssp. *sativa*	spring vetch	FACU
	Quercus agrifolia	coast live oak	NL
	Quercus douglasii	blue oak	NL
	Quercus lobata	valley oak	FACU
Gentianaceae	*Centaurium tenuiflorum*	slender centaury	FACW
	Erodium botrys	broad leaf filaree	FACU
	Erodium cicutarium	red stemmed filaree	NL
	Geranium dissectum	cutleaf geranium	NL
Hypericaceae	*Hypericum perforatum*	Klamath weed	FACU
Iridaceae	*Sisyrinchium bellum*	western blue eyed grass	FACW
Juglandaceae	*Juglans* sp.	walnut	NL
Juncaceae	*Juncus balticus* ssp. *ater*	Baltic rush	FACW
	Juncus bufonius	toad rush	FACW
	Juncus patens	spreading rush	FACW
	Juncus xiphioides	iris leaved rush	OBL
Lamiaceae	*Mentha pulegium*	pennyroyal	OBL
	Mentha spicata	spearmint	OBL
	Rosmarinus officinalis (ornamental)	rosemary	NL
	Stachys sp.	hedge nettle	NL
Linaceae	*Linum bienne*	narrow leaved flax	NL
Lythraceae	*Lythrum hyssopifolia*	hyssop loosestrife	OBL
Malvaceae	*Malva nicaeensis*	bull mallow	NL
	Malva parviflora	cheeseweed	NL
	Malva pseudolavatera	Cornish mallow	NL
Oleaceae	*Olea* sp. (ornamental)	olive	NL
Onagraceae	*Epilobium brachycarpum*	tall annual willowherb	FAC
	Epilobium ciliatum	slender willowherb	FACW
Orobanchaceae	*Bellardia trixago*	Mediterranean lineseed	NL
Papaveraceae	*Eschscholzia californica*	California poppy	NL
	Fumaria capreolata	white ramping fumitory	NL
Plantaginaceae	*Kickxia elatine*	sharp leaved fluellin	UPL
	Plantago lanceolata	English plantain	FAC
Poaceae	*Agrostis* sp.	bent grass	NL

Family	*Botanical Name*	Common Name	Wetland Indicator Status
	Aira caryophyllea	silver hairgrass	FACU
	Avena sp.	wild oats	NL
	Brachypodium distachyon	purple false brome	NL
	Briza minor	little rattlesnake grass	FAC
	Bromus caroli-henrici	weedy brome	NL
	Bromus diandrus	ripgut brome	NL
	Bromus hordeaceus	soft chess	FACU
	Bromus sp.	brome	NL
	Cortaderia selloana	pampas grass	FACU
	Ehrharta erecta	panic veldt grass	NL
	Elymus caput-medusae	medusa head	NL
	Elymus triticoides	beardless wildrye	FAC
	Festuca arundinacea	tall fescue	FACU
	Festuca bromoides	brome fescue	FACU
	Festuca idahoensis	Idaho fescue	FACU
	Festuca myuros	rattail fescue	FACU
	Festuca perennis	Italian ryegrass	FAC
	Holcus lanatus	velvet grass	FAC
	Hordeum murinum	wall barley	FACU
	Paspalum dilatatum	dallis grass	FAC
	Phalaris aquatica	Harding grass	FACU
	Poa pratensis	Kentucky bluegrass	FAC
	Polypogon monspeliensis	annual beard grass	FACW
	Stipa pulchra	purple needlegrass	NL
Polygonaceae	*Persicaria hydropiperoides*	false waterpepper	OBL
	Polygonum aviculare	prostrate knotweed	FAC
	Rumex crispus	curly dock	FAC
	Rumex pulcher	fiddle dock	FAC
	Rumex transitorius	willow dock	FACW
Primulaceae	*Anagallis arvensis*	scarlet pimpernel	FAC
Rosaceae	*Heteromeles arbutifolia*	toyon	NL
	Prunus cerasifera	cherry plum	NL
	Pyracantha sp.	firethorn	NL
	Rosa californica	California wild rose	FAC
	Rosa sp. (ornamental)	rose	NL

Family	*Botanical Name*	Common Name	Wetland Indicator Status
	Rubus armeniacus	Himalayan blackberry	FAC
Rubiaceae	*Galium aparine*	cleavers	FACU
Salicaceae	*Populus fremontii* ssp. *fremontii*	Fremont cottonwood	FAC
	Salix laevigata	red willow	FACW
	Salix lasiolepis	arroyo willow	FACW
Sapindaceae	*Aesculus californica*	California buckeye	NL
Solanaceae	*Solanum americanum*	American black nightshade	FACU
Themidaceae	*Triteleia laxa*	Ithuriel's spear	NL
Typhaceae	*Typha latifolia*	broad-leaved cattail	OBL
Verbenaceae	*Verbena* sp. (ornamental)	vervain	NL

Note: OBL=obligate, FACW=facultative wetland, FAC=facultative, FACU=facultative upland, UPL=upland, NL=not listed

Appendix B. NRCS Soil Survey Report for the Study Area

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Napa County, California, and Solano County, California

I-80/Hiddenbrooke Parkway Interchange Project

August 10, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

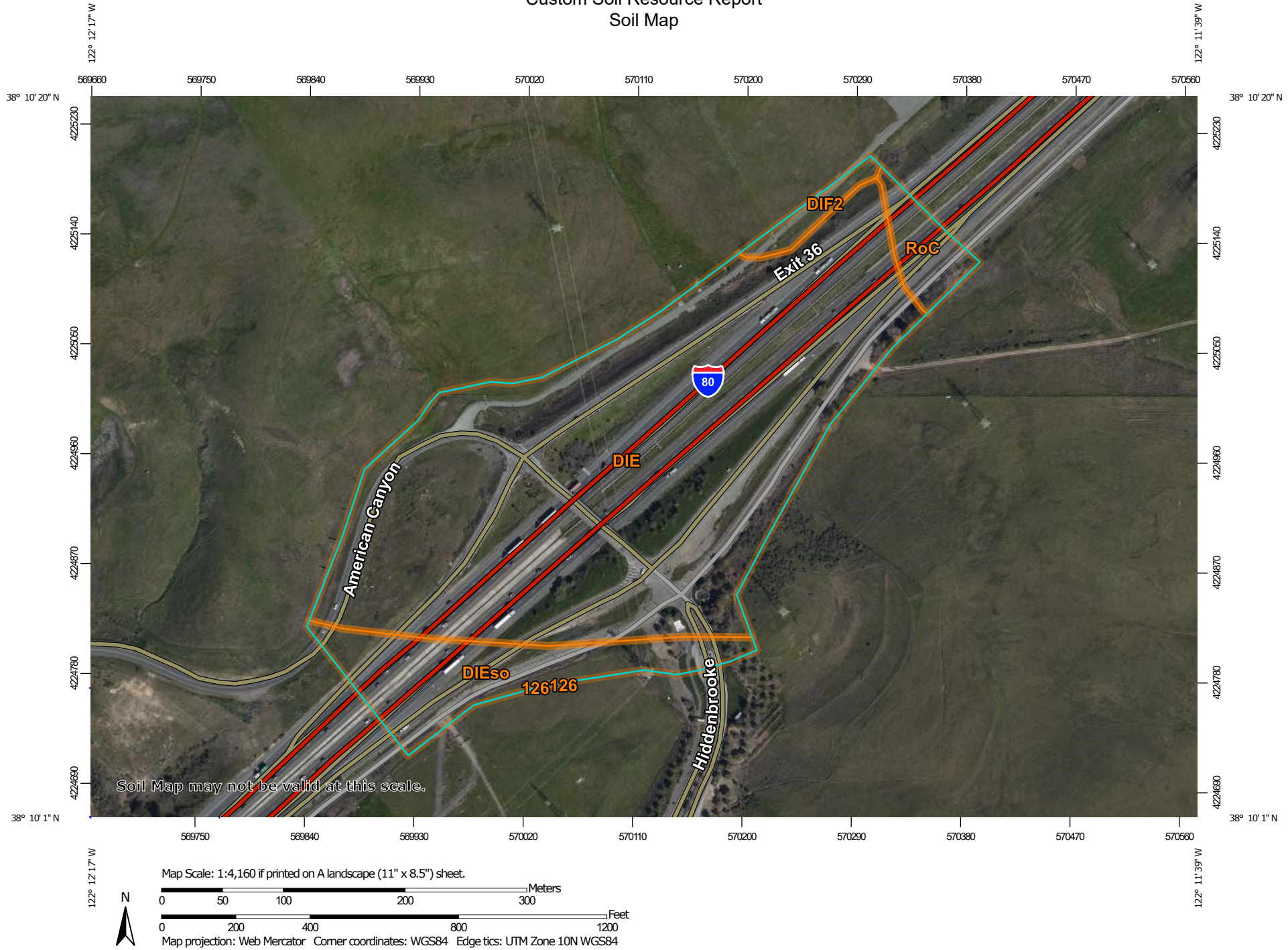
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:4,160 if printed on A landscape (11" x 8.5") sheet.

