# AQUATIC RESOURCE DELINEATION REPORT

## KNIGHTSEN WETLAND RESTORATION AND FLOOD PROTECTION PROJECT
## CONTRA COSTA COUNTY, CALIFORNIA

***Prepared for***

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# Section 1. INTRODUCTION

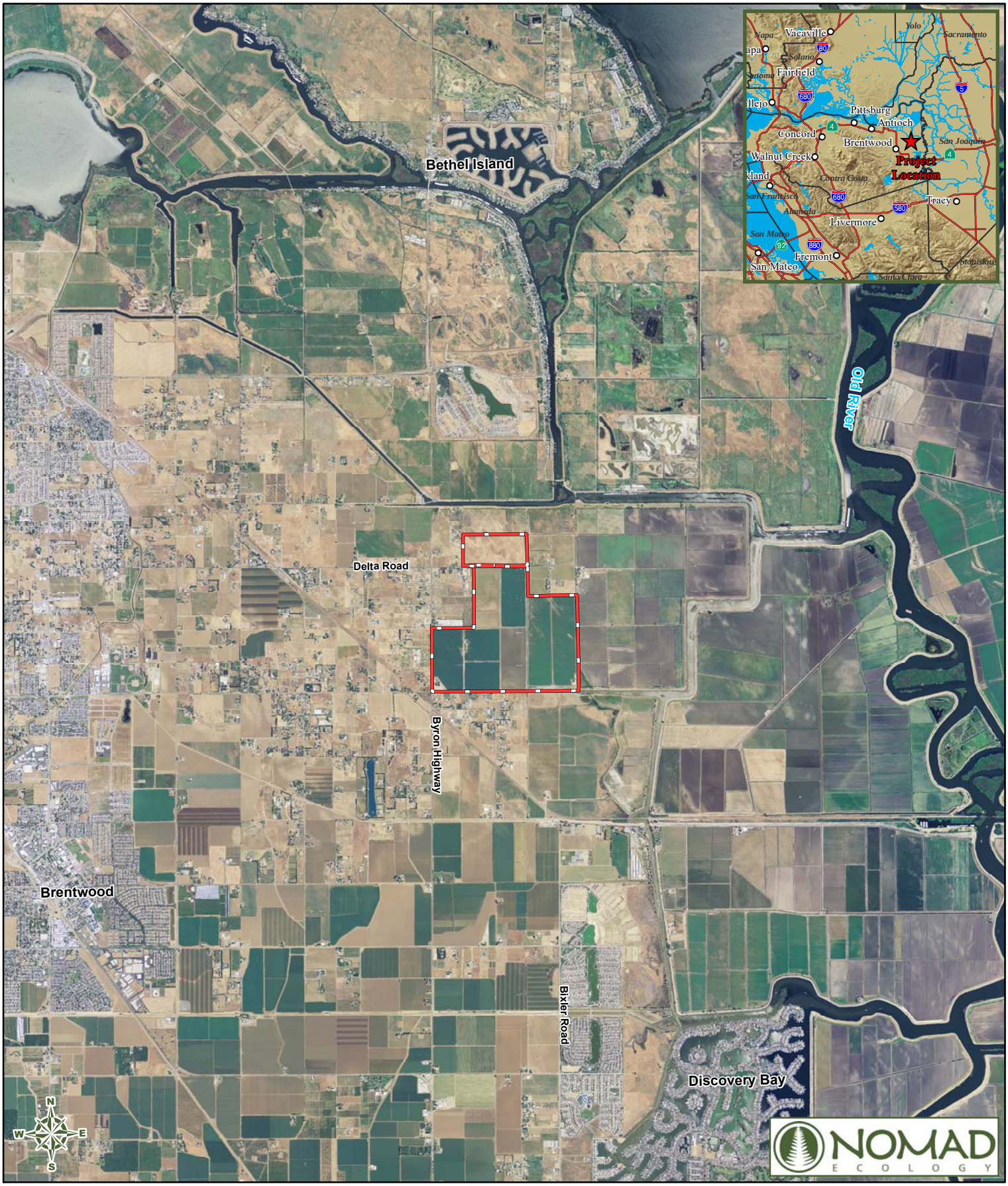
Nomad Ecology, LLC (Nomad) conducted an aquatic resources delineation for the Knightsen Wetland Restoration and Flood Protection Project (project) on the 639-acre Nunn Property for the East Contra Costa County Habitat Conservancy (Conservancy). The project is located east of Knightsen, in unincorporated Contra Costa County, California (Figures 1 and 2). The restoration project will help the Conservancy meet conservation goals of the East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan (HCP/NCCP) (Jones & Stokes 2006).

The study area for this report comprises 639 acres and includes two parcels bisected by Delta Road both owned by the County. The 78-acre "northern parcel" (APN 020-171-001) is north of Delta Road and is used as pasture. The 561-acre "southern parcel" (APNs 020-172-004) is south of Delta Road and is currently used to grow row crops such as wheat and hay (Figure 3). The location of the project footprint within the study area has not been determined as the project is still in the conceptual design phase. The GPS coordinates of the center of the property is 37.967224, -121.631303.

This report presents the results of the field evaluations conducted on November 30, 2016, May 9, 16, and 19, 2017, and March 26, 2018, and provides a preliminary determination of jurisdictional wetlands and waters of the United States, as defined by the Clean Water Act.

## 1.1. PROJECT DESCRIPTION

The Knightsen Wetland Restoration and Flood Protection Project is a multi-objective effort on a 639-acre property to attenuate flooding in the community of Knightsen, restore a mosaic of wetland and upland habitats for special status species, provide water quality benefits, and provide recreation and Delta access. This project will contribute to the conservation goals of the HCP/NCCP.

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Aquatic Resource Delineation Report

Legend

Aquatic Delineation Study Area

**Figure 1**

Location of the Study Area

Knightsen Wetland Restoration and Flood Protection Project

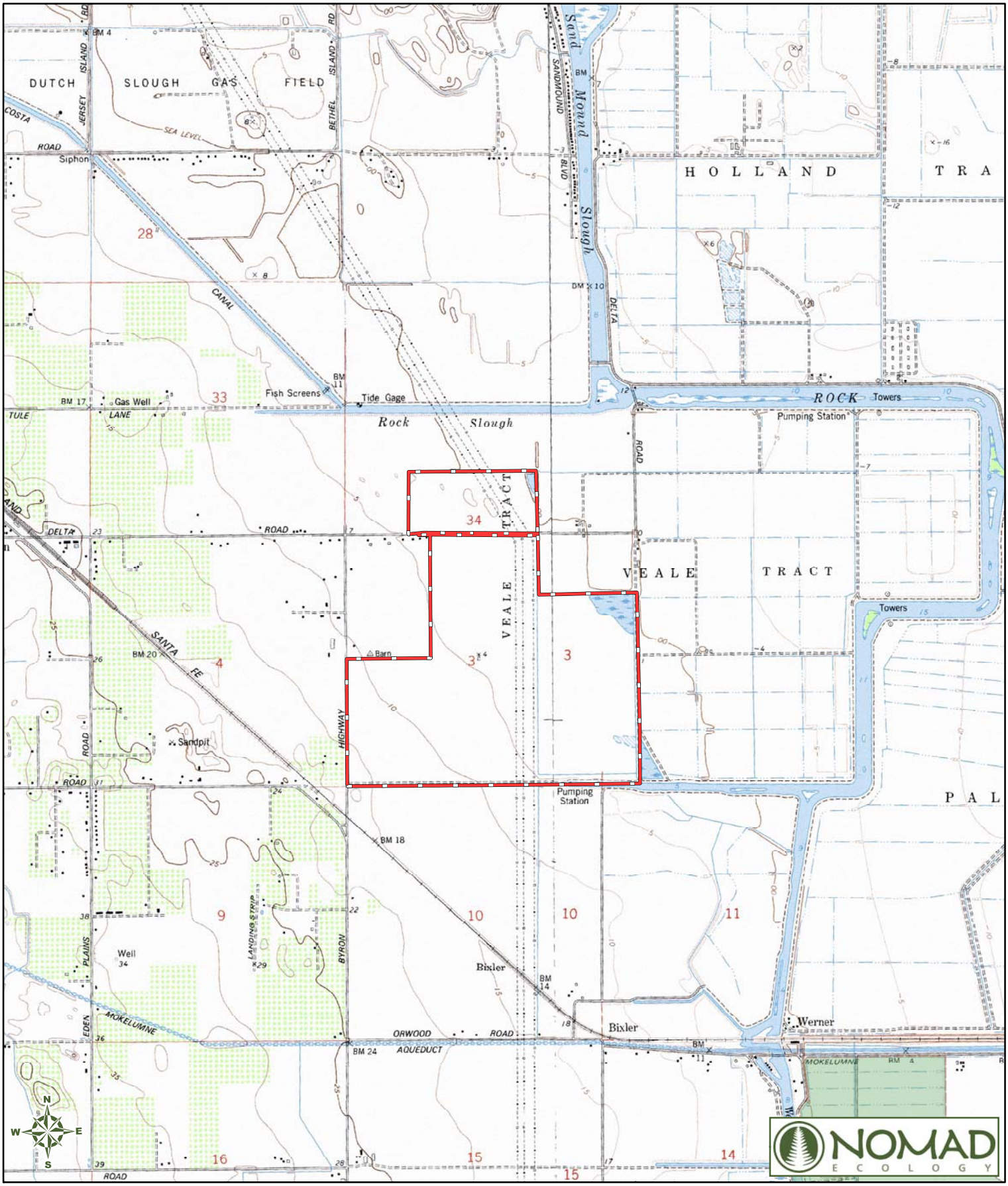
East Contra Costa County Habitat Conservancy

1:63,360

0 0.5 1 Miles

Sources: California Spatial Information Libray, ESRI

*Contra Costa County, California*

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Aquatic Resource Delineation Report

Legend

Aquatic Delineation Study Area

**Figure 2**

Location of the Study Area on USGS Quadrangle

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

1:31,680

0 0.25 0.5 Miles

Sources: USGS, California Spatial Information Libray, Bay Area Open Space Council

*Contra Costa County, California*

Legend
Study Area Boundary

**Figure 3**
Study Area on Aerial Photo
Knightsen Wetland Restoration and Flood Protection Project
East Contra Costa County Habitat Conservancy

1:12,000
0 500 1,000
Feet

Sources: California Spatial Information Libray, ESRI

# Section 2. STUDY METHODS

## 2.1. DEFINITIONS

The following terms were used to define and evaluate the project's aquatic resources.

**Study Area** The study area for this report comprises 639 acres and includes two parcels bisected by Delta Road both owned by the County. The 78-acre "northern parcel" (APN 020-171-001) is north of Delta Road. The 561-acre "southern parcel" (APNs 020-172-004) is south of Delta Road and is bound to the west by Byron Highway, and to the south by Eagle Lane and an unnamed slough (Figures 1, 2, and 3).

**Project Area** The location of the project footprint within the study area has not been determined as the project is still in the conceptual design phase. The exact project area will be based on construction plans and will be smaller than the study area.

**Waters of the U.S.** "Waters of the United States", which includes "wetlands" and "other waters" are defined by 33 CFR §328.3 as follows:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
- All interstate waters including interstate wetlands.
- All "other waters" such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
  - which are or could be used by interstate or foreign travelers for recreational or other purposes; or
  - from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
  - which are used or could be used for industrial purpose by industries in interstate commerce.
- All impoundments of waters otherwise defined as waters of the United States under the definition.
- Tributaries of waters identified above.
- The territorial seas.
- Wetlands adjacent to waters (other than wetlands) identified above.

**Wetlands** Corps jurisdictional "wetlands", as defined by 33 CFR §328.3(b), are those areas which are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

**Ordinary High Water** The Corps' jurisdiction over "other waters" extends to the limit of the ordinary high water mark or the upward extent of any adjacent wetland. The ordinary high water mark, as defined by 33 CFR §328.3(e), is the visible line on the shore/bank 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 soil;
- destruction of terrestrial vegetation;
- the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.

## 2.2. DATA RESOURCES

Background information for potential jurisdictional wetlands were compiled through a review of the following resources:

During this study various data sources were examined, including the following:

- Brentwood and Woodward Island 7.5-minute USGS topographic quadrangle
- Soil Survey of Contra Costa County (USDA 1977)
- Field Office Official List of Hydric Soil Map Units for Contra Costa County California (USDA 2002)
- National Wetland Inventory for the Brentwood and Woodward Island quadrangles (USFWS 2015)
- Arid West 2016 Regional Wetland Plant List (Lichvar et al. 2016)
- Historical aerial images (1938, 1991) served by Google Earth

Botanical taxonomy and nomenclature conforms to *The Jepson Manual, 2nd Edition* (Baldwin et al. 2012). Common names of plant species are derived from The Calflora Database (Calflora 2017). Land cover types and vegetation described herein conform to the HCP/NCCP (Jones & Stokes 2006), *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and/or *A Manual of California Vegetation* (Sawyer et al. 2009); wetland and deepwater habitat classifications conform to *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979), where appropriate.

## 2.3. Personnel and Field Investigation

Wetland delineation field work was conducted by the following personnel on the following dates.

**Table 1. Wetland Delineation Site Visits**

| Personnel | Dates |
|---|---|
| Erin McDermott, Wetland Specialist<br>Heath Bartosh, Senior Botanist | April 13, 2016 |
| Erin McDermott, Wetland Specialist<br>Adam Chasey, Botanist | November 30, 2016 |
| Erin McDermott, Wetland Specialist<br>Stephanie Bishop, Wetland Ecologist | May 9, 16, and 19, 2017 |
| Erin McDermott, Wetland Specialist | March 26, 2018 |

Wetland delineation field studies were conducted by Ms. McDermott and Nomad senior botanist Heath Bartosh on April 13, 2016, by Ms. McDermott and Nomad botanist Adam Chasey on November 30, 2016, and by Ms. McDermott and Environmental Science Associates wetland ecologist Stephanie Bishop on May 9, 16, and 19, 2017. Ms. McDermott conducted an additional site visit on March 26, 2018 to record notes on wetland vegetation and hydrology since the winter of 2016/2017 was unusually wet and resulted in flooding across much of the site in areas that do not normally exhibit wetland hydrology.

The field studies were conducted in accordance with the U.S. Army Corps of Engineers' (Corps) *Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (U.S. Army Corps of Engineers 2010), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008), and the *Clean Water Rule: Definition of 'Waters of the United States* (USACE and EPA 2015).

Based on this protocol, topography and field characteristics including evidence of inundated or saturated soil conditions resulting from permanent or periodic inundation by ground water or surface water, the prevalence of hydrophytic vegetation (e.g. plant species typically adapted for life in saturated soil conditions), and the presence of hydric soils, were evaluated to determine the limits of potentially jurisdictional waters of the U.S. within the study area. Data was collected at a total of 54 data point locations, using the Wetland Determination Data Form – Arid West Region (Appendix D).

The boundaries of waters were determined using the OHWM indicators including a topographic break in slope, change in vegetation characteristics, and change in sediment characteristics. Other indicators used to determine the limits of OHWM include scour lines, shelving, and litter deposits. The width of the OHWM was measured at multiple locations in the study area.

## 2.4. Limitations

This document is a wetland delineation and preliminary jurisdictional determination based on the Corps' guidelines. Therefore, wetlands and waters that have been mapped within the study area may be considered potentially Corps jurisdictional. Wetlands, waters, and/or riparian areas under the purview of other regulatory agencies, such as the California Regional Water Quality Control Board and the

California Department of Fish and Wildlife, may have broader jurisdictional scope and/or overlapping jurisdictions with that of the Corps. This document also assesses the potential extent of state jurisdictional authority of wetlands, waters, and/or riparian areas. However, definitive judgment of potentially jurisdictional wetlands and waters of the state should be confirmed by the appropriate state agency(s).

Based on the timing of the surveys, all plant species growing within the study area may not have been observed due to varying flowering phenologies and life forms, such as bulbs, biennials, and annuals. Annuals may be absent in some years due to annual variations in temperature and rainfall, which influence germination and plant phenology. Colonization of new populations within an area may also occur from year to year.

Since vegetation types are based on samples from selected seasons vegetation descriptions and their associate species may be subject to change if additional data are collected, as species dominance, with regard to annuals, may change depending on the sample season or year. The phrase "in part" is used to signify that vegetation descriptions may include additional annual species present if surveyed during other seasons or years. Other potentially dominant species within vegetation communities on site may be present during other times of the year.