N

0 50 100 200 300 Meters

0 200 400 800 1200 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Napa County, California
Survey Area Data: Version 13, May 29, 2020

Soil Survey Area: Solano County, California
Survey Area Data: Version 14, May 29, 2020

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

MAP LEGEND

MAP INFORMATION

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 15, 2019—Apr 10, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
126	Diablo clay, 5 to 9 percent slopes, MLRA 15	0.0	0.0%
DIEso	Dibble-Los Osos clay loams, 9 to 30 percent slopes	3.8	12.7%
Subtotals for Soil Survey Area		**3.8**	**12.7%**
Totals for Area of Interest		**29.9**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DIE	Dibble-Los Osos clay loams, 9 to 30 percent slopes	24.5	81.8%
DIF2	Dibble-Los Osos clay loams, 30 to 50 percent slopes, eroded	0.6	1.9%
RoC	Rincon clay loam, 2 to 9 percent slopes, MLRA 14	1.1	3.6%
Subtotals for Soil Survey Area		**26.1**	**87.3%**
Totals for Area of Interest		**29.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas

are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Napa County, California

126—Diablo clay, 5 to 9 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2w63c
Elevation: 30 to 1,130 feet
Mean annual precipitation: 16 to 32 inches
Mean annual air temperature: 56 to 60 degrees F
Frost-free period: 290 to 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Diablo and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Diablo

Setting

Landform: Hillslopes, mountain slopes
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Residuum weathered from calcareous shale

Typical profile

A1 - 0 to 5 inches: clay
A2 - 5 to 18 inches: clay
Bkss1 - 18 to 30 inches: clay
Bkss2 - 30 to 39 inches: clay
Ck - 39 to 53 inches: clay
Cr - 53 to 79 inches: bedrock

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: 40 to 59 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R015XD001CA - CLAYEY
Hydric soil rating: No

Minor Components

Cropley

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Aridic haploxererts, moderately deep

Percent of map unit: 5 percent
Landform: Hillslopes, mountain slopes
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

DlEso—Dibble-Los Osos clay loams, 9 to 30 percent slopes

Map Unit Setting

National map unit symbol: wd67
Elevation: 100 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 225 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dibble and similar soils: 60 percent
Los osos and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dibble

Setting

Landform: Mountains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 13 inches: clay loam
H2 - 13 to 30 inches: clay loam
H3 - 30 to 59 inches: bedrock

Properties and qualities

Slope: 9 to 30 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R015XE020CA
Hydric soil rating: No

Description of Los Osos

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 7 inches: clay loam
H2 - 7 to 25 inches: clay
H3 - 25 to 59 inches: bedrock

Properties and qualities

Slope: 9 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R015XE020CA
Hydric soil rating: No

Minor Components

Millsholm

Percent of map unit: 5 percent
Hydric soil rating: No

Los gatos

Percent of map unit: 5 percent
Hydric soil rating: No

Solano County, California

DIE—Dibble-Los Osos clay loams, 9 to 30 percent slopes

Map Unit Setting

National map unit symbol: h9lb
Elevation: 100 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 225 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dibble and similar soils: 60 percent
Los osos and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dibble

Setting

Landform: Mountains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 13 inches: clay loam
H2 - 13 to 30 inches: clay loam
H3 - 30 to 59 inches: bedrock

Properties and qualities

Slope: 9 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R015XE020CA
Hydric soil rating: No

Description of Los Osos

Setting

Landform: Mountains

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 7 inches: clay loam
H2 - 7 to 25 inches: clay
H3 - 25 to 59 inches: bedrock

Properties and qualities

Slope: 9 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R015XE020CA
Hydric soil rating: No

Minor Components

Los gatos

Percent of map unit: 5 percent
Hydric soil rating: No

Millsholm

Percent of map unit: 5 percent
Hydric soil rating: No

DIF2—Dibble-Los Osos clay loams, 30 to 50 percent slopes, eroded

Map Unit Setting

National map unit symbol: h9lc
Elevation: 100 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 225 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dibble and similar soils: 60 percent
Los osos and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dibble

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 3 inches: clay loam
H2 - 3 to 20 inches: clay loam
H3 - 20 to 59 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R015XF006CA - Steep Clayey Hills
Hydric soil rating: No

Description of Los Osos

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 1 inches: clay loam
H2 - 1 to 20 inches: clay
H3 - 20 to 59 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R015XE020CA
Hydric soil rating: No

Minor Components

Millsholm

Percent of map unit: 5 percent
Hydric soil rating: No

Los gatos

Percent of map unit: 5 percent
Hydric soil rating: No

RoC—Rincon clay loam, 2 to 9 percent slopes, MLRA 14

Map Unit Setting

National map unit symbol: 2tb8p
Elevation: 10 to 3,110 feet
Mean annual precipitation: 11 to 33 inches
Mean annual air temperature: 56 to 62 degrees F
Frost-free period: 250 to 320 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Rincon and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rincon

Setting

Landform: Terraces, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium derived from sedimentary rock

Typical profile

A - 0 to 6 inches: clay loam
Ap - 6 to 18 inches: clay loam
Bt - 18 to 52 inches: clay
Btk - 52 to 64 inches: clay loam

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R014XE025CA - FINE LOAMY BOTTOM

Minor Components

Lockwood

Percent of map unit: 2 percent
Hydric soil rating: No

Capay

Percent of map unit: 2 percent
Hydric soil rating: No

Arbuckle

Percent of map unit: 2 percent
Hydric soil rating: No

Cropley

Percent of map unit: 2 percent
Hydric soil rating: No

Brentwood

Percent of map unit: 1 percent
Hydric soil rating: No

Antioch

Percent of map unit: 1 percent
Hydric soil rating: No

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Appendix C. USACE Arid West Wetland Data Forms and OHWM Datasheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Solano Sampling Date: July 17, 2020
Applicant/Owner: City of Vallejo State: California Sampling Point: SP1
Investigator(s): R. Lee Section/Township/Range: S28/T4N/R3W
Landform (hillslope, terrace, etc.): Swale Local Relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.17009 Long: -122.20067 Datum: WGS84
Soil Map Unit Name: Dibble-Los Osos clay loams, 9–30% slopes NWI classification R4SBAx - Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil X or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____
Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Point taken to investigate a swale between the I-80 westbound offramp and an unpaved frontage road. The swale recieves seasonal runoff from hillslopes, roads (paved and unpaved), and a culvert situated beneath the frontage road. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

VEGETATION

Tree Stratum (Plot size: *NA*)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Elymus triticoides*	80	X	FAC
2. *Helminthotheca echioides*	15		FAC
3. *Bromus diandrus*	5		NL
4. *Foeniculum vulgare*	3		NL
5. *Bromus caroli-henrici*	2		NL
6. *Rumex crispus*	2		FAC
7. *Bromus hordeaceus*	1		FACU
8. *Carduus pycnocephalus*	1		NL
Total Cover:	109		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL Species		x 5 =	
Column totals	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Text is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No** ____

Remarks:
More than 50% of the dominant plant species across all strata are rated OBL, FACW, or FAC.

SOIL

Sampling Point: SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100					SiCL	
5-12	10YR 3/2	94	5YR 5/8	1	C	M	C	Prominent redox
	7.5YR 2.5/1	5						
12-20	2.5Y 3/2	93	10YR 4/6	5	C	M	SC	More gravel, prominent redox
	7.5YR 2.5/1	2						

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ 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)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes X No ___

Remarks:

The area is in a landscape position that is likely to collect or concentrate water (concave surface, swale) and is subject to periodic sedimentation due to its proximity to a culvert. The soil has a 4-inch thick layer having a matrix value of 3 and chroma of 2 and 5% prominent redox concentrations as begins at a depth of 12 inches.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (Riverine)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Hydrophytic vegetation is present and bent over in the direction of flow (B10). Hydric soil is absent due to a problematic situation (sedimentation). The site is in a landscape position that is likely to collect water (concave surface, swale). Site visit occurred during the dry season. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Solano Sampling Date: July 17, 2020
Applicant/Owner: City of Vallejo State: California Sampling Point: SP2
Investigator(s): R. Lee Section/Township/Range: S28/T4N/R3W
Landform (hillslope, terrace, etc.): Swale Local Relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.17086 Long: -122.19915 Datum: WGS84
Soil Map Unit Name: Dibble-Los Osos clay loams, 9–30% slopes NWI classification R4SBAx - Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil ____ or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Point taken to investigate a swale between the I-80 westbound offramp and an unpaved frontage road. The swale recieves seasonal runoff from hillslopes, roads (paved and unpaved), and a culvert situated beneath the frontage road. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

VEGETATION

Tree Stratum (Plot size: *NA*)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Juncus xiphioides*	75	X	OBL
2. *Dipsacus fullonum*	10		FAC
3. *unknown Asteraceae*	10		UNK
4. *Elymus triticoides*	5		FAC
5. *Galium aparine*	5		FACU
6. *Epilobium brachycarpum*	<1		FAC
7. *Lactuca serriola*	<1		FACU
8. *Rumex crispus*	<1		FAC
Total Cover:	108		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL Species ____	x 5 = ____
Column totals ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Text is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No** ____

Remarks:
More than 50% of the dominant plant species across all strata are rated OBL, FACW, or FAC.

SOIL

Sampling Point: SP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 3/2	100					SiCL	Many coarse roots
4-12	10YR 3/2	35	7.5YR 4/6	5	C	M	C	Prominent redox
	7.5YR 3/1	60						
12-17	10YR 4/2	95	5YR 4/6	5	C	M	SC	Prominent redox

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

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

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Loamy Mucky Mineral (F1)
___	Hydrogen Sulfide (A4)	___	Loamy Gleyed Matrix (F2)
___	Stratified Layers (A5) **(LRR C)**	___	Depleted Matrix (F3)
___	1 cm Muck (A9) (**LRR D**)	X	Redox Dark Surface (F6)
___	Depleted Below Dark Surface (A11)	___	Depleted Dark Surface (F7)
___	Thick Dark Surface (A12)	___	Redox Depressions (F8)
___	Sandy Mucky Mineral (S1)	___	Vernal Pools (F9)
___	Sandy Gleyed Matrix (S4)		

Indicators for Problematic Hydric Soils[3]:

___	1 cm Muck (A9) (**LRR C**)
___	2 cm Muck (A10) (**LRR B**)
___	Reduced Vertic (F18)
___	Red Parent Material (TF2)
___	Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes X No ___

Remarks:

The soil has a layer that is at least 4 inches within the upper 12 inches of the soil and has a matrix value of 3 and chroma of 2 and 5% prominent redox concentrations.

HYDROLOGY

Wetland Hydrology Indicators:

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

				Secondary Indicators (2 or more required)	
___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) (**Riverine**)
___	High Water Table (A2)	___	Biotic Crust (B12)	___	Sediment Deposits (B2) (**Riverine**)
___	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) (Riverine)
___	Water Marks (B1) (**Nonriverine**)	___	Hydrogen Sulfide Odor (C1)	___	Drainage Patterns (B10)
___	Sediment Deposits (B2) (**Nonriverine**)	___	Oxidized Rhizospheres along Living Roots (C3)	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) (**Nonriverine**)	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	___	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
___	Water-stained Leaves (B9)	X	Other (Explain in Remarks)	___	FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Hydrophytic vegetation and hydric soil are present. The site is in a landscape position that is likely to collect water (concave surface, swale). Site visit occurred during the dry season. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Solano Sampling Date: July 17, 2020

Applicant/Owner: City of Vallejo State: California Sampling Point: SP3

Investigator(s): R. Lee Section/Township/Range: S28/T4N/R3W

Landform (hillslope, terrace, etc.): Swale Local Relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): Mediterranean California (LRR C) Lat: 38.17100 Long: -122.19886 Datum: WGS84

Soil Map Unit Name: Dibble-Los Osos clay loams, 9–30% slopes NWI classification R4SBAx - Riverine

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

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____ Soil ____ or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

Point taken to investigate a swale between the I-80 westbound offramp and an unpaved frontage road. The swale recieves seasonal runoff from hillslopes, roads (paved and unpaved), and a culvert. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

VEGETATION

Tree Stratum (Plot size: *NA*)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: *5-foot radius*)			
1. *Rosa californica*	15	X	FAC
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Juncus xiphioides*	75	X	OBL
2. *Epilobium ciliatum*	50	X	FACW
3. *Dipsacus fullonum*	5		FAC
4. *Rumex crispus*	5		FAC
5. *Helminthotheca echioides*	2		FAC
6. *Polypogon monspeliensis*	1		FACW
7.			
8.			
Total Cover:	138		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	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:

X Dominance Text is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No** ____

Remarks:

More than 50% of the dominant plant species across all strata are rated OBL, FACW, or FAC.

SOIL

Sampling Point: SP3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 3/2	100					SiCL	
4-11	2.5Y 3/2	89	10YR 4/4	10	C	M	C	Distinct redox
			2.5/5PB	1	C	M		
11-17	2.5Y 4/1	50	10YR 4/4	50	C	M	C	Prominent redox
17-20	5Y 4/1	40	10YR 4/3	60	C	M	C	Prominent redox
			2.5/5PB	1	C	PL		

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ 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)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes X No ___

Remarks:

The soil has a layer that is at least 4 inches within the upper 12 inches of the soil and has a matrix value of 3 and chroma of 2 and at least 5% prominent redox concentrations.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes X No ___ Depth (inches): 17

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Hydrophytic vegetation and hydric soil are present. The site is in a landscape position that is likely to collect water (concave surface, swale). Site visit occurred during the dry season. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Napa Sampling Date: July 22, 2020

Applicant/Owner: City of Vallejo State: California Sampling Point: SP4

Investigator(s): R. Lee Section/Township/Range: S28/T4N/R3W

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

Subregion (LRR): Mediterranean California (LRR C) Lat: 38.16766 Long: -122.20172 Datum: WGS84

Soil Map Unit Name: Dibble-Los Osos clay loams, 9–30% slopes NWI classification R4SBAx - Riverine

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

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____ Soil X or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

Point taken to investigate a ditch along the south side of McGary Road south of Hiddenbrooke Parkway. The ditch recieves seasonal runoff and landscape irrigation runoff from hillslopes, roads, and culverts along McGary Road. Soil is naturally problematic because broken glass and many large angular gravels down to approximately 15 inches indicate the soil is fill/disturbed. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same period.

VEGETATION

Tree Stratum (Plot size: *NA*)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Helminthotheca echioides*	25	X	FAC
2. *Elymus ponticus*	10		NL
3. *Ammi majus*	4		NL
4. *Erigeron canadensis*	3		FACU
5. *Brassica nigra*	2		NL
6. *Carduus pycnocephalus*	2		NL
7. *Polypogon monspeliensis*	2		FACW
8. *Cirsium vulgare*	1		FACU
Total Cover:	49		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL Species		x 5 =	
Column totals	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Text is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No** ____

Remarks:

More than 50% of the dominant plant species across all strata are rated OBL, FACW, or FAC.

SOIL

Sampling Point: SP4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/1	100					CL	
6-16	2.5Y 3/2	49					SCL	Many gravels
	7.5YR 2.5/1	50	10YR 4/6	1	C	M		Prominent redox
16-21	2.5Y 3/2	25	2.5Y 2.5/1	75	C	M	C	Faint redox

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ 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)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes X No ___

Remarks:

Hydrophytic vegetation and a primary indicator of wetland hydrology (B6) are present. The area is in a landscape position that is likely to collect water (concave surface: ditch). Small pieces of broken glass and many large angular gravels down to approximately 15 inches indicate the soil is fill/disturbed.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Hydrophytic vegetation and hydric soil are present. The site is in a landscape position that is likely to collect water (concave surface, swale). Site visit occurred during the dry season. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Napa Sampling Date: July 22, 2020
Applicant/Owner: City of Vallejo State: California Sampling Point: SP5
Investigator(s): R. Lee Section/Township/Range: S28/T4N/R3W
Landform (hillslope, terrace, etc.): Ditch Local Relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.16804 Long: -122.20112 Datum: WGS84
Soil Map Unit Name: Dibble-Los Osos clay loams, 9–30% slopes NWI classification none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil ____ or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Point taken to investigate a ditch along the south side of McGary Road south of Hiddenbrooke Parkway. The ditch recieves seasonal runoff and landscape irrigation runoff from hillslopes, roads, and culverts along McGary Road. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same period.