The proposed activities and work areas evaluated in this report are based on the study area provided by the Conservancy. Significant changes in the project design may warrant further analysis.

# Section 3. ENVIRONMENTAL SETTING

## 3.1. SETTING

The study area is located east of Knightsen in unincorporated Contra Costa County, east of Byron Highway, and both north and south of Delta Road (Figure 1). The study area is geographically situated eighteen miles east-northeast of Mount Diablo, and less than three miles south of the Sacramento-San Joaquin River Delta.

As recorded in the public land survey system, the study area lies within Section 3 of Township 1 North and Range 3 East and Section 34 of Township 2 North and 3 East of the Mount Diablo Baseline and Meridian. It is depicted on the Brentwood and Woodward Island 7.5-minute USGS topographic quadrangles (Figure 2). The study area lies within the San Joaquin Valley Subregion of the California Floristic Province (Baldwin et al. 2012), within the east County Delta Drainages (CCCCDD 2003), and within the East Contra Costa County HCP/NCCP Inventory Area (Jones & Stokes 2006).

### 3.1.1 REGIONAL SETTING

As described in the *Ecological Subregions of California* (USDA 1997), the study area is located within the Delta subsection of the Great Valley Section. The *Ecological Subregions of California* form the basis for describing regional variation in California alliance descriptions in *A Manual of California Vegetation* (Sawyer et al. 2009).

**Delta**

The Delta subsection is a low area, near sea-level, at the confluence of the Sacramento and San Joaquin Rivers. It is comprised of terraces and alluvial fans along the western edge of the San Joaquin Valley (USDA 1997). The climate is hot and sub-humid (USDA 1997). This subsection is a practically level plain, except for levees of the Sacramento and San Joaquin Rivers. Elevations range from a few feet on levees of the Sacramento and San Joaquin Rivers to sea-level, or lower, on the rest of the plain. Fluvial erosion and deposition are the main geomorphic processes on and adjacent to levees in this subsection. This subsection contains Quaternary sediments covered by organic deposit and most of the soils are poorly to very-poorly drained (USDA 1997).

For this subsection the mean annual precipitation ranges from 14 to 16 inches and practically all of the precipitation is rainfall. The mean annual temperature is generally between 56 and 60°F and the mean freeze-free period is from 250 to 275 days. The Sacramento and San Joaquin Rivers follow meanders across the subsection, which are somewhat modified artificially. There are many overflow channels, and brackish tidal water enters the area when river flow is low during the summer and autumn (USDA 1997).

### 3.1.2 LOCAL SETTING

The parcel north of Delta Road is undeveloped and is used intermittently for grazing livestock. It is characterized predominantly by annual grassland with areas of alkali grassland, alkali wetland, and seasonal wetland. Remnant Oakley sand stabilized interior dunes are also present. The parcel south of Delta Road has been highly modified by agricultural activities and construction of drainage ditches and is characterized primarily by row crops and wheat fields (Figure 3). Land cover types present on the southern parcel include alkali wetland, alkali grassland, annual grassland, cropland, permanent wetland, riparian, slough/channel, and urban land cover types. This parcel includes an existing residence and outbuildings. High voltage electric transmission lines cross both parcels.

Topography within the study area is characterized as delta uplands 16-17 feet (4.9-5.2 meters) above mean sea level (MSL) in the southwest corner of the study area to tidal wetland elevations at 0-5 feet (0-1.52 meters) above MSL on the east of the site. Annual average rainfall is approximately 15 inches (PRISM 2007).

The underlying geology of the study area consists of Quaternary sediments covered by surficial deposits (Graymer et al. 2000). A total of six soil mapping units are located within the study area: Delhi sand, 2 to 9 percent slopes; Marcuse sand; Marcuse clay; Piper loamy sand; Piper fine sandy loam; and Sacramento clay, alkali (USDA 2017). Marcuse series soils are moderately to highly alkaline, Delhi series soils are slightly acidic to slightly alkaline, Sacramento series soils are mildly to moderately alkaline, and Piper series soils are moderately alkaline (USDA 2017). Soils are discussed in detail in Section 3.3.

Immediately south and west of the site is low density residential and agricultural land, while immediately to the north and west are open agricultural lands with sparse residences. The southeast portion of the study area is bounded on the south by an unnamed tidal slough (Figure 4). Rock slough is present to the north of the study area. Hydrologic Features are further discussed in detail in Section 3.1.3. An aerial photo of the study area is shown in Figure 4. Select photos of the site are included in Appendix B.

### 3.1.3 Hydrologic Features

Hydrology on site is influenced by many factors such as precipitation, run-off, geologic stratigraphy, topography, soil permeability, and plant cover. The study area is fairly level and ranges from 0 to 17 feet in elevation which limits run-off. Alkali wetlands and a few seasonal wetlands are present scattered throughout the northern parcel which are presumably fed by rain water. No flow was observed, these wetlands pond water in the winter at a depth of several inches and dry out in early spring.

Alkali wetlands were also observed on the southern parcel, primarily in depressional areas of agricultural fields that do not drain well and water ponds. The southern parcel contains drainage ditches that run in north-south and east-west direction across the property. These ditches drain irrigation water in the spring and summer and rain water and groundwater in the winter months. In addition, during large precipitation events, stormwater from Knightsen is diverted into roadside drainage ditches and culverts, then discharged into the agricultural drainage ditches on site. Water on the southern parcel flows south and east to the southeast corner of the study area where it is pumped into the unnamed slough to the south. The unnamed slough is a tributary to Werner Dredger Cut which flows into Rock Slough. Rock Slough empties into Old River downstream to the north which drains into the San Joaquin River Delta. This unnamed slough is tidally influenced.

## 3.2. Land Cover Types and Vegetation

This subsection describes vegetation communities following the land cover types described in the HCP/NCCP (Jones & Stokes 2006). HCP/NCCP land cover types observed within the study area include annual grassland, alkali grassland, ruderal, alkali wetland, seasonal wetland, permanent wetland, slough/channel, riparian, cropland, and urban (Table 2). An additional land cover type was observed on site, Oakley Sand Stabilized Interior Dunes, which was not recognized at the time of HCP/NCCP development.

The location of land cover types in the study area is shown in Figure 4. The wetland indicator status of plant species found on site are listed in Appendix C.

**Table 2. HCP Land Cover Types in the Study Area**

| LAND COVER | ACREAGE |
|---|---|
| **GRASSLANDS** | |
| Annual Grassland | 54.03 |
| Alkali Grassland | 6.89 |
| Ruderal | 9.69 |
| **WETLANDS** | |
| Alkali Wetland | 9.05<br>(of which 8.15 are in crop fields) |
| Permanent Wetland | 0.20 |
| Seasonal Wetland | 0.04 |
| **AQUATIC** | |
| Slough/Channel | 10,220 linear feet (3.10 acres) |
| **RIPARIAN** | |
| Riparian | 0.85 |
| **OTHER** | |
| Oakley Sand Stabilized Interior Dunes[3] | 20.37 |
| Cropland | 533.66 |
| Urban | 1.44 |
| **Total:** | **639** |

[1]Alkali and seasonal wetland acreages are preliminary and will be finalized in the wetland delineation report.

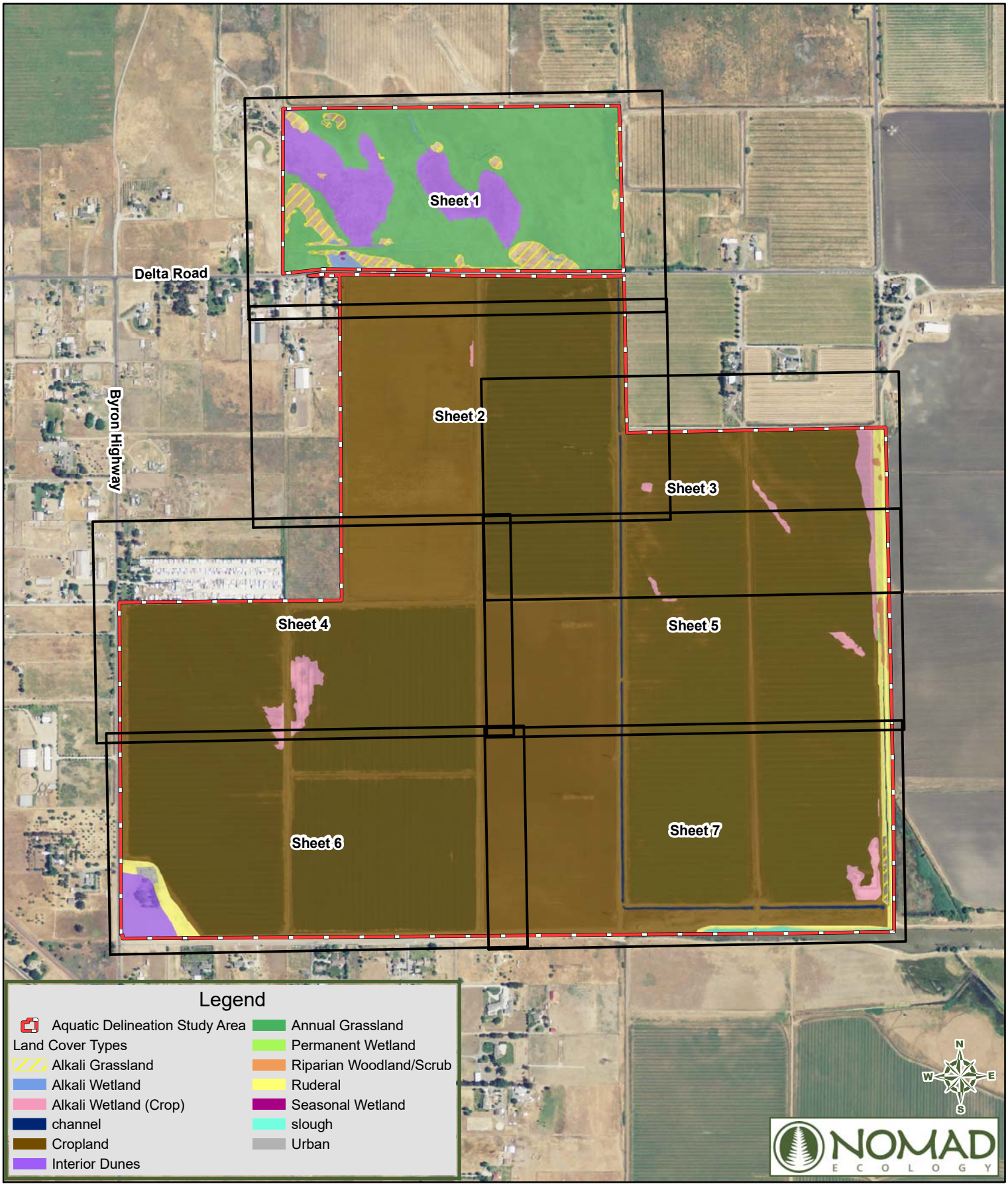
[2] As specified in the HCP/NCCP, slough/channel is mapped as linear features.

[3] Not included in the HCP/NCCP as a land cover type.

Land cover types are further described using three commonly used vegetation classification systems including *California Vegetation* (Holland and Keil 1995), *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986), and/or *Manual of California Vegetation, Second edition* (Sawyer et al. 2009)[1]. In addition, habitat types from the *CNPS Inventory of Rare and Endangered Plants of California* (CNPS 2001a) are included to reference habitat types listed in the CNPS Inventory to HCP/NCCP land cover types found on site.

Table 3 relates HCP/NCCP land cover types to the commonly used vegetation classification systems described above. The codes used in Table 3 reflect those associated with Holland (1986) types and the *Vegetation Classification and Mapping Program List of California Vegetation Alliances* (CDFW 2018).

[1] This is due to the fact that the HCP land cover types, in many cases, do not refer to standard vegetation community treatments and is therefore an effort to relate HCP land cover types to these commonly used classification systems for regional context and regulatory continuity.






1:12,000
0 500 1,000
Feet

**Figure 4**
Land Cover in the Study Area
Knightsen Wetland Restoration and Flood Protection Project
East Contra Costa County Habitat Conservancy

**Overview**

Sources: USGS, California Spatial Information Libray, Bay Area Open Space Council

*Contra Costa County, California*

**Legend**

Aquatic Delineation Study Area

Land Cover Types

- Alkali Grassland
- Alkali Wetland
- Alkali Wetland (Crop)
- Channel
- Cropland
- Interior Dunes
- Annual Grassland
- Permanent Wetland
- Riparian Woodland/Scrub
- Ruderal
- Seasonal Wetland
- Slough
- Urban

**Figure 4**

Land Cover Types in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

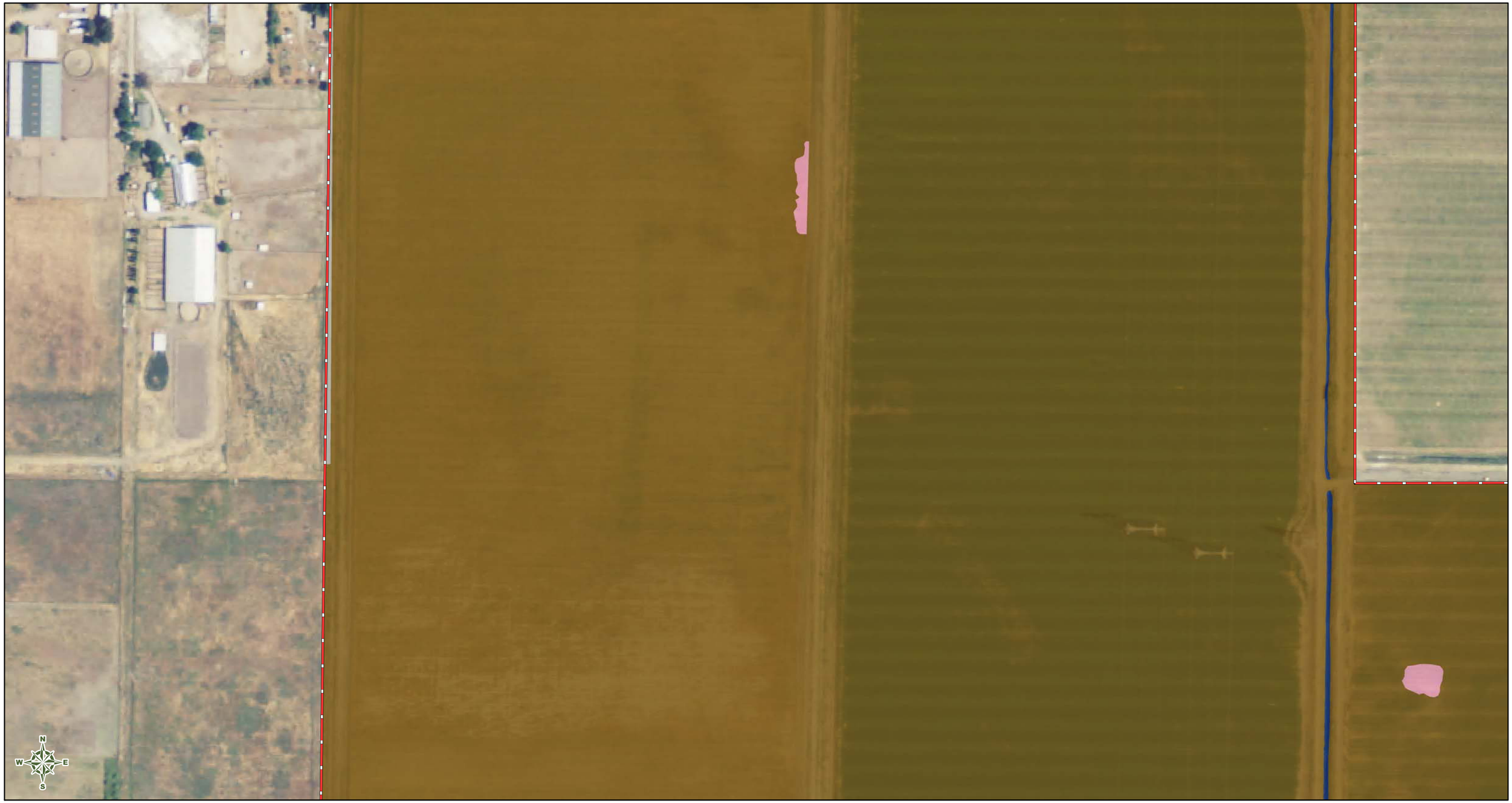
NOMAD ECOLOGY

1:2,400

0 100 200 Feet



*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*






**Legend**

Aquatic Delineation Study Area

Land Cover Types

- Alkali Grassland
- Alkali Wetland
- Alkali Wetland (Crop)
- Channel
- Cropland
- Interior Dunes
- Annual Grassland
- Permanent Wetland
- Riparian Woodland/Scrub
- Ruderal
- Seasonal Wetland
- Slough
- Urban