VEGETATION

Tree Stratum (Plot size: *NA*)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Lotus corniculatus*	65	X	FAC
2. *Polypogon monspeliensis*	8		FACW
3. *Lythrum hyssopifolia*	5		OBL
4. *Helminthotheca echioides*	2		FAC
5. *Cyperus eragrostis*	1		FACW
6. *Epilobium brachycarpum*	1		FAC
7. *Epilobium ciliatum*	1		FACW
8. *Pseudognaphalium sp.*	1		
Total Cover:	84		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 16 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL Species	x 5 =	
Column totals	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Text is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No** ____

Remarks:
More than 50% of the dominant plant species across all strata are rated OBL, FACW, or FAC.

SOIL

Sampling Point: SP5

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5Y 3/2	100					C	Lots of large gravel, cobble, fill, disturbed
8-20	2.5Y 4/2	85	2.5Y 5/6	10	C	M	C	Prominent redox
	10YR 3/2					M		

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

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

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Loamy Mucky Mineral (F1)
___	Hydrogen Sulfide (A4)	___	Loamy Gleyed Matrix (F2)
___	Stratified Layers (A5) **(LRR C)**	X	Depleted Matrix (F3)
___	1 cm Muck (A9) (**LRR D**)	___	Redox Dark Surface (F6)
___	Depleted Below Dark Surface (A11)	___	Depleted Dark Surface (F7)
___	Thick Dark Surface (A12)	___	Redox Depressions (F8)
___	Sandy Mucky Mineral (S1)	___	Vernal Pools (F9)
___	Sandy Gleyed Matrix (S4)		

Indicators for Problematic Hydric Soils[3]:

___	1 cm Muck (A9) (**LRR C**)
___	2 cm Muck (A10) (**LRR B**)
___	Reduced Vertic (F18)
___	Red Parent Material (TF2)
___	Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Soil has a depleted matrix with 85% chroma of 2 and is 2 inches thick and within the upper 6 inches inches of the soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)			Secondary Indicators (2 or more required)		
___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) (**Riverine**)
___	High Water Table (A2)	X	Biotic Crust (B12)	___	Sediment Deposits (B2) (**Riverine**)
___	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) (Riverine)
___	Water Marks (B1) (**Nonriverine**)	___	Hydrogen Sulfide Odor (C1)	___	Drainage Patterns (B10)
___	Sediment Deposits (B2) (**Nonriverine**)	___	Oxidized Rhizospheres along Living Roots (C3)	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) (**Nonriverine**)	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	___	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
___	Water-stained Leaves (B9)	X	Other (Explain in Remarks)	___	FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

Algal mats are present (B12). Hydrophytic vegetation and hydric soil are present. The site is in a landscape position that is likely collects water (concave surface, ditch). The ditch recieves seasonal runoff and landscape irrigation runoff from hillslopes, roads, and culverts. Site visit occurred during the dry season. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Napa Sampling Date: July 22, 2020
Applicant/Owner: City of Vallejo State: California Sampling Point: SP6
Investigator(s): R. Lee Section/Township/Range: S28/T4N/R3W
Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Convex Slope (%): 10
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.16767 Long: -122.20175 Datum: WGS84
Soil Map Unit Name: Dibble-Los Osos clay loams, 9–30% slopes NWI classification none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil ____ or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:
Point taken in hillslope next to a ditch along the south side of McGary Road south of Hiddenbrooke Parkway. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same period.

VEGETATION

Tree Stratum (Plot size: *NA*)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Bromus diandrus*	25	X	NL
2. *Helminthotheca echioides*	25	X	FAC
3. *Ammi majus*	15		NL
4. *Carduus pycnocephalus*	10		NL
5. *Avena sp.*	5		NL
6. *Erigeron canadensis*	3		FACU
7. *Epilobium brachycarpum*	1		FAC
8. *Geranium dissectum*	1		NL
Total Cover:	85		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 3 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	26	x 3 =	78
FACU species	4	x 4 =	16
UPL Species	56	x 5 =	280
Column totals	86 (A)		374 (B)

Prevalence Index = B/A = 4.4

Hydrophytic Vegetation Indicators:
___ Dominance Text is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:
Indicators of hydrophytic vegetation are absent.

SOIL

Sampling Point: SP6

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2	100					CL	
7-12	10YR 3/2	98	10YR 4/6	2	C	M	CL	Small gravels
12-14	7.5YR 3/2	40					CL	
	10YR 4/6	10						
	10YR 4/4	50						
14-20	2.5Y 3/2	90	2.5Y 4/4	5	C	M	C	Distinct redox
			2.5Y 2.5/1	5	C	M		

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ 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)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes ___ No X

Remarks:

Indicators of hydric soil are absent.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

Indicators of wetland hydrology are absent.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Solano Sampling Date: July 28, 2020
Applicant/Owner: City of Vallejo State: California Sampling Point: SP7
Investigator(s): R. Lee, C. McClain Section/Township/Range: S28/T4N/R3W
Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): None Slope (%): 25
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.17087 Long: -122.19891 Datum: WGS84
Soil Map Unit Name: Dibble-Los Osos clay loams, 9–30% slopes NWI classification none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil ____ or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:
Point taken in hillslope next to a swale between the westbound I-80 offramp and an unpaved frontage road. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same period. Runoff from the offramp supports hydrophytic vegetation; however, indicators of hydric soil and wetland hydrology are absent.

VEGETATION

Tree Stratum (Plot size: *NA*)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Dipsacus fullonum*	65	X	FAC
2. *Helminthotheca echioides*	15		FAC
3. *Festuca bromoides*	5		FACU
4. *Brassica nigra*	2		NL
5. *Geranium dissectum*	2		NL
6. *Lactuca serriola*	1		FACU
7.			
8.			
Total Cover:	90		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL Species	x 5 =	
Column totals	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Text is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No** ____

Remarks:
More than 50% of the dominant plant species across all strata are rated OBL, FACW, or FAC.

SOIL

Sampling Point: SP7

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/3	100					CL	Abundant gravel
10-14	10YR 2/2	100					C	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ 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)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes ___ No X

Remarks:

Soil does not meet any hydric soil indicator.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

Wetland hydrology indicators absent.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Solano Sampling Date: July 28, 2020
Applicant/Owner: City of Vallejo State: California Sampling Point: SP8
Investigator(s): R. Lee, C. McClain Section/Township/Range: S28/T4N/R3W
Landform (hillslope, terrace, etc.): Swale Local Relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.17105 Long: -122.19876 Datum: WGS84
Soil Map Unit Name: Dibble-Los Osos clay loams, 9–30% slopes NWI classification R4SBAx - Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil ____ or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

Point taken in freshwater marsh dominated by wetland obligate (Typha sp.) within a swale between the westbound I-80 offramp and an unpaved frontage road. The swale recieves seasonal runoff from hillslopes, roads (paved and unpaved), and a culvert. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same period.

VEGETATION

Tree Stratum (Plot size: *NA*)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Typha sp.*	95	X	OBL
2. *Epilobium ciliatum*	10		FACW
3. *Juncus xiphioides*	10		OBL
4.			
5.			
6.			
7.			
8.			
Total Cover:	115		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x 1 =	____
FACW species	____	x 2 =	____
FAC species	____	x 3 =	____
FACU species	____	x 4 =	____
UPL Species	____	x 5 =	____
Column totals	____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Text is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No** ____

Remarks:

More than 50% of the dominant plant species across all strata are rated OBL, FACW, or FAC.

SOIL

Sampling Point: SP8

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2	100					C	
5-14	10YR 3/1	85	7.5YR 4/6	15	C	M	C	

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

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

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Loamy Mucky Mineral (F1)
___	Hydrogen Sulfide (A4)	___	Loamy Gleyed Matrix (F2)
___	Stratified Layers (A5) **(LRR C)**	___	Depleted Matrix (F3)
___	1 cm Muck (A9) (**LRR D**)	X	Redox Dark Surface (F6)
___	Depleted Below Dark Surface (A11)	___	Depleted Dark Surface (F7)
___	Thick Dark Surface (A12)	___	Redox Depressions (F8)
___	Sandy Mucky Mineral (S1)	___	Vernal Pools (F9)
___	Sandy Gleyed Matrix (S4)		

Indicators for Problematic Hydric Soils[3]:

___	1 cm Muck (A9) (**LRR C**)
___	2 cm Muck (A10) (**LRR B**)
___	Reduced Vertic (F18)
___	Red Parent Material (TF2)
___	Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes X No ___

Remarks:

Soil has a layer that is at least 4 inches thick, is entirely within the upper 12 incches of the mineral soil, and has a matrix valeu of 3 and chroma of 1 and more than 5% distinct redox concentrations occurring as soft masses.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)				Secondary Indicators (2 or more required)	
___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) (**Riverine**)
___	High Water Table (A2)	___	Biotic Crust (B12)	___	Sediment Deposits (B2) (**Riverine**)
X	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) (Riverine)
___	Water Marks (B1) (**Nonriverine**)	___	Hydrogen Sulfide Odor (C1)	___	Drainage Patterns (B10)
___	Sediment Deposits (B2) (**Nonriverine**)	___	Oxidized Rhizospheres along Living Roots (C3)	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) (**Nonriverine**)	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	___	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
___	Water-stained Leaves (B9)		Other (Explain in Remarks)	___	FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes X No ___ Depth (inches): 12

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

A primary indicator of wetland hydrology (A3) is present despite naturally problematic hydrology because of below-average precipitation.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Solano Sampling Date: July 28, 2020
Applicant/Owner: City of Vallejo State: California Sampling Point: SP9
Investigator(s): R. Lee, C. McClain Section/Township/Range: S21/T4N/R3W
Landform (hillslope, terrace, etc.): Swale Local Relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.17194 Long: -122.19737 Datum: WGS84
Soil Map Unit Name: Dibble-Los Osos clay loams, 30–50% slopes NWI classification R4SBAx - Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Vegetation ____
Are Soil ____ or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)
Vegetation ____

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Point taken to investigate a swale between the westbound I-80 and an unpaved frontage road. Area receives seasonal runoff from uplands and developed land cover via surface and subsurface flow and culverts. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same period.

VEGETATION

Tree Stratum (Plot size: *NA*)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Juncus xiphioides*	95	X	OBL
2. *Phalaris aquatica*	3		FACU
3. *Galium aparine*	1		FACU
4.			
5.			
6.			
7.			
8.			
Total Cover:	99		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL Species		x 5 =	
Column totals	(A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Text is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No** ____

Remarks:
More than 50% of the dominant plant species across all strata are rated OBL, FACW, or FAC.

SOIL

Sampling Point: SP9

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/2	100					C	
8-14	10YR 3/1	90	7.5YR 4/6	10	C	M	C	Prominent redox

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

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

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Loamy Mucky Mineral (F1)
___	Hydrogen Sulfide (A4)	___	Loamy Gleyed Matrix (F2)
___	Stratified Layers (A5) **(LRR C)**	___	Depleted Matrix (F3)
___	1 cm Muck (A9) (**LRR D**)	X	Redox Dark Surface (F6)
___	Depleted Below Dark Surface (A11)	___	Depleted Dark Surface (F7)
___	Thick Dark Surface (A12)	___	Redox Depressions (F8)
___	Sandy Mucky Mineral (S1)	___	Vernal Pools (F9)
___	Sandy Gleyed Matrix (S4)		

Indicators for Problematic Hydric Soils[3]:

___	1 cm Muck (A9) (**LRR C**)
___	2 cm Muck (A10) (**LRR B**)
___	Reduced Vertic (F18)
___	Red Parent Material (TF2)
___	Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? **Yes X** **No ___**

Remarks:

Soil has a layer that is at least 4 inches thick, is entirely within the upper 12 incches of the mineral soil, and has a matrix value of 3 and chroma of 1 and more than 5% distinct redox concentrations occurring as soft masses.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)				Secondary Indicators (2 or more required)	
___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) (**Riverine**)
___	High Water Table (A2)	___	Biotic Crust (B12)	___	Sediment Deposits (B2) (**Riverine**)
___	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) (Riverine)
___	Water Marks (B1) (**Nonriverine**)	___	Hydrogen Sulfide Odor (C1)	X	Drainage Patterns (B10)
___	Sediment Deposits (B2) (**Nonriverine**)	___	Oxidized Rhizospheres along Living Roots (C3)	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) (**Nonriverine**)	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	___	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
___	Water-stained Leaves (B9)	X	Other (Explain in Remarks)	___	FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? **Yes X** **No ___**

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

Remarks:

Hydrophytic vegetation and hydric soil are present. The site is in a landscape position that is likely to collect water (concave surface, swale). Site visit occurred during the dry season. Hydrophytic vegetation is bent over in the direction of flow (B10). Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Solano Sampling Date: July 28, 2020

Applicant/Owner: City of Vallejo State: California Sampling Point: SP10

Investigator(s): R. Lee, C. McClain Section/Township/Range: S21/T4N/R3W

Landform (hillslope, terrace, etc.): Swale Local Relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): Mediterranean California (LRR C) Lat: 38.17197 Long: -122.19726 Datum: WGS84

Soil Map Unit Name: Rincon clay loams, 2–9% slopes NWI classification R4SBAx - Riverine

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

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____ Soil ____ or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

Point taken to investigate a swale between the westbound I-80 and an unpaved frontage road. Area receives seasonal runoff from uplands and developed land cover via surface and subsurface flow and culverts. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same period.

VEGETATION

Tree Stratum (Plot size: *10-foot radius*)	Absolute Cover %	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	100	X	FACW
2.			
3.			
4.			
Total Cover:	100		
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Festuca arundinacea*	20	X	FACU
2. *Festuca bromoides*	1		FACU
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	21		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	21	x 4 =	84
UPL Species	0	x 5 =	0
Column totals	121 (A)		284 (B)

Prevalence Index = B/A = 2.4

Hydrophytic Vegetation Indicators:

___ Dominance Text is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No** ____

Remarks:

A prevalence index of 2.4 indicates that hydrophytic vegetation is present.

SOIL

Sampling Point: SP10

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	85	7.5YR 4/6	15	C	PL	CL	Many fine and coarse roots

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

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

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Loamy Mucky Mineral (F1)
___	Hydrogen Sulfide (A4)	___	Loamy Gleyed Matrix (F2)
___	Stratified Layers (A5) **(LRR C)**	___	Depleted Matrix (F3)
___	1 cm Muck (A9) (**LRR D**)	X	Redox Dark Surface (F6)
___	Depleted Below Dark Surface (A11)	___	Depleted Dark Surface (F7)
___	Thick Dark Surface (A12)	___	Redox Depressions (F8)
___	Sandy Mucky Mineral (S1)	___	Vernal Pools (F9)
___	Sandy Gleyed Matrix (S4)		

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes X No ___

Remarks:

Soil has a layer that is at least 4 inches thick, is entirely within the upper 12 incches of the mineral soil, and has a matrix value of 2 and chroma of 2 and more than 5% distinct redox concentrations occurring as pore linings.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)				Secondary Indicators (2 or more required)	
___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) (**Riverine**)
___	High Water Table (A2)	___	Biotic Crust (B12)	___	Sediment Deposits (B2) (**Riverine**)
___	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) (Riverine)
___	Water Marks (B1) (**Nonriverine**)	___	Hydrogen Sulfide Odor (C1)	___	Drainage Patterns (B10)
___	Sediment Deposits (B2) (**Nonriverine**)	X	Oxidized Rhizospheres along Living Roots (C3)	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) (**Nonriverine**)	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	___	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
___	Water-stained Leaves (B9)	X	Other (Explain in Remarks)	___	FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Hydrophytic vegetation and hydric soil are present. The site is in a landscape position that is likely to collect water (concave surface, swale). Site visit occurred during the dry season. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Solano Sampling Date: July 28, 2020
Applicant/Owner: City of Vallejo State: California Sampling Point: SP11
Investigator(s): R. Lee, C. McClain Section/Township/Range: S28/T4N/R3W
Landform (hillslope, terrace, etc.): Swale Local Relief (concave, convex, none): Concave Slope (%): 5
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.17152 Long: -122.19793 Datum: WGS84
Soil Map Unit Name: Dibble-Los Osos clay loams, 9–30% slopes NWI classification R4SBAx - Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil ____ or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Point taken to investigate a swale between the westbound I-80 offramp and an unpaved frontage road. Area receives seasonal runoff from uplands and developed land cover via surface and subsurface flow and culverts. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same period.