NOMAD ECOLOGY

1:2,400

0 100 200 Feet

**Figure 4**

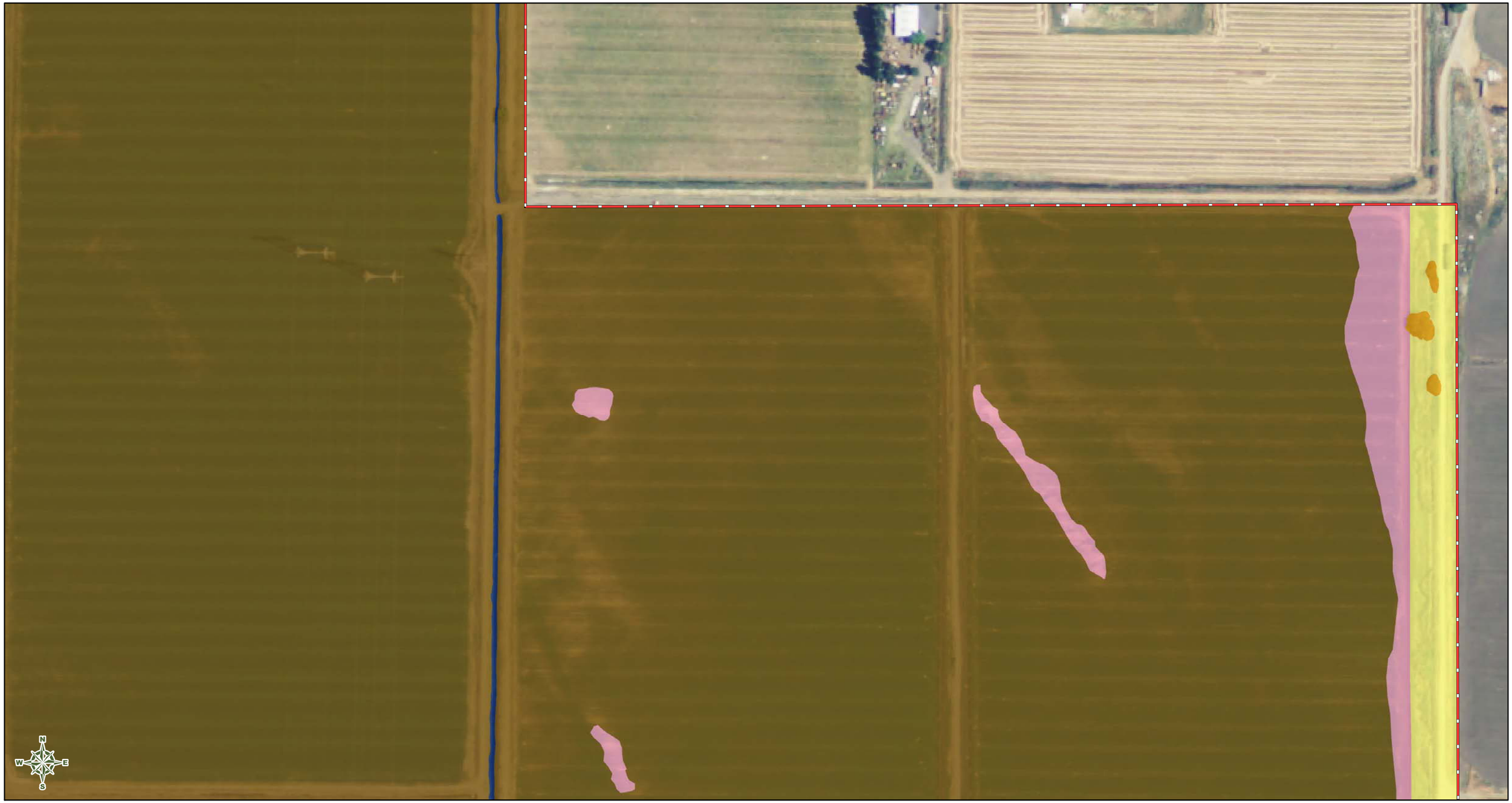
Land Cover Types in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

**Sheet 2 of 7**

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*






**Legend**

| | | |
|---|---|---|
| Aquatic Delineation Study Area | Channel | Ruderal |
| | Cropland | Seasonal Wetland |
| Land Cover Types | Interior Dunes | Slough |
| Alkali Grassland | Annual Grassland | Urban |
| Alkali Wetland | Permanent Wetland | |
| Alkali Wetland (Crop) | Riparian Woodland/Scrub | |

**Figure 4**

Land Cover Types in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

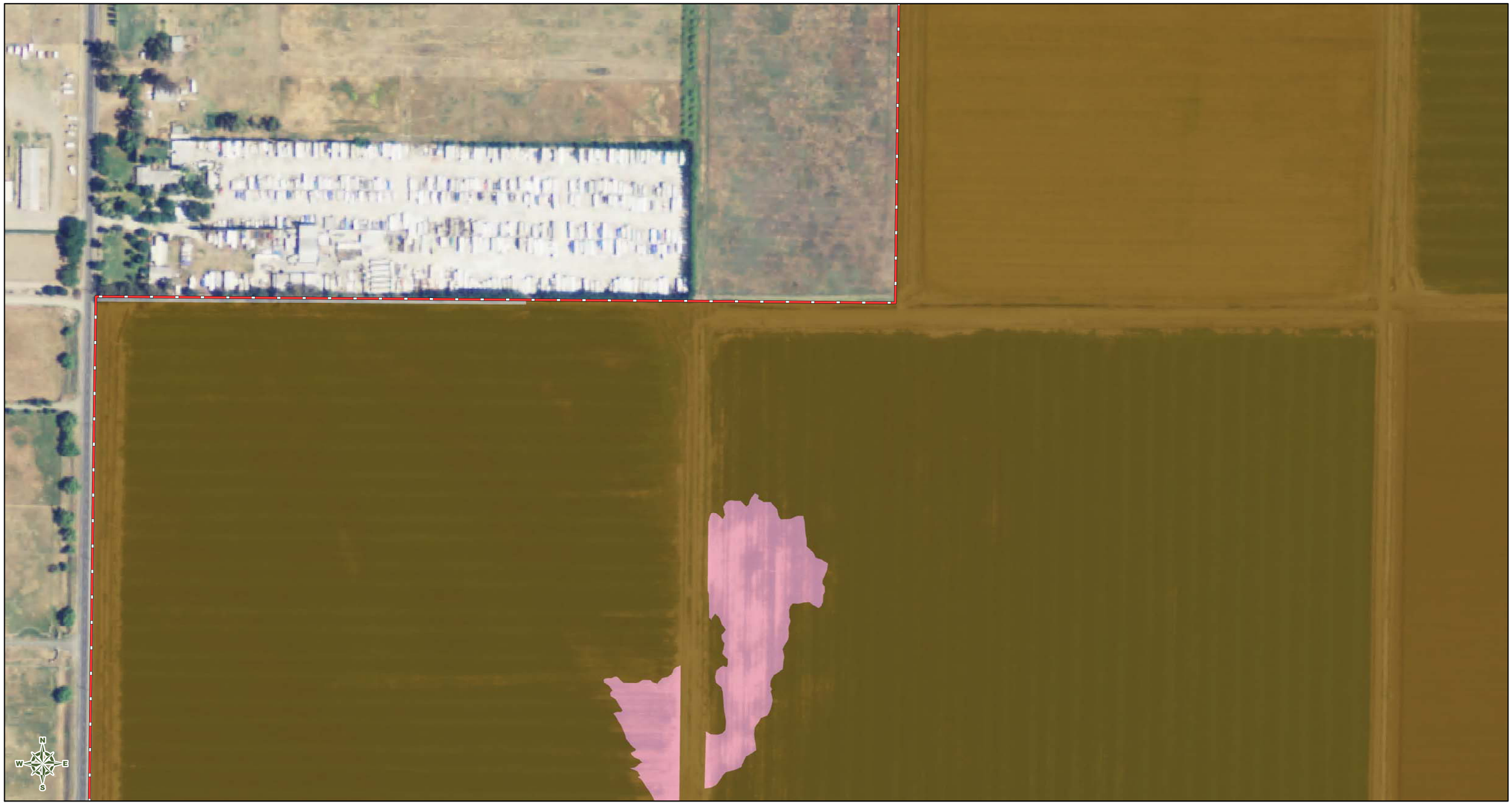
NOMAD ECOLOGY

1:2,400

0 100 200 Feet

**Sheet 3 of 7**

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*






Legend

| | | |
|---|---|---|
| Aquatic Delineation Study Area | Channel | Ruderal |
| | Cropland | Seasonal Wetland |
| Land Cover Types | Interior Dunes | Slough |
| Alkali Grassland | Annual Grassland | Urban |
| Alkali Wetland | Permanent Wetland | |
| Alkali Wetland (Crop) | Riparian Woodland/Scrub | |

**Figure 4**

Land Cover Types in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

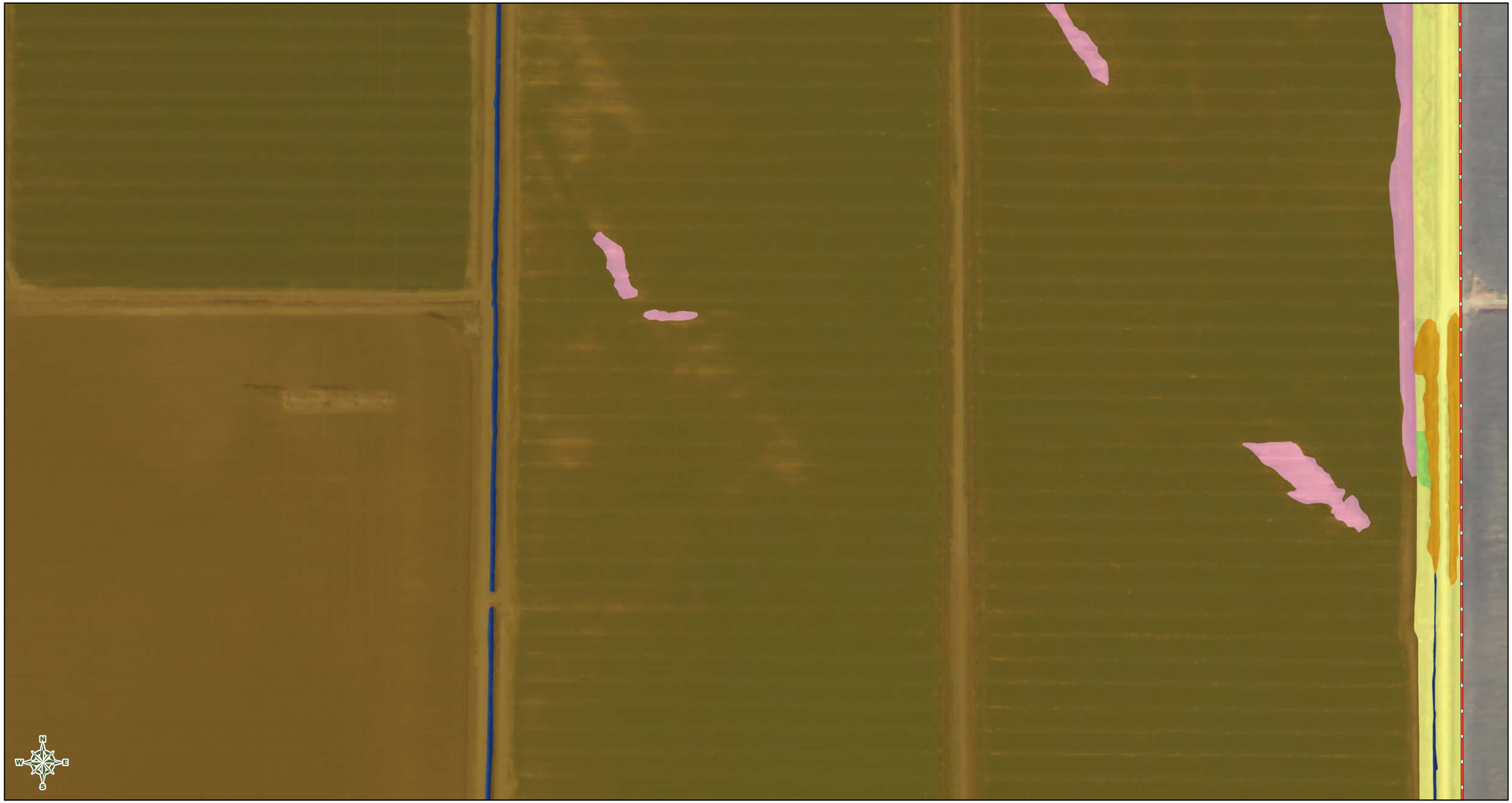
NOMAD ECOLOGY

1:2,400

0 100 200 Feet



*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*






Legend

Aquatic Delineation Study Area

Land Cover Types

- Alkali Grassland
- Alkali Wetland
- Alkali Wetland (Crop)
- Channel
- Cropland
- Interior Dunes
- Annual Grassland
- Permanent Wetland
- Riparian Woodland/Scrub
- Ruderal
- Seasonal Wetland
- Slough
- Urban

**Figure 4**

Land Cover Types in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

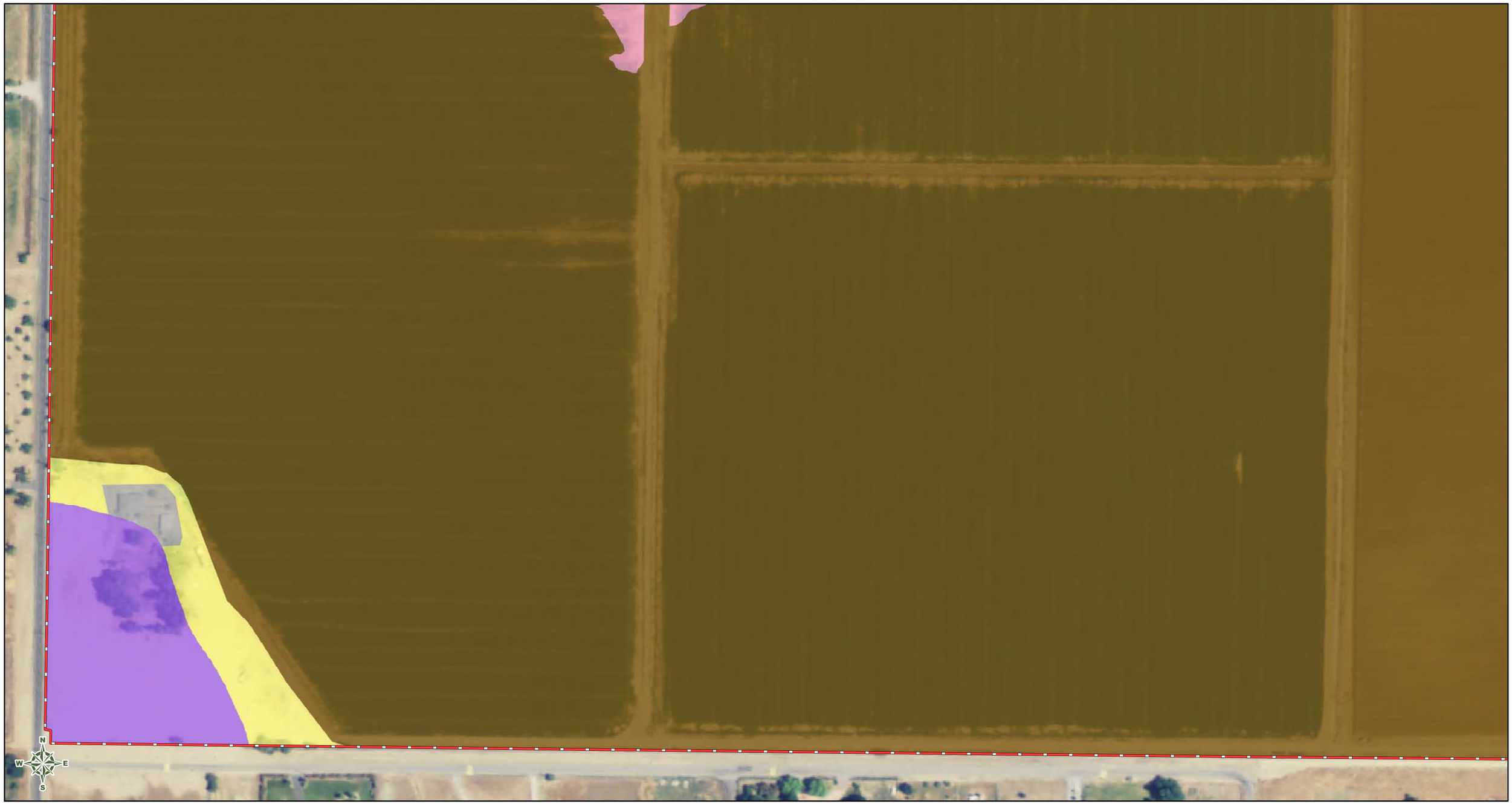
NOMAD ECOLOGY

1:2,400

0 100 200 Feet

**Sheet 5 of 7**

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*






**Legend**

Aquatic Delineation Study Area

Land Cover Types

- Alkali Grassland
- Alkali Wetland
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- Ruderal
- Seasonal Wetland
- Slough
- Urban