VEGETATION

Tree Stratum (Plot size: *NA*)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Helminthotheca echioides*	50	X	FAC
2. *Festuca myuros*	15		FACU
3. *Festuca perennis*	10		FAC
4. *Bromus hordeaceus*	10		FAC
5. *Bromus caroli-henrici*	5		NL
6. *Torilis arvensis*	1		NL
7. *Bromus diandrus*	1		NL
8.			
Total Cover:	92		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL Species ____	x 5 = ____
Column totals ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Text is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No** ____

Remarks:
More than 50% of the dominant plant species across all strata are rated OBL, FACW, or FAC.

SOIL

Sampling Point: SP11

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					C	
4-10	10YR 3/2	80	7.5 YR 4/6	20	C	PL	C	

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

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

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Loamy Mucky Mineral (F1)
___	Hydrogen Sulfide (A4)	___	Loamy Gleyed Matrix (F2)
___	Stratified Layers (A5) **(LRR C)**	___	Depleted Matrix (F3)
___	1 cm Muck (A9) (**LRR D**)	X	Redox Dark Surface (F6)
___	Depleted Below Dark Surface (A11)	___	Depleted Dark Surface (F7)
___	Thick Dark Surface (A12)	___	Redox Depressions (F8)
___	Sandy Mucky Mineral (S1)	___	Vernal Pools (F9)
___	Sandy Gleyed Matrix (S4)		

Indicators for Problematic Hydric Soils[3]:

___	1 cm Muck (A9) (**LRR C**)
___	2 cm Muck (A10) (**LRR B**)
___	Reduced Vertic (F18)
___	Red Parent Material (TF2)
___	Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? **Yes X** **No ___**

Remarks:

Soil has a layer that is at least 4 inches thick, is entirely within the upper 12 incches of the mineral soil, and has a matrix value of 3 and chroma of 2 and more than 5% distinct redox concentrations occurring as pore linings.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)				Secondary Indicators (2 or more required)	
___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) (**Riverine**)
___	High Water Table (A2)	___	Biotic Crust (B12)	___	Sediment Deposits (B2) (**Riverine**)
___	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) (Riverine)
___	Water Marks (B1) (**Nonriverine**)	___	Hydrogen Sulfide Odor (C1)	___	Drainage Patterns (B10)
___	Sediment Deposits (B2) (**Nonriverine**)	___	Oxidized Rhizospheres along Living Roots (C3)	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) (**Nonriverine**)	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	___	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
___	Water-stained Leaves (B9)	X	Other (Explain in Remarks)	___	FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? **Yes X** **No ___**

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

Remarks:

Hydrophytic vegetation and hydric soil are present. The site is in a landscape position that is likely to collect water (concave surface, swale). Site visit occurred during the dry season. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Solano Sampling Date: July 28, 2020
Applicant/Owner: City of Vallejo State: California Sampling Point: SP12
Investigator(s): R. Lee, C. McClain Section/Township/Range: S28/T4N/R3W
Landform (hillslope, terrace, etc.): Swale Local Relief (concave, convex, none): Concave Slope (%): 5
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.17010 Long: -122.20094 Datum: WGS84
Soil Map Unit Name: Dibble-Los Osos clay loams, 9–30% slopes NWI classification R4SBAx - Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil ____ or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:
Point taken to investigate a swale between the westbound I-80 offramp and an unpaved frontage road. Area receives seasonal runoff from uplands and developed land cover via surface and subsurface flow and culverts. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same period.

VEGETATION

Tree Stratum (Plot size: *NA*)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Bromus diandrus*	70	X	NL
2. *Helminthotheca echioides*	15		FAC
3. *Bromus hordeaceus*	5		FAC
4. *Festuca perennis*	5		FAC
5. *Rumex pulcher*	4		FAC
6. *Avena sp.*	2		NL
7. *Brassica nigra*	2		NL
8. *Geranium dissectum*	1		NL
Total Cover:	104		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	29	x 3 =	87
FACU species	1	x 4 =	4
UPL Species	75	x 5 =	375
Column totals	105 (A)		466 (B)

Prevalence Index = B/A = 4.4

Hydrophytic Vegetation Indicators:
___ Dominance Text is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:
Indicators of hydrophytic vegetation are absent.

SOIL

Sampling Point: SP12

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

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

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

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

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Loamy Mucky Mineral (F1)
___	Hydrogen Sulfide (A4)	___	Loamy Gleyed Matrix (F2)
___	Stratified Layers (A5) **(LRR C)**	___	Depleted Matrix (F3)
___	1 cm Muck (A9) (**LRR D**)	X	Redox Dark Surface (F6)
___	Depleted Below Dark Surface (A11)	___	Depleted Dark Surface (F7)
___	Thick Dark Surface (A12)	___	Redox Depressions (F8)
___	Sandy Mucky Mineral (S1)	___	Vernal Pools (F9)
___	Sandy Gleyed Matrix (S4)		

Indicators for Problematic Hydric Soils[3]:

___	1 cm Muck (A9) (**LRR C**)
___	2 cm Muck (A10) (**LRR B**)
___	Reduced Vertic (F18)
___	Red Parent Material (TF2)
___	Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes ___ No X

Remarks:

Indicators of hydric soil are absent.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)				Secondary Indicators (2 or more required)	
___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) (**Riverine**)
___	High Water Table (A2)	___	Biotic Crust (B12)	___	Sediment Deposits (B2) (**Riverine**)
___	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) (Riverine)
___	Water Marks (B1) (**Nonriverine**)	___	Hydrogen Sulfide Odor (C1)	___	Drainage Patterns (B10)
___	Sediment Deposits (B2) (**Nonriverine**)	___	Oxidized Rhizospheres along Living Roots (C3)	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) (**Nonriverine**)	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	___	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
___	Water-stained Leaves (B9)		Other (Explain in Remarks)	___	FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

Indicators of wetland hydrology are absent.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: I-80/Hiddenbrooke Parkway Interchange City/County: Unincorporated/Solano Sampling Date: July 28, 2020
Applicant/Owner: City of Vallejo State: California Sampling Point: SP13
Investigator(s): R. Lee, C. McClain Section/Township/Range: S28/T4N/R3W
Landform (hillslope, terrace, etc.): Swale Local Relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.16984 Long: -122.20012 Datum: WGS84
Soil Map Unit Name: Dibble-Los Osos clay loams, 9–30% slopes NWI classification none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil ____ or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Point taken to investigate a swale between the westbound I-80 offramp and westbound I-80. Area receives seasonal runoff from uplands and developed land cover via surface and subsurface flow and culverts. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same period.

VEGETATION

Tree Stratum (Plot size: *10-foot radius*)	Absolute Cover %	Dominant Species?	Indicator Status
1. *Salix laevigata*	100	X	FACW
2.			
3.			
4.			
Total Cover:	100		
Sapling/Shrub Stratum (Plot size: *NA*)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum (Plot size: *5-foot radius*)			
1. *Juncus balticus*	70	X	FACW
2. *Galium aparine*	5		FACU
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	75		
Woody Vine Stratum (Plot size: *NA*)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL Species	x 5 =	
Column totals	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Text is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No** ____

Remarks:
More than 50% of the dominant plant species across all strata are rated OBL, FACW, or FAC.

SOIL

Sampling Point: SP13

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					SCL	
4-10	10YR 2/2	85	10YR 5/6	15	CS	M	SCL	

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

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

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Loamy Mucky Mineral (F1)
___	Hydrogen Sulfide (A4)	___	Loamy Gleyed Matrix (F2)
___	Stratified Layers (A5) **(LRR C)**	X	Depleted Matrix (F3)
___	1 cm Muck (A9) (**LRR D**)	___	Redox Dark Surface (F6)
___	Depleted Below Dark Surface (A11)	___	Depleted Dark Surface (F7)
___	Thick Dark Surface (A12)	___	Redox Depressions (F8)
___	Sandy Mucky Mineral (S1)	___	Vernal Pools (F9)
___	Sandy Gleyed Matrix (S4)		

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (If present):

Type: None

Depth (inches): NA

Hydric Soil Present? Yes X No ___

Remarks:

Soil contains a layer that has a depleted matrix with 60% or more chroma of 2 and has a minimum thickess of 2 inches entirely within the upper 6 inches of the soil.

HYDROLOGY

Wetland Hydrology Indicators:

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

				Secondary Indicators (2 or more required)	
___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) (**Riverine**)
___	High Water Table (A2)	___	Biotic Crust (B12)	___	Sediment Deposits (B2) (**Riverine**)
___	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) (Riverine)
___	Water Marks (B1) (**Nonriverine**)	___	Hydrogen Sulfide Odor (C1)	___	Drainage Patterns (B10)
___	Sediment Deposits (B2) (**Nonriverine**)	___	Oxidized Rhizospheres along Living Roots (C3)	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) (**Nonriverine**)	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	___	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
___	Water-stained Leaves (B9)	X	Other (Explain in Remarks)	___	FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ___ No X Depth (inches): NA

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Hydrophytic vegetation and hydric soil are present. The site is in a landscape position that is likely to collect water (concave surface, swale). Site visit occurred during the dry season. Hydrology is naturally problematic because precipitation from August 2019 through July 2020 was 11.75 inches, which is approximately 50.4% of the 30-year average for that same time period.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: I-80/Hiddenbrooke Parkway Interchange
Project Number: 3328-21
Stream: Unnamed ephemeral drainage
Investigator(s): R. Lee, C. McClain

Date: July 28, 2020
Town: Unincorporated
Photo begin file#: 20200728_152736

Time: 3:30 PM
State: CA
Photo end file#: 20200728_152743

Y ☐ / N ☒ Do normal circumstances exist on the site?
Drier than normal conditions
Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Ditch south of and parallel to McGary Rd, north of Hiddenbrooke Pkwy

Projection: **Datum:** WGS84
Coordinates: 38.17092, -122.19694

Potential anthropogenic influences on the channel system:

Remnants of a historic irrigation canal. Contributions of seasonal natural runoff from adjacent hillslopes and regular artificial runoff from adjacent road and irrigated developed/landscaped land cover.

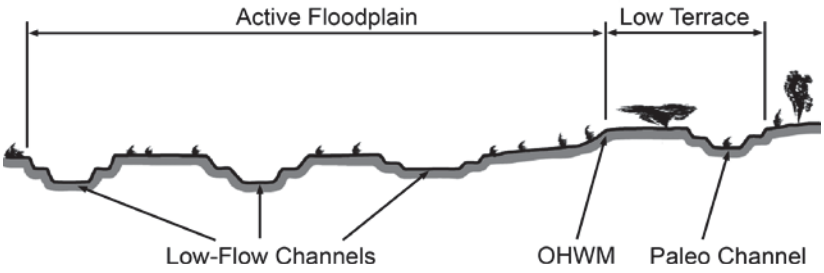
Brief site description:

Mixed riparian woodland along the remnants of a historic irrigation canal located at the base of a hillslope. Previously maintained free of woody vegetation. Mapped in National Wetland Inventory as Riverine (R4SBAx).

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 3/1/70, 1993–2018
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☒ Other studies National Wetland Inventory (USFWS 2020)
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

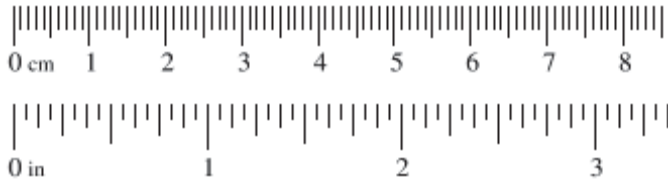


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

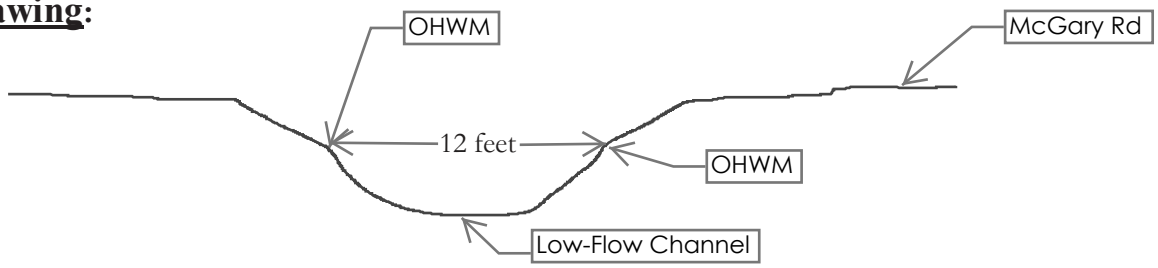
Wentworth Size Classes

Millimeters (mm)		Inches (in)		Wentworth size class	
	10.08		256	Boulder	
	2.56		64	Cobble	Gravel
	0.157		4	Pebble	
	0.079		2.00	Granule	
	0.039		1.00	Very coarse sand	
	0.020		0.50	Coarse sand	
1/2	0.0098		0.25	Medium sand	Sand
1/4	0.005		0.125	Fine sand	
1/8	0.0025		0.0625	Very fine sand	
1/16	0.0012		0.031	Coarse silt	
1/32	0.00061		0.0156	Medium silt	Silt
1/64	0.00031		0.0078	Fine silt	
1/128	0.00015		0.0039	Very fine silt	
				Clay	Mud



Project ID: 3328-21 **Cross section ID:** OHWM-1 **Date:** 7/28/20 **Time:** 3:30 PM

Cross section drawing:



OHWM

GPS point: 38.170920°, -122.196970° and 38.170896°, -122.196936°

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☒ Break in bank slope
- ☒ Other: Exposed tree roots
- ☐ Other: _____

Comments:

Bed of an ephemeral drainage. No water present; soil bed, no rock/fill.

Floodplain unit:

☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: 38.170902°, -122.196950°

Characteristics of the floodplain unit:

Average sediment texture: clay loam

Total veg cover: 100 % Tree: 100 % Shrub: 0 % Herb: 1 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☒ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No trees rooted within the low-flow channel; however, a canopy of coast live oak (*Quercus agrifolia*) and arroyo willow (*Salix lasiolepis*) provide cover. A small amount of *Juncus* sp. and some leaf litter is present.

Project ID: 3328-21 **Cross section ID:** OHWM-1 **Date:** 7/28/20 **Time:** 3:30 PM

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Clay loam

Total veg cover: 100 % Tree: 100 % Shrub: 15 % Herb: 1 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☒ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

The low terrace is dominated by coast live oak and arroyo willow with patches of poison oak (*Toxicodendron diversilobum*) and scattered *Juncus* sp. Beyond the riparian canopy is annual grassland to the south and McGary Road to the north.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: NA

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Appendix D. Photos of the Study Area

Photo 1. Sample point SP1 taken to investigate a low-lying area between the westbound I-80 offramp and a frontage road. SP1 was determined to be a three parameter seasonal wetland (SW5). Photo direction = southeast.

Photo 2. Sample point SP2 taken to investigate a low-lying area between the westbound I-80 offramp and a frontage road. SP2 was determined to be a three parameter seasonal wetland (SW5). Photo direction = northeast.

Photo 3. Sample point SP3 taken to investigate a low-lying area between the westbound I-80 offramp and a frontage road. SP3 was determined to be a three parameter perennial emergent wetland (PEW12). Photo direction = northeast.

Photo 4. Sample point SP4 taken to investigate a low-lying area along the south side of McGary Road south of Hiddenbrooke Parkway. SP4 was determined to be a three parameter seasonal wetland (SW1). Photo direction = northeast.

Photo 5. Sample point SP5 taken to investigate a low-lying area along the south side of McGary Road south of Hiddenbrooke Parkway. SP5 was determined to be a three parameter seasonal wetland (SW2). Photo direction = east.

Photo 6. Sample point SP6 taken to investigate hillslope next to a ditch along the south side of McGary Road south of Hiddenbrooke Parkway. This location was determined to not be a three parameter wetland. Photo direction = southeast.

Photo 7. Sample point SP7 taken to investigate hillslope between the westbound 1-80 offramp and frontage road. This location was determined to not be a three parameter wetland because it lacks indicators of hydric soil and wetland hydrology. Photo direction = southwest.

Photo 8. Sample point SP8 taken to investigate a low-lying area between the westbound I-80 offramp and a frontage road. SP8 was determined to be a three parameter perennial emergent wetland (PEW12). Photo direction = northeast.

Photo 9. Sample point SP9 taken to investigate a low-lying area between westbound I-80 and a frontage road. SP9 was determined to be a three parameter seasonal wetland (SW8). Photo direction = northeast.