NOMAD ECOLOGY

1:2,400

0 100 200 Feet

**Figure 4**

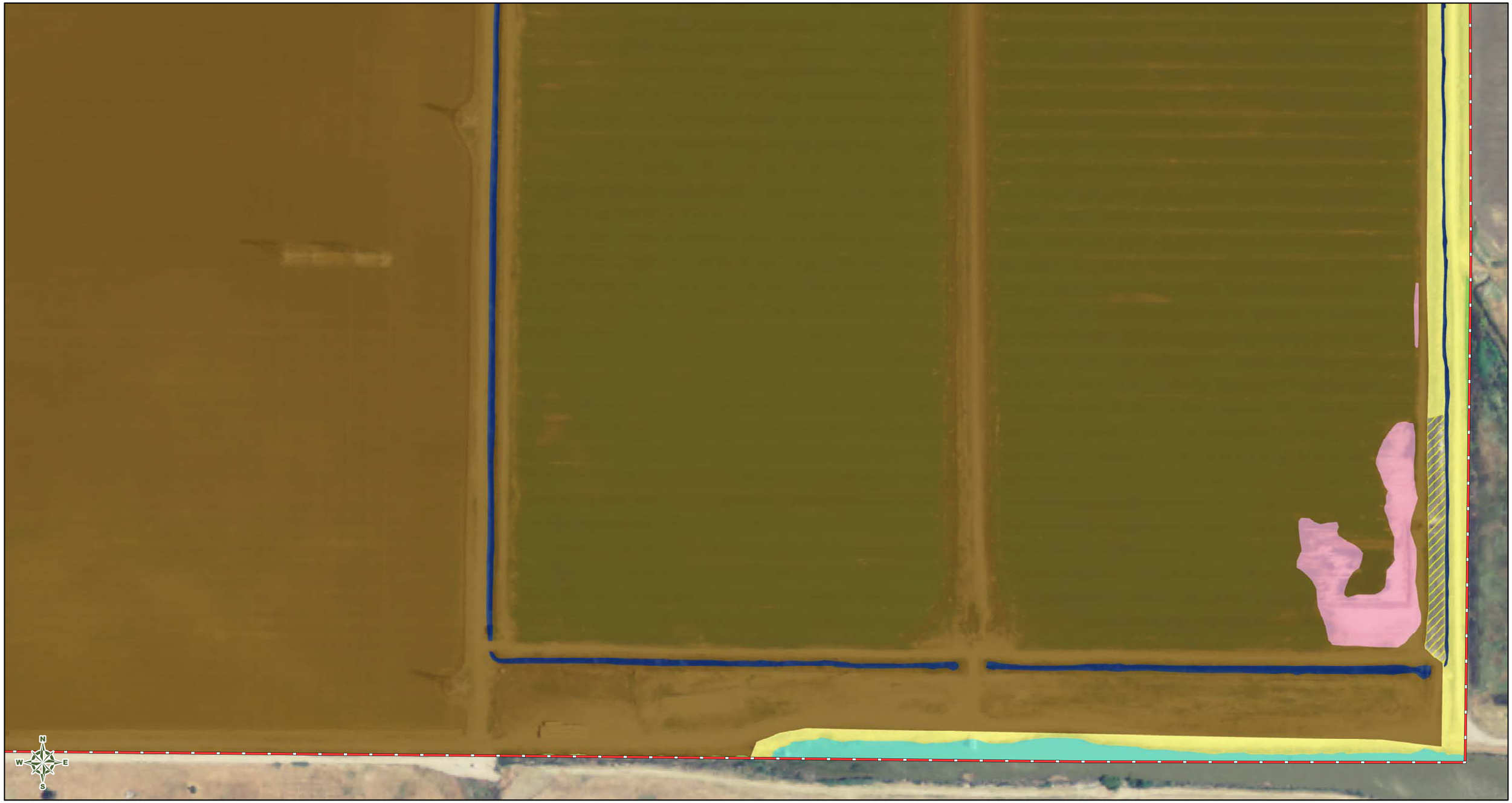
Land Cover Types in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

**Sheet 6 of 7**

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*






Legend

Aquatic Delineation Study Area

Land Cover Types

- Alkali Grassland
- Alkali Wetland
- Alkali Wetland (Crop)
- Channel
- Cropland
- Interior Dunes
- Annual Grassland
- Permanent Wetland
- Riparian Woodland/Scrub
- Ruderal
- Seasonal Wetland
- Slough
- Urban

**Figure 4**

Land Cover Types in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

NOMAD ECOLOGY

1:2,400

0 100 200 Feet

**Sheet 7 of 7**

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*

**Table 3. Land Cover Types and Vegetation Community Classification Systems Comparisons**

| HCP/NCCP Land Cover Types[2] | Vegetation Community and Wetland Classification Systems | | | |
|---|---|---|---|---|
| | Terrestrial Communities[3] | California & National Vegetation[4] | CNPS Inventory[5] | Wetlands & Deepwater Habitats[6] |
| **Grasslands** | | | | |
| Annual Grassland | Non-Native Grassland (42200) (*Holland 1986*) | California Annual Grassland Alliance (42.040.00)<br>*Bromus diandrus-hordeaceous* (Annual brome grasslands) Semi-natural Stands (42.026.21), in part[7]<br>*Festuca perennis* (Perennial rye grass fields) Semi-natural Stands (41.321.00), in part | Valley and Foothill Grassland | Upland |
| Alkali Grassland | Alkali Meadow (45310) (in part) (*Holland 1986*) | *Distichlis spicata* (Salt grass flats) Alliance (41.200.00) | Valley and Foothill Grassland | Upland |
| Ruderal | Ruderal (*Holland & Keil 1995*) | *Lepidium latifolium* (Perennial pepper weed patches) Semi-natural Stands (52.205.00), in part<br>*Brassica nigra* and other mustards (Upland mustards) Semi-natural Stands (42.011.00), in part | Not Described | Upland |
| **Wetlands** | | | | |
| Alkali Wetland | Alkali Meadow (45310) (*Holland 1986*)<br>Alkali Seep (45320) (*Holland 1986*) | *Distichlis spicata* (Salt grass flats) Alliance (41.200.00), in part<br>*Suaeda nigra* (Bush seepweed scrub) Alliance (36.200.00), in part<br>*Spergularia marina* (Saltmarsh sand-spurrey) Provisional Herbaceous Alliance (52.213.00), in part | Valley and Foothill Grassland<br>Meadows and Seeps (in part)<br>Vernal Pools (in part) | Palustrine non-persistent emergent wetlands |

[2] East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (Jones & Stokes 2006)
[3] Terrestrial Natural Communities of California (Holland 1986) or (Holland & Keil 1995)
[4] List of Vegetation Alliances and Associations (CDFG 2010)
[5] CNPS Inventory of Rare and Endangered Plants of California Habitat Types (CNPS 2001b)
[6] Classification of Wetlands & Deepwater Habitats of the U.S. (Cowardin et al. 1979)
[7] The phrase "in part" is used to signify that vegetation descriptions may include additional annual species present if surveyed during other seasons or years.

| HCP/NCCP Land Cover Types[2] | Vegetation Community and Wetland Classification Systems | | | |
|---|---|---|---|---|
| | Terrestrial Communities[3] | California & National Vegetation[4] | CNPS Inventory[5] | Wetlands & Deepwater Habitats[6] |
| Seasonal Wetland | Freshwater Seep (45400) (*Holland 1986*) | *Festuca perennis* (Perennial rye grass fields) Semi-natural Stands (41.321.00), in part | Valley and Foothill Grassland<br>Meadows and Seeps (in part)<br>Vernal Pools (in part) | Palustrine non-persistent emergent wetlands |
| Permanent Wetland | Coastal and Valley Freshwater Marsh (52410) *(Holland 1986)* | *Typha* (*angustifolia, domingensis, latifolia*) (Cattail marshes) Alliance (52.050.00), in part<br>*Schoenoplectus acutus* (Hardstem bulrush marsh) Alliance (52.122.00), in part | Marshes and Swamps | Palustrine persistent emergent wetland |
| **Aquatic** | | | | |
| Slough/Channel | Not Described | *Lemna* (*minor*) and Relatives (Duckweed blooms) Provisional Alliance (52.105.00 ) | Marshes and swamps (brackish or freshwater) | Emergent, tidal, riverine (in part) |
| **Riparian** | | | | |
| Riparian | Great Valley Willow Scrub (63410) (*Holland 1986*) | *Salix exigua* (Sandbar willow thickets) Alliance (61.209.00 )<br>*Rubus armeniacus* (Himalayan black berry brambles) Semi-natural Stands (63.906.00 ) | Riparian Woodland<br>Riparian Scrub | Palustrine forested or shrub-scrub wetland |
| **Other** | | | | |
| Oakley Sand Stabilized Interior Dunes | Stabilized Interior Duness (23100) (*Holland 1986*) | Not Described | Not Described | Upland |
| Cropland | Not Described | Not Described | Not Described | Upland |
| Urban | Not Applicable | Not Applicable | Not Applicable | Not Applicable |

### 3.2.1 GRASSLANDS

Three grassland land cover types, as described in the HCP/NCCP, are present on site: alkali grassland, annual grassland, and ruderal.

**Annual Grassland**

As described in the HCP/NCCP, annual grassland is characterized by grass and forb species dominating the land cover and where trees and shrubs comprise less than 5 percent canopy cover. The dominant grass species are non-native annuals. Based on the description by Holland (1986) non-native grassland is a dense to sparse cover of annual grasses with flowering culms up to 3 feet (one meter) tall. Associates often include "showy-flowered" native annual forbs. This community occurs on fine-textured, usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall. Germination occurs with the onset of the late fall rains while growth, flowering, and seed-set occur from winter through spring. With a few exceptions, the plants are dead through the summer and fall dry season, persisting as seeds. This community usually occurs below 3,000 feet, but reaches 4,000 feet in the Tehachapi Mountains and interior San Diego County, and intergrades with coastal prairie along the Central Coast.

Within the study area, annual grassland occupied the majority of the northern parcel north of Delta Road. This plant community is dominated by non-native annual grasses including ripgut brome (*Bromus diandrus*[*]), slender oats (*Avena barbata**), Italian ryegrass (*Festuca perennis**), soft chess (*Bromus hordeaceus**), Mediterranean barley (*Hordeum marinum* subsp. *gussoneanum**), and hare barley (*Hordeum murinum* subsp. *leporinum**). Non-native herbaceous species present in annual grassland on site include red-stemmed filaree (*Erodium cicutarium**), Italian thistle (*Carduus pycnocephalus* subsp. *pycnocephalus**), charlock (*Sinapis arvensis**), Russian thistle (*Salsola tragus**), and black mustard (*Brassica nigra**). Native herbs present in this community include horseweed (*Erigeron canadensis*), tall annual willowherb (*Epilobium brachycarpum*), and fiddleneck (*Amsinckia intermedia*).

**Alkali Grassland**

As described by the HCP/NCCP, alkali grassland is characterized by a dominance of saltgrass (*Distichlis spicata*) and wild barley (*Hordeum* ssp.*), as well as other halophytes such as including saltbush (*Atriplex* ssp.), alkali heath (*Frankenia salina*), alkali weed (*Cressa truxillensis*), alkali mallow (*Malvella leprosa*), and common spikeweed (*Centromadia pungens* subsp. *pungens*). Of the vegetation communities described by Holland (1986) the most similar is alkali meadow. This community is characterized by a sparse to densely vegetated plant community consisting of relatively few low growing plant species with a strong component of perennial species. It is usually supported by fine-textured, seasonally or perennially moist, alkaline soils. When annual grasses or forbs are dominant these areas can be characterized as alkali grassland. Alkali meadow or grassland is distributed in poorly drained valley bottoms and on the lower edges of alluvial slopes east of the Cascades and the Sierra Nevada as well as throughout the Sacramento and San Joaquin Valleys and into the Livermore Valley. Although not specifically described in Holland (1986), features commonly referred to as alkali scalds are frequently associated with alkali meadow or grassland due to an elevated soil pH, which can be toxic to most plant species. Alkali scalds exhibit saline or alkaline crusts on the soil surface and support little or no vegetation.

Within the study area, alkali grassland was observed throughout northern parcel and in the southeast corner of southern parcel. Characteristic species on site include saltgrass, alkali heath, alkali mallow, common spikeweed, and Mediterranean barley*, in part. The soil mapping units present where alkali

[*] Denotes a non-native species that has an origin other than that of California.

grassland occurs on site are Marcuse clay, Piper loamy sand, Piper fine sandy loam, and Sacramento clay, alkali. Small, unmappable, alkali scalds were also present on site.

**Ruderal**

As described in the HCP/NCCP ruderal vegetation is characterized by sparse nonnative, typically weedy vegetation, occupying vacant parcels surrounded by developed areas. Based on the description by Holland and Keil (1995) ruderal vegetation is an assemblage of plants, often a mixture of both native and non-native weed species that thrive in waste areas, heavily grazed pastures, cultivated and fallow fields, roadsides, parking lots, footpaths, around residences and similar disturbed sites in towns and cities and along rural roadways. Ruderal communities are difficult to characterize and are often temporary assemblages. In areas of frequent human disturbance the majority of wild plants are often introduced weeds rather than natives. Some urban weeds are ornamentals that have escaped from cultivation. Ruderal species may at times be integrated into various other communities (Holland and Keil 1995).

Within the southern parcel of the study area, ruderal vegetation is located along the irrigation ditch on the eastern edge and along the banks of the slough on the southern edge. Stands of ruderal vegetation on site are expressed as mosaics of near monocultures of invasive species including black mustard (*Brassica nigra**), poison hemlock (*Conium maculatum**), slender flowered thistle (*Carduus tenuiflorus**), Himalayan blackberry (*Rubus armeniacus**), whitetop (*Lepidium draba**), and broadleaf pepperweed (*Lepidium latifolium**). Other species associated with this vegetation type are prickly lettuce (*Lactuca serriola**), bristly ox-tongue (*Helmonthotheca echioides**), cocklebur (*Xanthium strumarium*), curly dock (*Rumex crispus**), and ripgut brome*.

### 3.2.2 WETLANDS

Three land cover type found on site are wetlands as described in the HCP/NCCP: alkali wetland, seasonal wetland, and permanent wetland.

**Alkali Wetland**

As described by the HCP, alkali wetland occurs as perennial or seasonally wet features on alkaline soils. Alkaline soils on site include Delhi sand, 2 to 9 percent slopes, Marcuse sand, Marcuse clay, Piper loamy sand, Piper fine sandy loam, and Sacramento clay, alkali (USDA 1977). The vegetation of alkali wetlands is composed of halophytic plant species adapted to both wetland conditions and high salinity levels.

Of the vegetation communities described by Holland (1986) the most similar are alkali meadow and alkali seep. These communities are characterized by sparse to densely vegetated plant community consisting of relatively few low growing plant species with a strong component of perennial species. It is usually supported by fine-textured, seasonally or perennially moist alkaline soils. When wetland species are dominant, these areas can be characterized as alkali wetland. It is distributed in poorly drained valley bottoms and on the lower edges of alluvial slopes east of the Cascades and the Sierra Nevada as well as throughout the Sacramento and San Joaquin Valleys and into the Livermore Valley. Although not specifically described in Holland (1986), features commonly referred to as alkali scalds are frequently associated with alkali meadow or grassland due to an elevated soil pH, which can be toxic to most plant species. Alkali scalds are relatively devoid of plant life and exhibit saline or alkaline crusts on the soil surface, supporting little or no vegetation. Scalds were mapped as a separate land cover type because they it is included as an uncommon landscape feature in the HCP and should be identified during surveys.

Within the northern parcel, alkali wetland occurs in low-lying level areas that are dominated by alkaline wetland species, exhibit indicators of alkaline soils, and have wetland hydrology. Species that comprise this community include saltgrass, alkali heath, silverscale (*Atriplex argentea* var. *expansa*), salt marsh

sand spurrey (*Spergularia marina*), bush seepweed (*Suaeda nigra*), Mediterranean barley*, Italian ryegrass*, alkali mallow, and alkali weed (*Cressa truxillensis*), in part.

Within the southern parcel, alkali wetlands were present in crop fields, primarily those planted in wheat. These alkali wetlands are characterized by saturated soils, ponding of water due to poor drainage, and indicators of alkali soil including a visible alkali soil crust. They are often ponded or saturated both in the winter due to poor drainage of rainfall and in the summer due to poor drainage of irrigation water. Crop growth in these areas is usually stunted and sparse due to excessive saturation and harsh soil chemistry caused by poor drainage and alkalinity. The soil in these locations is mapped as Marcuse clay and Pescadero clay loam, which have alkaline soil characteristics. Characteristic vegetation includes included hyssop loosestrife*, salt marsh sand spurrey, rabbitsfoot grass (*Polypogon monspeliensis*)*, birdfoot trefoil (*Lotus corniculatus**), swamp grass (*Crypsis schoenoides**), lady's thumb (*Persicaria maculosa*), and fat hen (*Atriplex patula**). The soil in the wheat fields is mapped as Marcuse clay and Pescadero clay loam, which have alkaline soil characteristics.

**Seasonal Wetland**

As described by the HCP/NCCP, seasonal wetlands are freshwater wetlands that support ponded or saturated soil conditions during winter and spring and are dry through the summer and fall until the first substantial rainfall. Seasonal wetlands, although not specifically described in Holland (1986) or Holland and Keil (1995), would be classified by Cowardin (1979) as seasonally persistent palustrine emergent wetlands. As defined, this classification indicates that surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface. Vegetation is characterized by erect, rooted, herbaceous hydrophytes.

This community typically occurs as shallow ephemeral bodies of water that occupy low-lying depressions on poorly drained clay soils. Early in the growing season, wetland species of annual and perennial native and non-native grasses and forbs begin their growth as aquatic or semiaquatic plants and this community resembles a wetland community. Later in the growing season, this community transitions to a dry-land environment as the pool dries and upland grasses and forbs germinate and grow while wetland species desiccate. The length of time that water persists has a major effect on species composition. During and after the establishment of upland species these sites may no longer resemble wetlands. These plant species usually have a wetland indicator status of hydrophytic or facultative. Although seasonal wetlands and vernal pools share similar hydrologic characteristics, species composition of seasonal wetlands is typically ruderal in nature. Therefore, seasonal wetlands are not considered vernal pools, which support a more specialized and less common native flora.

Within the study area, seasonal wetlands were present in the northern parcel. Characteristic plant species include woolly marbles (*Psilocarphus brevissimus* var. *brevissimus*), bracted popcorn flower (*Plagiobothrys bracteatus*), purslane speedwell (*Veronica peregrina* subsp. *xalapensis*), Jepson's button celery (*Eryngium aristulatum* var. *aristulatum*), annual hairgrass (*Deschampsia danthonioides*), little mouse tail (*Myosurus minimus*), hyssop loosestrife (*Lythrum hyssopifolium**), and Italian ryegrass*.

**Permanent Wetland**

As described by the HCP/NCCP Permanent Wetlands are characterized by a year-round water source. They are typically dominated by erect, rooted, herbaceous hydrophytic plant species adapted to growing in conditions of prolonged inundation. Of the vegetation types described by Holland (1986) the most similar is Freshwater Marsh and Freshwater Seep. This vegetation type is dominated by perennial, emergent monocots 1-15 feet (0.40-4.5 meters). It typically occurs on sites that lack a significant current that are permanently flooded by freshwater along the edges of water bodies, dune swales, slough terrace edges, banks, channels and mouth margins of rivers, bottomlands, ditch margins, lagoons, ponds,

reservoir margins and along geologic faults. This community is most extensive in the upper portion of the Sacramento-San Joaquin River Delta.

Within the study area, permanent wetland is located in the manmade drainage channel along the eastern edge of the southern parcel and on the southern boundary of the study area continuous with the slough. This vegetation type consists of mixed stands of narrow-leafed cattail (*Typha angustifolia*), seacoast bulrush (*Bolboschoenus robustus*), dotted smartweed (*Persicaria punctata*), and common tule (*Schoenoplectus acutus* var. *occidentalis*).

### 3.2.3 AQUATIC

One land cover type found on site is aquatic as described in the HCP/NCCP: slough/channel.

**Slough/Channel**

As described by the HCP/NCCP, sloughs and channels are features with perennial water and artificial banks constructed of natural soil with little or no in-channel vegetation. Sloughs are tidally influenced and may contain brackish waters.

Within the southern portion of study area, the area mapped as slough runs along the southern boundary of the study area near the eastern most corner. Several additional drainage canals within the southern parcel of the study area were mapped as slough/channel: in an east-west direction through cropland towards the southern end of the study area, and in a north-south direction along the eastern boundary and through the cropland in the southern portion. The slough has earthen and rip rap banks. The channels have earthen banks. Vegetation is present along the banks of these sloughs and channels and includes common tule, narrow-leaved cattail, Mexican rush (*Juncus mexicanus*), tall flatsedge (*Cyperus eragrostis*), curly dock (*Rumex crispus**), and fringed willow herb (*Epilobium ciliatum* subsp. *ciliatum*). Stands of tule are present along the margin of the slough and emergent and floating plants are present in the slough including duckweed (*Lemna minor*) and common water hyacinth (*Eichhornia crassipes**).

### 3.2.4 RIPARIAN

One land cover type found on site is riparian as described in the HCP/NCCP: riparian woodland/scrub.

**Riparian Woodland/Scrub**

As described by the HCP/NCCP, riparian woodland/scrub is characterized by phreatophytic woody vegetation associated with streams and permanent water sources. Riparian woodland is dominated by trees and contains an understory of shrubs and forbs. Riparian scrub is dominated by young trees and shrubs, typically representing an early successional stage of riparian woodland. Of the vegetation types described by Holland (1986) the most similar is Great Valley willow scrub. Great Valley willow scrub is an open to dense, broadleafed, winter-deciduous shrubby streamside thicket dominated by any of several willow species. Dense stands usually have little understory or herbaceous component. More open stands have grassy understories, usually dominated by introduced species. This community is distributed along all of the major rivers and most of the smaller streams throughout the Great Valley watershed, usually below 1000 feet.

Within the study area, riparian woodland/scrub occurs along the drainage ditch located on the western edge of the southern parcel. This land cover type is characterized by an open canopy overstory of sandbar willow (*Salix exigua* var. *hindisana*). Other tree and shrub species present in riparian woodland/scrub within the study area include Fremont cottonwood (*Populus fremontii* subsp. *fremontii*), Gooding's black willow (*Salix goodingii*), Himalayan blackberry*, and orchard waifs of northern California black walnut (*Juglans hindsii*). Understory species include broadleaved pepperweed*, garden asparagus (*Asparagus officinalis* subsp. *officinalis**), and tall fescue (*Festuca arundinacea**), in part.

### 3.2.5 OTHER

**Oakley Sand Stabilized Interior Dune**
The Oakley sand stabilized interior dune land cover type is not defined in the HCP, however it is a very uncommon and highly threatened vegetation type in the region that should be identified during surveys. This habitat is characterized by loose to consolidated sandy soils mapped as Delhi sand, Piper sand, and Piper fine sandy loams (USDA 1977). Characteristic vegetation includes locally common natives such as California croton (*Croton californicus*), desert evening primrose (*Oenothera deltoids* subsp. *cognata*), small evening primrose (*Camissonia* spp.), slender buckwheat (*Eriogonum gracile* subsp. *gracile*), blue head gilia (*Gilia capitate* subsp. *staminea*), Kellog's tarweed (*Deinandra kelloggii*), valley lessingia (*Lessingia glandulifera* var. *glandulifera*), coast live oak (*Quercus agrifolia* var. *agrifolia*), and silver bush lupine (*Lupinus albifrons* var. *albifrons*) (Bettelheim & Thayer 2006).

Within the study area, Oakley sand stabilized interior dunes are aligned generally north to south and are located in the northern parcel, and in the southwest corner of the southern parcel. Species that comprise this community include California croton, blue head gilia, contorted suncup (*Camissonia contorta*), desert goosefoot (*Chenopodium pratericola*)[8], ripgut brome*, Italian thistle (*Carduus pycnocephalus* subsp. *pycnocephalus**), and Russian thistle (*Salsola tragus**), in part.

*Cropland*
As described in the HCP/NCCP, irrigated agriculture is defined as all areas where the native vegetation has been cleared for agricultural use. As described in the HCP/NCCP, cropland are those areas that are tilled and cultivated for agricultural crops, such as corn, tomatoes, and wheat. Cropland also includes hay production in both dryland settings and irrigated areas. Some croplands become ruderal vegetation if fields are left fallow for several growing seasons. Agricultural crops are planted early in the season and rotated with other crops on a yearly or seasonal basis.

Within the study area, row crops are present in the majority of the southern parcel of the study area. During the 2017 site visits, crops observed include garlic, tomatoes, and wheat.

*Urban*
The HCP/NCCP defines urban sites as areas where the native vegetation has been cleared for residential, commercial, industrial, transportation, or recreational structures. Developed areas include areas that have structures, paved surfaces, horticultural plantings, and lawns smaller than 10 acres. Within the study area, the area mapped as urban includes part of the southwestern corner of the portion south of Delta Road. The single residence is characterized by plowed and cleared soil and ornamental trees, including olive (*Olea europaea**), and Eucalyptus (*Eucalyptus* sp.*). Ornamental trees associated with residences were mapped as urban, as they do not meet the non-native woodland definition as described in the HCP/NCCP due to their small area.

[8] This species of *Chenopodium* has never been recorded in the Contra Costa County, therefore it is considered a new county record. Nomad botanists Mr. Bartosh and Mr. Chasey confirmed this identification by comparing material collected in the field to herbarium specimens and the University and Jepson Herbaria at the University of California at Berkeley.

## 3.3. SOIL CHARACTERISTICS

There are six soil mapping units located within the study area: Delhi sand, 2 to 9% slopes (DaC), Marcuse sand (Ma), Marcuse clay (Mb), Piper loamy sand (Pe), Piper fine sandy loam (Ph), and Sacramento clay, alkali (Sb) (USDA 1977; Figure 5). The Delhi and Marcuse sands are mapped in the southern and southwestern sections of the study area. Piper sandy loam is mapped largely in the area north of Delta Road. Sacramento clay soils are mapped in the northeastern section of the study area. Piper fine sandy loam is largely restricted to the western portion of the northern parcel. Marcuse clay makes up the majority of the soils in the study area and is mapped throughout most of the area south of Delta Road and along the southwestern edge north of Delta Road.

The characteristics of the soil mapping unit are described below using details from the Soil Survey of Contra Costa County, California (USDA 1977). The symbol following the soil mapping unit name refers to the map symbol used in the soil survey (USDA 1977). For a summary of soil characteristics relevant to wetland delineations refer to Table 4.

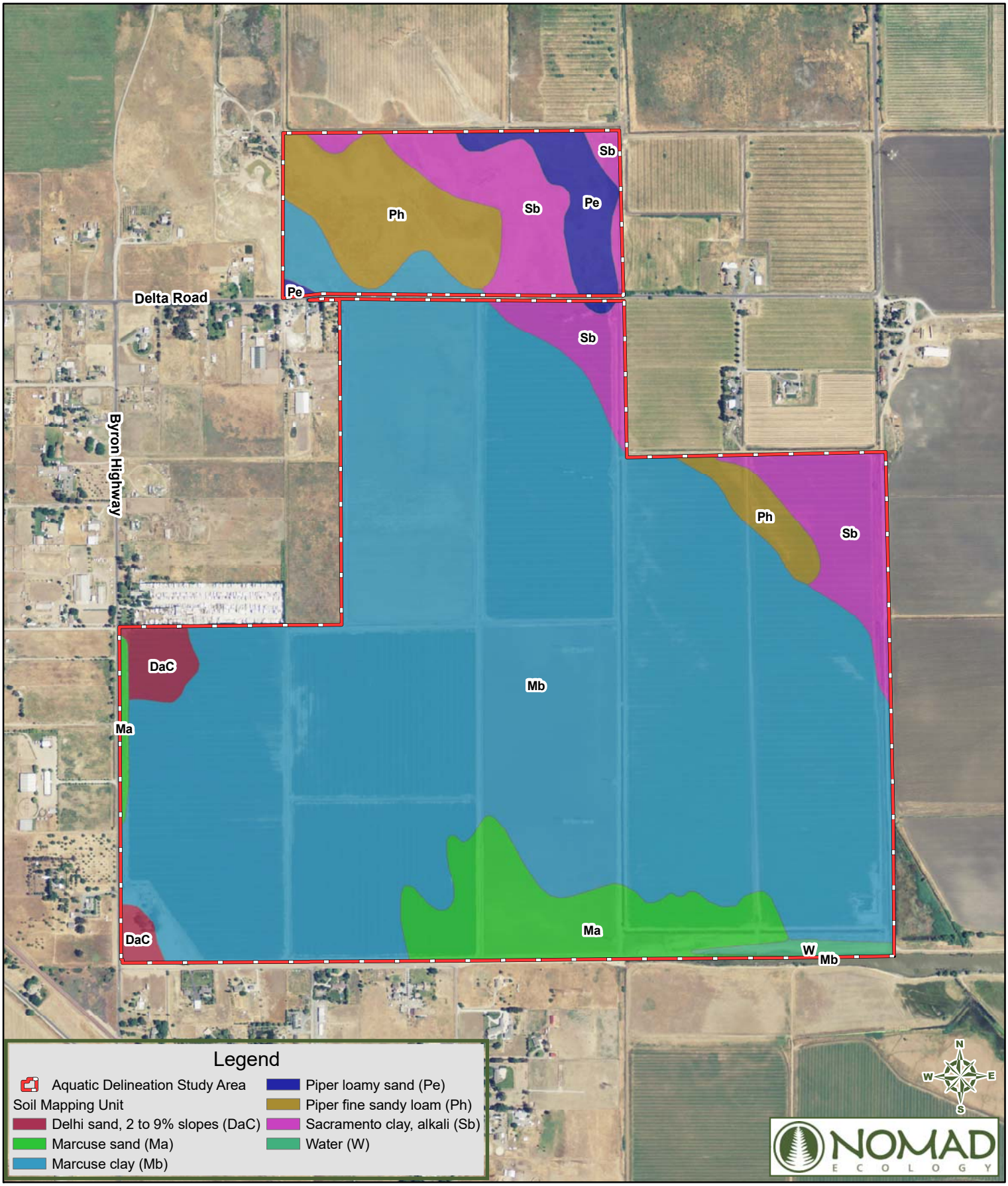
Soils on site are alkaline or may contain alkaline inclusions. Moderate to very strongly alkaline soils can be considered problematic hydric soils as they may not exhibit any of the hydric soil indicators including redox concentrations and depletions (USACE 2008). Identifiable iron or manganese featured do not readily form in saturated soils with high pH (USACE 2008).

### 3.3.1 DELHI SERIES

The Delhi series consists of very deep soils, which formed in wind-modified stream deposits of mixed origin. Slopes are 2 to 9 percent and elevation ranges from 10 to 150 feet. The soils are generally moist to a depth of 60 inches from December through February and are dry from May through October in most years. Permeability is rapid and the available water capacity is 3.75 inches. Roots can penetrate to a depth of more than 60 inches. The soil mapping unit that includes the Delhi series is Delhi sand, 2 to 9 % slopes. Included in the soil in mapping are areas of Laugenour loam, sandy loam soils with a faint subsoil consisting of lamellae, and ~80 acres of soils similar to Delhi sand but with a fluctuating water table. Runoff is slow to very slow and the hazards of soil erosion are slight where the soil is tilled and exposed.