Photo 10. Sample point SP10 taken to investigate a low-lying area between westbound I-80 and a frontage road. SP10 was determined to be a three parameter forested wetland (FW4). Photo direction = northeast.

Photo 11. Sample point SP11 taken to investigate a low-lying area between the westbound I-80 offramp and a frontage road. SP11 was determined to be a three parameter seasonal wetland (SW8). Photo direction = southwest.

Photo 12. Sample point SP12 taken to investigate a low-lying area between the westbound I-80 offramp and a frontage road. SP12 was determined to not be a three parameter wetland. Photo direction = southeast.

Photo 13. Sample point SP13 taken to investigate a low-lying area between westbound I-80 and offramp. SP13 was determined to be a three parameter wetland. Photo direction = northeast.

Photo 14. Ordinary high water mark cross-section OHWM-1 taken to investigate an ephemeral drainage (ED2) along the south side of McGary Road east of Hiddenbrooke Parkway. Indicator = break in bank slope (red dashed line). Photo direction = southwest.

Photo 15. Ordinary high water mark cross-section OHWM-1 taken to investigate an ephemeral drainage (ED2) along the south side of McGary Road east of Hiddenbrooke Parkway. Indicator = exposed tree roots. Photo direction = northwest.

Photo 16. Riparian scrub (foreground) and mixed riparian woodland (background) along an ephemeral drainage (ED2) south of McGary Road east of Hiddenbrooke Parkway. Photo direction = northwest.

Photo 17. Concrete ditch south of McGary Road east of Hiddenbrooke Parkway. Photo direction = northwest.

Photo 18. Earthen ditch south of McGary Road east of Hiddenbrooke Parkway. Photo direction = northwest.

Appendix E. Aquatic Resources Table

Waters Name	State	Cowardin Code	HGM Code	Meas Type	Amount	Units	Waters Type	Latitude	Longitude	Local_Waterway
FW1	CALIFORNIA	PFO	DEPRESS	Area	0.0445	ACRE	NRPWW	38.168387	-122.199962	American Canyon Creek
FW2	CALIFORNIA	PFO	DEPRESS	Area	0.0989	ACRE	NRPWW	38.169835	-122.200142	Green Valley Creek
FW3	CALIFORNIA	PFO	DEPRESS	Area	0.0429	ACRE	NRPWW	38.171571	-122.197712	Green Valley Creek
FW4	CALIFORNIA	PFO	DEPRESS	Area	0.0091	ACRE	NRPWW	38.171955	-122.197283	Green Valley Creek
PEW1	CALIFORNIA	PEM	DEPRESS	Area	0.0119	ACRE	NRPWW	38.167779	-122.201519	American Canyon Creek
PEW2	CALIFORNIA	PEM	DEPRESS	Area	0.0068	ACRE	NRPWW	38.167941	-122.201265	American Canyon Creek
PEW3	CALIFORNIA	PEM	DEPRESS	Area	0.0038	ACRE	NRPWW	38.168169	-122.200717	American Canyon Creek
PEW4	CALIFORNIA	PEM	DEPRESS	Area	0.0041	ACRE	NRPWW	38.168295	-122.200252	American Canyon Creek
PEW5	CALIFORNIA	PEM	DEPRESS	Area	0.0048	ACRE	NRPWW	38.168347	-122.200102	American Canyon Creek
PEW6	CALIFORNIA	PEM	DEPRESS	Area	0.0025	ACRE	NRPWW	38.168813	-122.201525	American Canyon Creek
PEW7	CALIFORNIA	PEM	DEPRESS	Area	0.0058	ACRE	NRPWW	38.169462	-122.200554	American Canyon Creek
PEW8	CALIFORNIA	PEM	DEPRESS	Area	0.0072	ACRE	NRPWW	38.169948	-122.199957	Green Valley Creek
PEW9	CALIFORNIA	PEM	DEPRESS	Area	0.0018	ACRE	NRPWW	38.170014	-122.199851	Green Valley Creek
PEW10	CALIFORNIA	PEM	DEPRESS	Area	0.0031	ACRE	NRPWW	38.170068	-122.199767	Green Valley Creek
PEW11	CALIFORNIA	PEM	DEPRESS	Area	0.0061	ACRE	NRPWW	38.170412	-122.198023	Green Valley Creek
PEW12	CALIFORNIA	PEM	DEPRESS	Area	0.0438	ACRE	NRPWW	38.171057	-122.198713	Green Valley Creek
PEW13	CALIFORNIA	PEM	DEPRESS	Area	0.0147	ACRE	NRPWW	38.171225	-122.198410	Green Valley Creek
PEW14	CALIFORNIA	PEM	DEPRESS	Area	0.0156	ACRE	NRPWW	38.171401	-122.198121	Green Valley Creek
PEW15	CALIFORNIA	PEM	DEPRESS	Area	0.0010	ACRE	NRPWW	38.171594	-122.197815	Green Valley Creek
SW1	CALIFORNIA	PEM	DEPRESS	Area	0.0118	ACRE	NRPWW	38.167718	-122.201603	American Canyon Creek
SW2	CALIFORNIA	PEM	DEPRESS	Area	0.0573	ACRE	NRPWW	38.168157	-122.200686	American Canyon Creek
SW3	CALIFORNIA	PEM	DEPRESS	Area	0.0058	ACRE	NRPWW	38.169397	-122.200675	American Canyon Creek
SW4	CALIFORNIA	PEM	DEPRESS	Area	0.0077	ACRE	NRPWW	38.169974	-122.199920	Green Valley Creek
SW5	CALIFORNIA	PEM	DEPRESS	Area	0.1892	ACRE	NRPWW	38.170434	-122.199997	Green Valley Creek
SW6	CALIFORNIA	PEM	DEPRESS	Area	0.0030	ACRE	NRPWW	38.169220	-122.198654	Green Valley Creek

Waters Name	State	Cowardin Code	HGM Code	Meas Type	Amount	Units	Waters Type	Latitude	Longitude	Local_Waterway
SW7	CALIFORNIA	PEM	DEPRESS	Area	0.0089	ACRE	NRPWW	38.170373	-122.198099	Green Valley Creek
SW8	CALIFORNIA	PEM	DEPRESS	Area	0.1311	ACRE	NRPWW	38.171455	-122.198061	Green Valley Creek
SW9	CALIFORNIA	PEM	DEPRESS	Area	0.0089	ACRE	NRPWW	38.171247	-122.196439	Green Valley Creek
C1	CALIFORNIA	R4	RIVERINE	Area	0.0017	ACRE	NRPW	38.167805	-122.201595	American Canyon Creek
C2	CALIFORNIA	R4	RIVERINE	Area	0.0020	ACRE	NRPW	38.167865	-122.201390	American Canyon Creek
C3	CALIFORNIA	R4	RIVERINE	Area	0.0035	ACRE	NRPW	38.169322	-122.200990	American Canyon Creek
C4	CALIFORNIA	R4	RIVERINE	Area	0.0054	ACRE	NRPW	38.169615	-122.200370	American Canyon Creek/Green Valley Creek
C5	CALIFORNIA	R4	RIVERINE	Area	0.0018	ACRE	NRPW	38.170212	-122.201068	Green Valley Creek
C6	CALIFORNIA	R4	RIVERINE	Area	0.0056	ACRE	NRPW	38.169997	-122.199553	Green Valley Creek
C7	CALIFORNIA	R4	RIVERINE	Area	0.0051	ACRE	NRPW	38.170362	-122.197825	Green Valley Creek
C8	CALIFORNIA	R4	RIVERINE	Area	0.0017	ACRE	NRPW	38.170501	-122.197392	Green Valley Creek
C9	CALIFORNIA	R4	RIVERINE	Area			NRPW	38.168382	-122.199987	Green Valley Creek
C10	CALIFORNIA	R4	RIVERINE	Area			NRPW	38.171783	-122.197473	Green Valley Creek
ED1	CALIFORNIA	R4SB	RIVERINE	Area	0.1382	ACRE	NRPW	38.169919	-122.197919	Green Valley Creek
ED2	CALIFORNIA	R4SB	RIVERINE	Area	0.1104	ACRE	NRPW	38.170917	-122.196906	Green Valley Creek

*Please note: all features listed in this table meet physical definitions of wetlands and waters, but are not considered waters of the U.S. under the Navigable Waters Protection Rule.