**Delhi sand, 2 to 9 % slope (DaC)**

This is the only Delhi soil mapped in the county. Included with it in the mapping area areas of Laugenour loam in places near the delta. These areas make up about 3 percent of the mapping unit. Also included is are area of sandy loam soils that have a faint subsoil of consisting of lamellae and about 80 acres of soils that are similar to Delhi sand but have a fluctuating water table between depths of 4 to 5 feet. Areas of Delhi sand that have slopes of 0 to 2 percent are also included. The soil is used for irrigated almonds, vineyards, and some walnuts (USDA 1977).






1:12,000
0 500 1,000
Feet

**Figure 5**
Soils in the Study Area
Knightsen Wetland Restoration and Flood Protection Project
East Contra Costa County Habitat Conservancy

Sources: USGS, California Spatial Information Libray, Bay Area Open Space Council

### 3.3.2 MARCUSE SERIES

The Marcuse series consists of very poorly drained and poorly drained soils formed in alluvium from sedimentary rock. These soils are located along lower edges of valley fill and on rims of basins. Slopes are 0 to 2 percent. Elevation ranges from 0 to 5 feet. Permeability is slow and the availability water capacity is 5 to 7 inches, although reclamation has lowered the water table. The depth to which roots can penetrate is restricted to a depth of 40 to 50 inches (USDA 2002).

The soil mapping units that include the Marcuse series are the Marcuse sand (Ma) and Marcuse clay (Mb).

**Marcuse Sand (Ma)**

This is a nearly level soil that has a profile representative of the series, but the surface layer is sand or loamy sand 4 to 24 inches thick. Both Marcuse clay and Capay clay are included with it in mapping, each of which make up about 5 percent of the mapping unit, and Delhi sand, which makes up about 4 percent. This soil is poorly drained. It is subject to ponding or water runs off very slowly. There is no hazard of erosion (USDA 2002).

**Marcuse Clay (Mb)**

This soil has slopes of less than 2 percent and has a profile representative of the series. Included in mapping are areas of Marcuse clay, strongly alkali, that make up 10 percent of the mapping unit, and Sacramento clay, alkali, that makes up 5 percent. The soil is poorly drained, and subject to ponding or water runs of very slowly. There is no hazard of erosion. About 5 to 35 percent of the mapping unit is affected by saline-alkaline salts (USDA 2002).

### 3.3.3 PIPER SERIES

The Piper series consists of poorly drained soils formed on low eolian mounds and ridges that have become more prominent as the surrounding organic material subsides. These soils are on the delta. Sloes are 0 to 5 percent. Elevation ranges from 0 to 25 feet. Permeability is rapid to slow, and the available water capacity is 2 to 4.6 inches. Roots can penetrate to a depth of 20 to 50 inches (USDA 2002).

**Piper loamy sand (Pe)**

This soil has slopes of 0 to 2 percent. It is mapped in the delta and has an elevation range of 5 to 10 feet below sea level. It has a profile representative of the series, but it is calcareous loamy sand to a depth of 60 inches and is not cemented. Included with this soil in mapping are areas of Shima muck that make up about 4 percent of the mapping unit and areas of Piper fine sandy loam that make up 3 percent. Also included are areas of a soil that is underlain by muck at a depth of 20 to 30 inches. These areas make up 8 percent. This soil is subject to frequent ponding and surface water runs off very slowly. Soil blowing is a hazard where the soil is tilled and exposed. The water table has been lowered to a depth of 40 to 50 inches by open drains and pumps (USDA 2002).

**Piper fine sandy loam (Ph)**

This soil generally has slopes of 2 to 5 percent, but a few areas are nearly level. It has a profile representative of the series. Included with this oil in mapping are Shima muck and Piper loamy sand, each of which makes up about 5 percent of the mapping unit. Runoff is low to medium. Permeability is slow in about 80 percent of the area and moderate in 20 percent because of the degree of cementation. Soil blowing is a moderate hazard where soil is tilled and exposed (USDA 2002).

### 3.3.4 SACRAMENTO SERIES

The Sacramento series consists of poorly drained and very poorly drained soils formed in mixed alluvium. These soils are mapped adjacent to the organic soils on the Sacramento-San Joaquin Delta. Slopes are 0 to 2 percent and elevation ranges from near sea level to 60 feet. Permeability is slow and the available water capacity is 5 to 9 inches. Depth to the water table is 4 to 5 feet. Roots can penetrate to a depth of 36 to 60 inches. The soil mapping unit that includes the Sacramento series is Sacramento clay, alkali. Included in this mapping are small areas of Marcuse clay that make up about 8 percent of the mapping unit. Also included are small areas of that have a surface layer of sandy clay that grades into sand or loamy sand, which make up about 5 percent of the mapping unit. About 2 percent are made up of soils that have a surface layer and substratum of dark-brown clay loam or loam. About 5 to 25 percent of this soil is saline enough to inhibit crop production. Runoff is slow and there is no hazard of erosion (USDA 2002).

**Sacramento Clay, Alkali (Sb)**

This nearly level soil has a profile similar to the one described as representative of the series, but it contains enough saline and alkali salts to limit the selection of crops. About 5 to 25 percent of the area is unsuited to crops. Included with this soil in mapping are small areas of Marcuse clay that make up about 8 percent of the mapping unit. Also included are small areas of soils that have a surface layer of sandy clay that gradually grades into sand or loamy sand. These areas make up 5 percent. Areas of soils that have a surface layer and substratum of dark-brown clay loam or loam make up 2 percent. This soil is very poorly drained, but the water table has been lowered to a depth of 36 to 60 inches by reclamation. Runoff is slow, and there is no hazard of erosion. The available water capacity is 5 to 7 inches. This soil is used for irrigated pasture and some row crops (USDA 1977).

**Table 4. Soil Mapping Unit Characteristics**

| SOIL MAPPING UNIT (SYMBOL) | DRAINAGE CLASS | PERMEABILITY | RUNOFF | CLASSIFICATION | HYDRIC |
|---|---|---|---|---|---|
| Delhi sand, 2 to 9% slopes (DaC) | Somewhat Excessively Drained | Rapid | Slow to Very Slow | Mixed, thermic. Typic Xeropsamments. Entisols. | No |
| Marcuse sand (Ma) | Poorly Drained | Slow | Very Slow | Fine, montmorillonitic (calcareous), thermic. Vertic Haplaquepts. Inceptisols. | Yes |
| Marcuse clay (Mb) | Poorly Drained | Slow | Very Slow | Fine, montmorillonitic (calcareous), thermic. Vertic Haplaquepts. Inceptisols. | Yes |
| Piper loamy sand (Pe) | Poorly Drained | Rapid | Very Slow | Coarse-loamy, mixed (calcareous), thermic. Aeric Haplaquepts. Inceptisols. | Yes |
| Piper fine sandy loam (Ph) | Poorly Drained | Slow | Slow to Medium | Coarse-loamy, mixed (calcareous), thermic. Aeric Haplaquepts. Inceptisols. | Yes |
| Sacramento clay, alkali (Sb) | Very Poorly Drained | Slow | Slow | Very-fine, montmorillonitic, thermic. Vertic Haplaquolls. Mollisols. | Yes |

# Section 4. AQUATIC RESOURCES DELINEATION FINDINGS

USACE makes the final determination of jurisdictional status of aquatic features; however, an assessment of presumed jurisdictional status of aquatic features in the study area was made during the field studies. Wetlands in the study area include alkali wetland, seasonal wetlands, and permanent wetlands, which total 1.13 acre and 637 linear feet. Farmed alkali wetlands were present in agricultural fields and total 8.15 acre. Other Waters in the study area include drainage ditches, culverts, and the slough which total 3.12 acre and 10,393 linear feet.

Wetlands and waters in the study area total 12.39 acre and 11,030 linear feet. Each feature, including name, length, width, area, and waters type is listed in Table 5 below. Photographs of representative features are shown in Appendix B. The wetland indicator status of plant species found on site are listed in Appendix C. Data was collected at a total of 54 data point locations using the Wetland Determination Data Form – Arid West Region, which are included in Appendix D.

Farmed alkali wetlands in the agricultural fields may or may not be jurisdictional since the Clean Water Rule specifies that prior converted cropland has been excluded from the Water of the U.S. definition since 1992 and this remains unchanged (USACE and EPA 2015).

**Table 5. Wetlands and Waters within the Study Area**

| Feature Label | Feature Type | Waters Type | Cowardin Code | Length (Feet) | Average Width (Feet) | Area (Feet$^2$) | Area (Acre) |
|---|---|---|---|---|---|---|---|
| **Wetlands** | | | | | | | |
| AW-1 | alkali wetland | NRPWW | PEM2 | NA | NA | 31,736 | 0.729 |
| AW-2 | alkali wetland | NRPWW | PEM2 | NA | NA | 2,362 | 0.054 |
| AW-3 | alkali wetland | NRPWW | PEM2 | NA | NA | 2,251 | 0.052 |
| AW-4 | alkali wetland | NRPWW | PEM2 | NA | NA | 2,665 | 0.061 |
| SW-1 | seasonal wetland | NRPWW | PEM2 | NA | NA | 991 | 0.023 |
| SW-2 | seasonal wetland | NRPWW | PEM2 | NA | NA | 564 | 0.013 |
| PW-1 | permanent wetland | NRPWW | PEM1 | NA | NA | 3,964 | 0.091 |
| PW-2 | permanent wetland | NRPWW | PEM1 | 122 | 24.1 | 2,946 | 0.068 |
| PW-3 | permanent wetland | TNWW | PEM1 | 273 | 3.0 | 809 | 0.019 |
| PW-4 | permanent wetland | TNWW | PEM1 | 242 | 3.5 | 852 | 0.020 |
| | | | **Subtotal:** | **637** | **NA** | **49,140** | **1.13** |
| **Wetlands - Farmed** | | | | | | | |
| CAW-1 | alkali wetland (cropland) | NRPWW | Pf | NA | NA | 4,584 | 0.105 |
| CAW-2 | alkali wetland (cropland) | NRPWW | Pf | NA | NA | 5,162 | 0.118 |
| CAW-3 | alkali wetland (cropland) | NRPWW | Pf | NA | NA | 5,514 | 0.127 |
| CAW-4 | alkali wetland (cropland) | NRPWW | Pf | NA | NA | 2,168 | 0.050 |
| CAW-5 | alkali wetland (cropland) | NRPWW | Pf | NA | NA | 17,923 | 0.411 |
| CAW-6 | alkali wetland (cropland) | NRPWW | Pf | NA | NA | 110,638 | 2.540 |
| CAW-7 | alkali wetland (cropland) | NRPWW | Pf | NA | NA | 18,324 | 0.421 |

| Feature Label | Feature Type | Waters Type | Cowardin Code | Length (Feet) | Average Width (Feet) | Area (Feet$^2$) | Area (Acre) |
|---|---|---|---|---|---|---|---|
| CAW-8 | alkali wetland (cropland) | NRPWW | Pf | NA | NA | 1,314 | 0.030 |
| CAW-9 | alkali wetland (cropland) | NRPWW | Pf | NA | NA | 62,686 | 1.439 |
| CAW-10 | alkali wetland (cropland) | NRPWW | Pf | NA | NA | 33,981 | 0.780 |
| CAW-11 | alkali wetland (cropland) | NRPWW | Pf | NA | NA | 92,692 | 2.128 |
| | | | **Subtotal:** | **NA** | **NA** | **354,986** | **8.15** |
| | | | **Total all Wetlands:** | **637** | **NA** | **404,126** | **9.28** |
| **Other Waters** | | | | | | | |
| DD-1 | drainage ditch | RPW | PEM1 | 1,197 | 6.0 | 7,181 | 0.165 |
| DD-2 | drainage ditch | RPW | PEM1 | 1,901 | 9.9 | 18,729 | 0.430 |
| DD-3 | drainage ditch | RPW | PEM1 | 1,739 | 12.6 | 21,970 | 0.504 |
| DD-4 | drainage ditch | RPW | PEM1 | 1,031 | 11.3 | 11,628 | 0.267 |
| DD-5 | drainage ditch | RPW | PEM1 | 970 | 15.5 | 15,031 | 0.345 |
| DD-6 | drainage ditch | RPW | PEM1 | 1,868 | 6.9 | 12,817 | 0.294 |
| DD-1 | drainage ditch | RPW | PEM1 | 1,197 | 6.0 | 7,181 | 0.165 |
| CU-1 | culvert | RPW | U | 26 | 4.5 | 118 | 0.003 |
| CU-2 | culvert | RPW | U | 32 | 4.1 | 130 | 0.003 |
| CU-3 | culvert | RPW | U | 25 | 4.3 | 107 | 0.002 |
| CU-4 | culvert | RPW | U | 62 | 4.5 | 276 | 0.006 |
| CU-5 | culvert | RPW | U | 28 | 1.9 | 53 | 0.001 |
| SL-1 | slough | TNW | R1UB | 1,514 | 31.5 | 47,749 | 1.096 |
| | | | **Total all Other Waters:** | **10,393** | **NA** | **135,789** | **3.12** |
| | | | **Total Wetlands and Waters:** | **11,030** | **NA** | **539,915** | **12.39** |

Codes used in the Table:

**Waters Types**

NRPWW Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
RPW Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs
TNW TNWs, including territorial seas
TNWW Wetlands adjacent to TNWs

**Cowardin Code**

PEM1 Persistent, Emergent, Palustrine
PEM2 Nonpersistent, Emergent, Palustrine
U Upland - Not a wetland or deepwater habitat of the United States as described by Cowardin.
Pf Pf Palustrine Farmed
R1UB Unconsolidated Bottom, Tidal, Riverine

## 4.1. Wetlands

Wetland on site include alkali wetland, seasonal wetland, and permanent wetland. Farmed alkali wetlands may or may not be jurisdictional since the Clean Water Rule specifies that prior converted cropland has been excluded from the Water of the U.S. definition since 1992 and this remains unchanged (USACE and EPA 2015). Each of these types of wetland are described below.

### 4.1.1 ALKALI WETLAND

**Hydrophytic Vegetation**

Alkali wetlands (labeled AW-1, AW-2, AW-3, and AW-4) in the northern parcel occur in low-lying level areas that are dominated by alkaline wetland species and have wetland hydrology. Species that comprise this community include saltgrass (FAC), alkali heath (FACW), silverscale (FAC), salt marsh sand spurrey (OBL), bush seepweed (OBL), Mediterranean barley* (FAC), Italian ryegrass* (FAC), alkali mallow (FACU), meadow barley (*Hordeum brachyantherum*; FACW), fat hen*(FACW), and alkali weed (FACW), in part.

**Hydric Soil**

Alkali wetlands were mapped in two soil mapping units: Marcuse clay and Sacramento clay, alkali. The soil was visibly alkaline in several locations and exhibited an alkali crust. Hydric soil indicators were not apparent at several of the data point locations even in obvious wetland locations, likely due to the alkalinity of the soil. Moderate to very strongly alkaline soils can be considered problematic hydric soils as they may not exhibit any of the hydric soil indicators including redox concentrations and depletions (USACE 2008). Identifiable iron or manganese featured do not readily form in saturated soils with high pH (USACE 2008). Because hydric soil indicators were absent in areas that were clearly wetlands, hydric soils were presumed present at most data point locations, and vegetation and wetland hydrology indicators were used to determine if a site was a wetland.

**Wetland Hydrology**

Wetland hydrology indicators observed in alkali wetlands on site included surface water, saturation, sediment deposits, water marks, and drift deposits. The winter of 2016/2017 had higher than normal precipitation and many areas on the northern parcel flooded, which was not observed in winter 2015/2016 or winter 2017/2018. The site was revisited in 2018 to observe if wetland hydrology persisted for a second year following the high rainfall year of 2016/2017.

### 4.1.2 SEASONAL WETLAND

**Hydrophytic Vegetation**

Within the study area, seasonal wetlands (labeled SW-1 and SW-2) were present in the northern parcel. Characteristic plant species include woolly marbles (FACW), bracted popcorn flower (FACW), purslane speedwell (FAC), Jepson's button celery (OBL), little mouse tail (OBL), hyssop loosestrife* (OBL), and Italian ryegrass* (FAC).

**Hydric Soil**

Seasonal wetlands were mapped in: Marcuse clay which is an alkaline soil. Hydric soil indicators were not apparent, likely due to the alkalinity of the soil. It was presumed these alkaline soils were problematic soils and assumed hydric soils were present at most data point locations, and vegetation and wetland hydrology indicators were used to determine if a site was a wetland.

**Wetland Hydrology**

Wetland hydrology indicators observed in alkali wetlands on site included saturation, sediment deposits, drift deposits, and surface soil cracks.

### 4.1.3 ALKALI WETLAND (CROPLAND)

**Hydrophytic Vegetation**

Within the southern parcel, cropland alkali wetlands (labeled CAW-1 through CAW-11) were present in farmed crop fields, primarily those planted in wheat. Crop growth in these areas is usually stunted and sparse due to excessive saturation and harsh soil chemistry caused by poor drainage and alkalinity. These areas were visible as areas with low growing vegetation and an absences of wheat plants and were often surrounded by tall robust wheat. Characteristic vegetation includes included hyssop loosestrife* (OBL), salt marsh sand spurrey (OBL), rabbitsfoot grass* (FACW), birdfoot trefoil* (FAC), swamp grass* (FACW), lady's thumb (FACW), and fat hen*(FACW).

**Hydric Soil**

The soil in these locations is mapped as Marcuse clay and Pescadero clay loam, which have alkaline soil characteristics. An alkali soil crust was visible at many of the locations. As was observed in alkali wetlands and seasonal wetlands on site, most data point locations did not exhibit conclusive hydric soil indicators, presumably due to the alkaline content in the soil, which characterizes these soils as problematic soils. In addition, soils on site have been regularly disturbed during disking and plowing of the fields which has damaged soil structure. A plow pan was observed at several of the data point locations in the agricultural fields. Soil at data points on the east side of the agricultural fields often had sand mixed in. The adjacent landowner said that there used to be a sand dune on the property and it was leveled and mixed in with native soil (personal communication with Abigail Fateman). Due to the difficulty observing hydric soil indicators, hydric soils were presumed to be present and used hydric vegetation and wetland hydrology to determine the boundaries of wetlands.

**Wetland Hydrology**

Alkali wetlands (cropland) were characterized by saturated soils and ponding of water due to poor drainage. These areas often ponded or saturated both in the winter due to poor drainage of rainfall and in the summer due to poor drainage of irrigation water, which obscured wetland hydrology indicators. Wetland hydrology indicators observed in farmed alkali wetlands includes surface water, saturation, sediment deposits, water marks, and drift deposits.

### 4.1.4 PERMANENT WETLAND

**Hydrophytic Vegetation**

Within the study area, permanent wetlands (labeled PW-1, PW-2, PW-3, and PW-4) are located in the manmade drainage channel along the eastern edge of the southern parcel and on the southern boundary of the study area continuous with the slough. This vegetation type consists of mixed stands of narrow-leafed cattail (OBL), seacoast bulrush (OBL), dotted smartweed (OBL), and common tule (OBL).

**Hydric Soil**

No soil data points were dug in these locations. Hydric soils were assumed based on the obligate hydrophytic vegetation and strong wetland hydrology indicated by surface water and saturation.

**Wetland Hydrology**

Areas mapped as permanent wetland exhibited saturation and surface water. The two permanent wetlands on the southern property boundary (PW-3 and PW-4) are likely tidally influenced as they are contiguous with the tidally-influenced slough.

## 4.2. OTHER WATERS

Other waters on site include drainage ditches, culverts connecting these drainage ditches, and the slough.

### 4.2.1 DRAINAGE DITCHES AND CULVERTS

Several drainage ditches within the southern parcel of the study area were mapped as other waters. These drainage ditches run in an east-west direction through cropland towards the southern end of the study area, and in a north-south direction along the eastern boundary and through the cropland in the southern portion. These ditches drain irrigation water in the spring and summer and rain water and groundwater in the winter months. In addition, during large precipitation events, stormwater from Knightsen is diverted into roadside drainage ditches and culverts and is discharged into the drainage ditches on site. Water on the southern parcel flows south and east to the southeast corner of the study area where it is pumped into the unnamed slough to the south. The bottoms of the drainage ditches were approximately 6 feet below the ground level.

The drainage ditches have earthen banks and are primarily open water. Vegetation is present along the base of the banks and includes common tule (OBL), narrow-leaved cattail (OBL), Mexican rush (FACW), tall flatsedge (FACW), curly dock*(FAC), and fringed willow herb (FACW).

The boundaries of waters were determined using the OHWM indicators including a topographic break in slope, change in vegetation characteristics (a break between wetland and upland vegetation), and change in sediment characteristics. Other indicators used to determine the limits of OHWM include scour lines, shelving, and litter deposits. The width of the OHWM was measured at multiple locations in the study area and use to interpret the aerial photo.

Culverts connect the drainage ditches where they pass under dirt roads. These culverts were mapped as other waters.

### 4.2.2 SLOUGH

The slough runs along the southern boundary of the study area near the eastern most corner. The unnamed slough is a tributary to Werner Dredger Cut which flows into Rock Slough. Rock Slough empties into Old River downstream to the north which drains into the San Joaquin River Delta. This unnamed slough is tidally influenced.

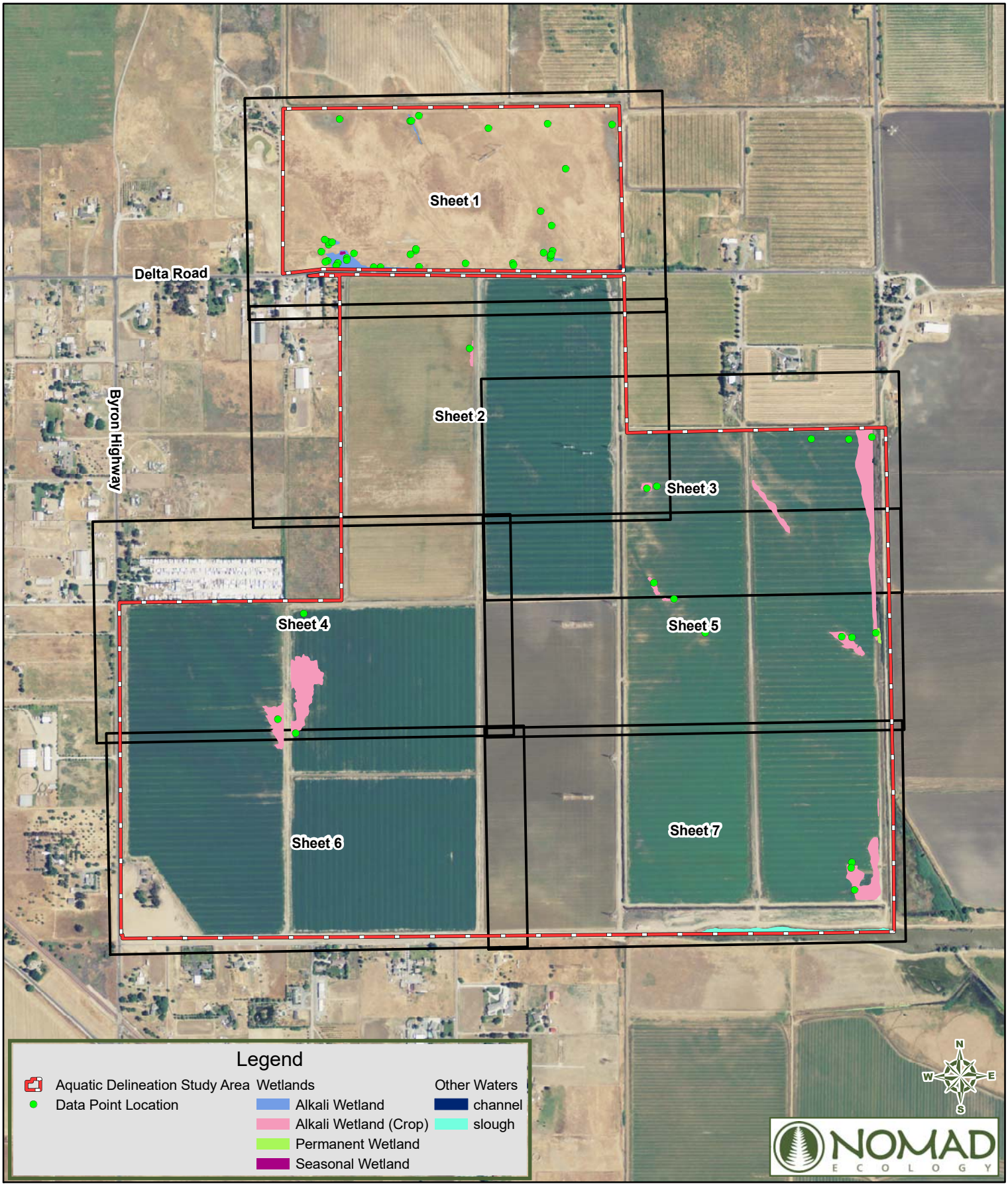
The slough has earthen and rip rap banks. Stands of tule (OBL) are present along the margin of the slough and emergent and floating plants are present in the slough including duckweed (OBL) and common water hyacinth*(OBL).

The boundaries of the slough were determined using the OHWM indicators including a topographic break in slope, and change in vegetation characteristics (a break between wetland and upland vegetation). Other indicators used to determine the limits of OHWM include scour lines, litter deposits on the rip rap banks, and water marks on the rip rap banks. High tide was observed during a site visit, and the height of the water was recorded in relation to the bank was recorded.

## 4.3. NON-JURISDICTIONAL FEATURES

### 4.3.1 IRRIGATION DITCHES

Numerous man-made irrigation ditches are present in the agricultural fields in the study area south of Delta Road. Irrigation ditches on site were much shallower (2 to 3 feet below ground level) compared to drainage ditches (which were 5-6 feet below ground level). The irrigation ditches generally did not contain any vegetation, they were regularly maintained, and only appeared to convey irrigation water during the growing season. These ditches were observed to be dry in the winter months.






1:12,000
0 500 1,000
Feet

**Figure 6**
Aquatic Features in the Study Area
Knightsen Wetland Restoration and Flood Protection Project
East Contra Costa County Habitat Conservancy

**Overview**

Sources: USGS, California Spatial Information Libray, Bay Area Open Space Council

October 2018

Aquatic Resource Delineation Report

## Legend

- Aquatic Delineation Study Area
- Data Point Location

**Wetlands**

- Alkali Wetland (AW)
- Alkali Wetland Cropland (CAW)
- Permanent Wetland (PW)
- Seasonal Wetland (SW)

**Other Waters**

- Drainage Ditch (DD)
- Culvert (CU)
- Slough (SL)

NOMAD ECOLOGY

1:2,400

0 100 200 Feet

# Figure 6

## Aquatic Features in the Study Area

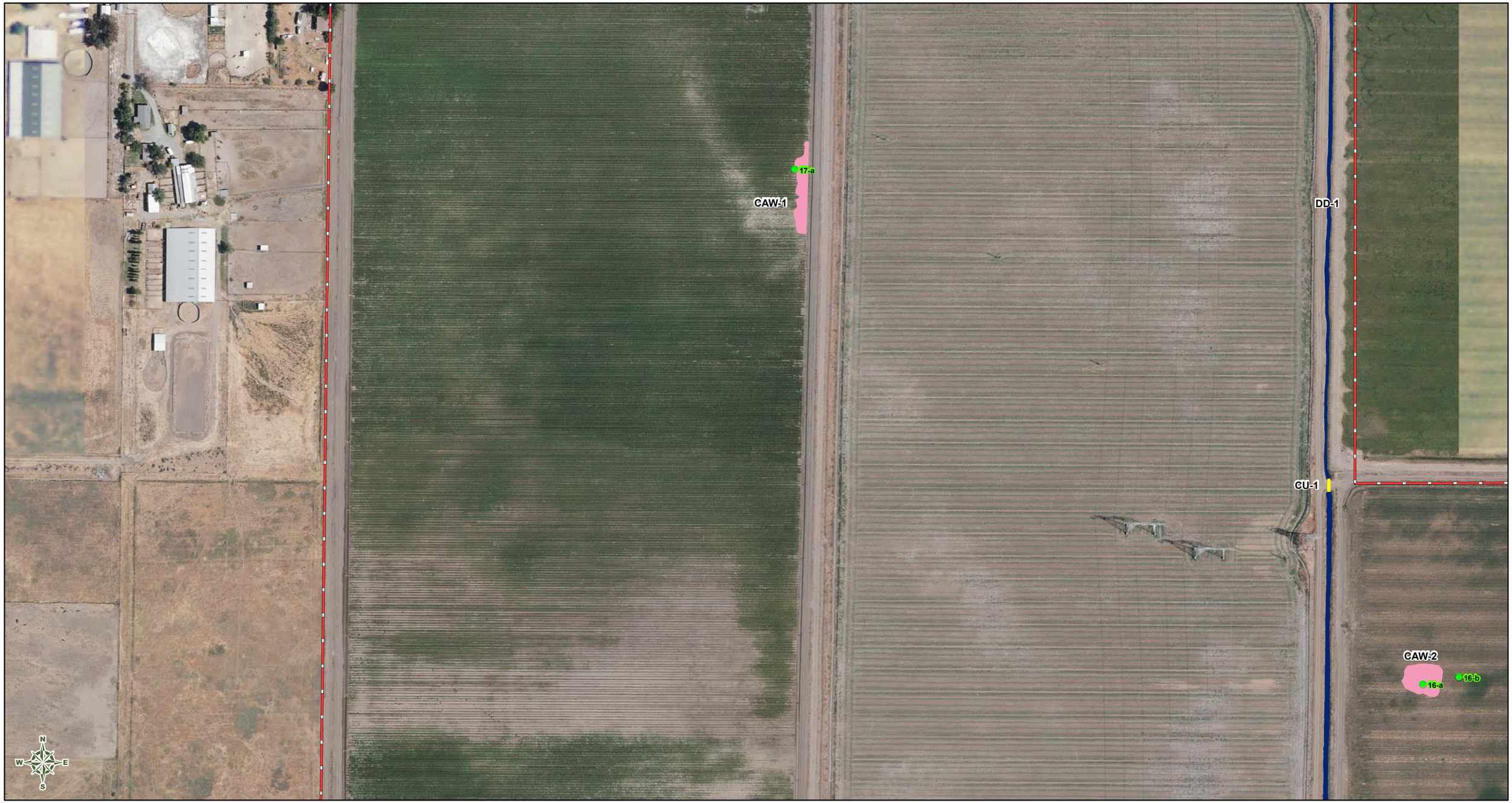
Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

Sheet 1 of 7

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*

*Contra Costa County, California*






**Legend**

- Aquatic Delineation Study Area
- Data Point Location

Wetlands
- Alkali Wetland (AW)
- Alkali Wetland Cropland (CAW)
- Permanent Wetland (PW)
- Seasonal Wetland (SW)

Other Waters
- Drainage Ditch (DD)
- Culvert (CU)
- Slough (SL)

**Figure 6**

Aquatic Features in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

NOMAD ECOLOGY

1:2,400

0 100 200 Feet

**Sheet 2 of 7**

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*

October 2018

Aquatic Resource Delineation Report

Legend

Aquatic Delineation Study Area
Data Point Location

Wetlands
Alkali Wetland (AW)
Alkali Wetland Cropland (CAW)
Permanent Wetland (PW)
Seasonal Wetland (SW)

Other Waters
Drainage Ditch (DD)
Culvert (CU)
Slough (SL)

**Figure 6**

Aquatic Features in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

NOMAD ECOLOGY

1:2,400

0 100 200 Feet

**Sheet 3 of 7**

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*

*Contra Costa County, California*

Legend

- Aquatic Delineation Study Area
- Data Point Location

Wetlands
- Alkali Wetland (AW)
- Alkali Wetland Cropland (CAW)
- Permanent Wetland (PW)
- Seasonal Wetland (SW)

Other Waters
- Drainage Ditch (DD)
- Culvert (CU)
- Slough (SL)

**Figure 6**

Aquatic Features in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

NOMAD ECOLOGY

1:2,400

0 100 200 Feet

**Sheet 4 of 7**

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*

October 2018



Legend

Aquatic Delineation Study Area
Data Point Location

Wetlands
- Alkali Wetland (AW)
- Alkali Wetland Cropland (CAW)
- Permanent Wetland (PW)
- Seasonal Wetland (SW)

Other Waters
- Drainage Ditch (DD)
- Culvert (CU)
- Slough (SL)

**Figure 6**

Aquatic Features in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

NOMAD ECOLOGY

1:2,400

0 100 200 Feet

**Sheet 5 of 7**

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*

Legend

Aquatic Delineation Study Area
Data Point Location

Wetlands
Alkali Wetland (AW)
Alkali Wetland Cropland (CAW)
Permanent Wetland (PW)
Seasonal Wetland (SW)

Other Waters
Drainage Ditch (DD)
Culvert (CU)
Slough (SL)

**Figure 6**

Aquatic Features in the Study Area

Knightsen Wetland Restoration and Flood Protection Project
East Contra Costa County Habitat Conservancy

NOMAD ECOLOGY

1:2,400
0 100 200
Feet

**Sheet 6 of 7**

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*

October 2018

Aquatic Resource Delineation Report

**Legend**

- Aquatic Delineation Study Area
- Data Point Location

Wetlands
- Alkali Wetland (AW)
- Alkali Wetland Cropland (CAW)
- Permanent Wetland (PW)
- Seasonal Wetland (SW)

Other Waters
- Drainage Ditch (DD)
- Culvert (CU)
- Slough (SL)

**Figure 6**

Aquatic Features in the Study Area

Knightsen Wetland Restoration and Flood Protection Project

East Contra Costa County Habitat Conservancy

NOMAD ECOLOGY

1:2,400

0 100 200 Feet

**Sheet 7 of 7**

*Mapped biological resources based on field work conducted in July 2015. Source: Contra Costa County. Aerials were flown in 2014. Projection: NAD 83 SP CA Zone III.*

*Contra Costa County, California*

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# APPENDIX A LAWS, ORDINANCES & REGULATIONS

## RIVERS AND HARBORS ACT

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the U.S. Army Corps of Engineers, to construct any structure in or over any "navigable water of the United States." Structures or work outside the limits defined as navigable waters requires a Section 10 permit if the structure or work affects the course, location, or condition of the water body. The law applies to dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States. It includes without limitation, any wharf, dolphin, weir, boom breakwater, jetty, groin, bank protection (e.g. riprap, revetment, bulkhead), mooring structures such as pilings, aerial or subaqueous power transmission lines, intake or outfall pipes, permanently moored floating vessel, tunnel, artificial canal, boat ramp, aids to navigation, and any other permanent, or semi-permanent obstacle or obstruction.

Navigable waters are generally defined as waters of the United States that are subject to the ebb and flow of the tide, shoreward to the mean high water mark, and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce, as defined in 32 CFR §322.2(a).

## SECTION 404 OF CLEAN WATER ACT

Section 404 of the Clean Water Act, as amended, requires authorization from the Secretary of the Army, acting through the U.S. Army Corps of Engineers, for the discharge of dredged or fill material into "waters of the United States", including "wetlands". Discharges of fill material generally include, without limitation, placement of fill that is necessary for the construction of any structure or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; dams and dikes; artificial islands; property protection or reclamation devices such as riprap, groins, seawalls, breakwaters, and revetments; beach nourishment; levees; fill for intake and outfall pipes and subaqueous utility lines; fill associated with the creation of ponds; and any other work involving the discharge of fill or dredged material. A §404 Corps permit is required whether the work is permanent or temporary. Examples of temporary discharges include dewatering of dredged material prior to final disposal, and temporary fills for access roadways, cofferdams, storage and work areas.

### *WATERS OF THE UNITED STATES*

"Waters of the United States", which includes "wetlands" and "other waters", are defined by 33 CFR §328.3 as follows:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
- All interstate waters including interstate wetlands.
- All "other waters" such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

  - which are or could be used by interstate or foreign travelers for recreational or other purposes; or
  - from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
  - which are used or could be used for industrial purpose by industries in interstate commerce.
- All impoundments of waters otherwise defined as waters of the United States under the definition.
- Tributaries of waters identified above.
- The territorial seas.
- Wetlands adjacent to waters (other than wetlands) identified above.

The Corps generally does not consider the following waters to be "waters of the United States." However, the Corps reserves the right on a case-by-case basis to determine that a particular water body within these categories of waters is a water of the United States. The Environmental Protection Agency also has the right to determine on a case-by-case basis if any of these waters are "waters of the United States."

- Non-tidal drainage and irrigation ditches excavated on dry land.
- Artificially irrigated areas which would revert to upland if the irrigation ceased.
- Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
- Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.
- Water filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States [see 33 CFR 328.3(a)].

***WETLANDS***

Corps jurisdictional "wetlands", as defined by 33 CFR §328.3(b), are those areas which are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

***ORDINARY HIGH WATER MARK***

The Corps' jurisdiction over "other waters" extends to the limit of the Ordinary High Water Mark or the upward extent of any adjacent wetland. The Ordinary high water mark, as defined by 33 CFR §328.3(e), is the visible line on the shore/bank 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 soil;
- destruction of terrestrial vegetation;
- the presence of litter and debris; or

- other appropriate means that consider the characteristics of the surrounding areas.

***CASE LAW***

The Supreme Court decision in the case of Solid Waste Agency of Northern Cook County vs. U.S. Army Corps of Engineers, commonly referred to as the "SWANCC" decision, pertains to the Corps' scope of regulatory jurisdiction under the Clean Water Act (CWA). SWANCC involved statutory and constitutional challenges to the assertion of CWA jurisdiction over isolated, non-navigable, and intrastate waters used as habitat by migratory birds. The Supreme Court ruled that that the Migratory Bird Rule is not fairly supported by the CWA; therefore field staff should no longer rely on the use of waters or wetlands as habitat by migratory birds as the sole basis for the assertion of regulatory jurisdiction under the CWA. The Court's holding was strictly limited to waters that are "non-navigable, isolated, and intrastate." With respect to any waters that fall outside of that category, field staff continue to exercise CWA jurisdiction to the full extent of their authority under the statute and regulations and consistent with court opinions. The following subsections of the regulatory definition of waters of the United States are, or potentially are, affected by SWANCC, "all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce . . ." Jurisdiction over other waters should be considered on a case-by-case basis (Guzy & Anderson 2001). The Migratory Bird Rule refers to an explanation, in the preambles to 1986 Corps regulations and 1988 EPA regulations, that waters that are or may be used as habitat for migratory birds are an example of waters whose use, degradation, or destruction could affect interstate or foreign commerce and therefore are waters of the United States [51 Fed. Reg. 41217 (1986); 53 Fed. Reg. 20765 (1988)].

The Supreme Court decision in the case of Rapanos vs. U.S. Army Corps of Engineers, commonly referred to as the "Rapanos" decision, also pertains to the Corps' scope of regulatory jurisdiction under the Clean Water Act (CWA). Rapanos involved statutory and constitutional challenges to the assertion of CWA jurisdiction over wetlands that do not contain, or are not adjacent to, traditional navigable waters. The Supreme Court ruled that regulatory authority extends to "relatively permanent, standing or continuously flowing bodies of water" connected to traditional navigable waters and to "wetlands with a continuous surface connection to" such relatively permanent waters. In addition, wetlands are considered waters of the U.S. "if the wetland, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as 'navigable.'" The agencies will assert jurisdiction over non-navigable, not relatively permanent tributaries and their adjacent wetlands where such tributaries and wetlands have a significant nexus with a traditional navigable water (EPA and U.S. Army Corps of Engineers 2007.)`

## PORTER-COLOGNE WATER QUALITY CONTROL ACT AND SECTION 401 OF THE CLEAN WATER ACT

The Regional Water Quality Control Board administers both the Porter-Cologne Water Quality Control Act and §401 of the Clean Water Act. The Porter-Cologne Water Quality Control Act, Water Code §13260, requires that "any person discharging waste, or proposing to discharge waste, within any region that could affect the 'waters of the State' to file a report of discharge" with the RWQCB. Waters of the State as defined by the Porter-Cologne Act [Water Code §13050 (e)] as "any surface water or groundwater, including saline waters, within the boundaries of the state."

Under §401 of the Clean Water Act, states must certify that any activity subject to a permit issued by a federal agency, such as the Corps, meet all state water quality standards. In California, the State and California Regional Water Quality Control Boards are responsible for taking certification actions for

activities subject to any permit issued by the Corps pursuant to Section 404 (or for any other Corps permit, such as permits issued pursuant to Section 10 of the Rivers and Harbors Act of 1899). Pursuant to §401 of the Clean Water Act, the RWQCB considers waters of the state to include but are not limited to, rivers, streams, lakes, bays, marshes, mudflats, unvegetated seasonally ponded areas, drainage swales, sloughs, wet meadows, natural ponds, vernal pools, diked bay lands, seasonal wetlands, and riparian woodlands. Subsequent to the SWANCC decision the RWQCB has claimed jurisdiction and exercised discretionary authority over "isolated waters".

### FISH AND GAME CODE

The California Department of Fish and Wildlife (CDFW) administers §1600-1603 of the Fish and Game Code which pertains to wetland and riparian resources associated with rivers, streams, and lakes. Pursuant to §1600-1603, CDFW regulates activities that divert or obstruct the natural flow of, or substantially change or use any material from the bed, bank, or channel of any river, stream, or lake, or its associated riparian vegetation, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. The jurisdiction of CDFW with respect to a river, stream, or creek is considered to be with the limits measured from the top-of-bank or the outermost edges of riparian vegetation.

# APPENDIX B PHOTOGRAPHS

**Photo 1**. Northern parcel. Alkali wetland (AW-1) characterized by alkali seepweed. Facing east. November 30, 2016.

**Photo 2**. Northern parcel. Alkali wetland (AW-1) in the dry season. Facing west. May 19, 2017.

**Photo 3**. Northern parcel. Alkali wetland (AW-1) in low area on edge of field. Facing west. November 30, 2016.

**Photo 4**. Northern parcel. Alkali wetland (AW-2) characterized by low vegetation surrounded by tall grassland. Facing east. March 26, 2018.

**Photo 5**. Northern parcel. Stabilized interior dune to left and alkali wetland (AW-3) to right. Facing south. May 16, 2017.

**Photo 6**. Northern parcel. Alkali wetland (AW-4) in the center of the photo. Facing west. May 16, 2017.

**Photo 7**. Southern parcel. Alkali wetland (CAW-6) in a planted wheat field. Low wetland vegetation is visible in the foreground and harvested wheat is visible in the distance. Facing northwest. May 9, 2018.

**Photo 8**. Southern parcel. Alkali wetland (CAW-9) at southeastern corner of study area in a planted wheat field. Facing northwest. March 26, 2018.

**Photo 9**. Southern parcel. Drainage ditch (DD-3) at southeastern corner of study area. Water in drainage ditches drains to here and is pumped into the unnamed slough. Facing south. May 16, 2017.

**Photo 10**. Southern parcel. View of drainage dich (DD-4). Ditch runs west-east and the water is pumped into the slough. Facing east May 16, 2017.

**Photo 11**. Southern parcel. Drainage ditch (DD-5) at southeastern corner of study area. Water in drainage ditches drains to here and is pumped into the unnamed slough. Facing west. May 16, 2017.|

**Photo 12**. Southern parcel. View of wetland (PW-3) that is continuous with the western end of the slough on southern boundary. Facing east. May 16, 2017.

**Photo 13**. Southern parcel. Unnamed slough (SL-1) as seen from southeastern corner of study area. Facing west. May 16, 2017.

**Photo 14**. Southern parcel. Unnamed slough (SL-1) as seen from southeastern corner. Facing east. May 16, 2017.

**Photo 15**. Southern parcel. Fallow field in southern parcel. Facing south. May 16, 2017.

**Photo 16**. Southern parcel. Crops (leeks) in cropland. May 16, 2017.

**Photo 17**. Southern parcel. Unvegetated shallow ditch in the southern parcel filled with irrigation water during growing season. These ditches are dry in the winter. Facing north. May 16, 2017.

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# APPENDIX C WETLAND INDICATOR STATUS OF PLANT SPECIES ON SITE

| SPECIES NAME | COMMON NAME | INDICATOR STATUS |
|---|---|---|
| *Amaranthus albus* | tumbleweed | FACU |
| *Amaranthus blitoides* | prostrate amaranth | FACU |
| *Amaranthus deflexus* | large fruited amaranth | NL |
| *Amsinckia intermedia* | common fiddleneck | NL |
| *Amsinckia lycopsoides* | bugloss fiddleneck | NL |
| *Amsinckia menziesii* | ranchers fireweed | NL |
| *Anthemis cotula* | mayweed | FACU |
| *Artemisia douglasiana* | mugwort | FAC |
| *Arundo donax* | giant reed | FACW |
| *Asparagus officinalis* subsp. *officinalis* | garden asparagus | FACU |
| *Atriplex argentea* var. *expansa* | silverscale | FAC |
| *Atriplex coronata* var. *coronata* (CRPR List 4.2) | crownscale | FACW |
| *Atriplex patula* | fat hen | FACW |
| *Atriplex prostrata* | spearscale | FACW |
| *Atriplex rosea* | tumbling oracle | FACU |
| *Avena barbata* | slender oats | NL |
| *Beta vulgaris* subsp. *maritima* | Beet | NL |
| *Bolboschoenus robustus* | seacoast bulrush | OBL |
| *Brassica nigra* | black mustard | NL |
| *Bromus catharticus* | Chilean brome | NL |
| *Bromus diandrus* | ripgut brome | NL |
| *Bromus hordeaceus* | soft chess | FACU |
| *Calystegia sepium* subsp. *limnophila* | marsh morning glory | FAC |
| *Camissonia contorta* | contorted suncup | NL |
| *Capsella bursa-pastoris* | shepherd's purse | NL |
| *Carduus pycnocephalus* subsp. *pycnocephalus* | Italian thistle | NL |

| Species Name | Common Name | Indicator Status |
|---|---|---|
| *Carduus tenuiflorus* | slender flowered thistle | NL |
| *Centaurea solstitialis* | yellow star thistle | NL |
| *Centromadia pungens* subsp. *pungens* | common tarweed | FAC |
| *Chenopodium album* | lambs quarters | FACU |
| *Chenopodium murale* | nettle leaf goosefoot | FACU |
| *Chenopodium pratericola* | meadow goosefoot | NL |
| *Cirsium vulgare* | bull thistle | FACU |
| *Conium maculatum* | poison hemlock | FACW |
| *Convolvulus arvensis* | bindweed | NL |
| *Cortaderia jubata* | jubata grass | FACU |
| *Cotula coronopifolia* | brass buttons | OBL |
| *Cressa truxillensis* | alkali weed | FACW |
| *Croton californicus* | California croton | NL |
| *Crypsis schoenoides* | swamp grass | FACW |
| *Cucurbita palmata* | coyote gourd | NL |
| *Cuscuta campestris* | field dodder | NL |
| *Cynodon dactylon* | Bermuda grass | FACU |
| *Cyperus eragrostis* | tall flatsedge | FAC |
| *Deinandra kelloggii* | Kellogg's tarweed | NL |
| *Distichlis spicata* | saltgrass | FAC |
| *Dittrichia graveolens* | dittrichia | NL |
| *Dysphania ambrosioides* | Mexican tea | FAC |
| *Echinochloa colona* | jungle rice | FAC |
| *Echinochloa crus-galli* | common barnyard millet | FACW |
| *Eichhornia crassipes* | water hyacinth | OBL |
| *Epilobium brachycarpum* | tall annual willow-herb | NL |
| *Epilobium ciliatum* subsp. *ciliatum* | fringed willowherb | FACW |
| *Erigeron bonariensis* | asthma weed | FACU |
| *Erigeron canadensis* | horseweed | FACU |
| *Eriochloa acuminata* var. *acuminata* | dense cupgrass | FACW |
| *Erodium botrys* | long-beaked filaree | FACU |
| *Erodium brachycarpum* | foothill filaree | NL |

| Species Name | Common Name | Indicator Status |
|---|---|---|
| *Erodium cicutarium* | red-stemmed filaree | NL |
| *Erodium moschatum* | white-stem filaree | NL |
| *Eryngium aristulatum* | Jepson's button celery | OBL |
| *Eucalyptus sideroxylon* | red iron bark | NL |
| *Euphorbia serpens* | matted sandmat | FACU |
| *Euthamia occidentalis* | western goldenrod | FACW |
| *Festuca arundinacea* | tall fescue | NL |
| *Festuca bromoides* | brome fescue | NL |
| *Festuca myuros* | foxtail fescue | NL |
| *Festuca perennis* | Italian ryegrass | FAC |
| *Festuca pratensis* | meadow fescue | NL |
| *Frankenia salina* | alkali heath | FACW |
| *Galium aparine* | bedstraw | FACU |
| *Geranium dissectum* | cut-leaf geranium | NL |
| *Geranium molle* | dovefoot geranium | NL |
| *Gilia capitata* subsp. *staminea* | capitate gilia | NL |
| *Gnaphalium palustre* | lowland cudweed | FACW |
| *Grindelia hirsutula* | hairy gumweed | NL |
| *Helianthus annuus* | common sunflower | FACU |
| *Heliotropium curassavicum* var. *oculatum* | salt heliotrope | FACU |
| *Helminthotheca echioides* | bristly ox-tongue | NL |
| *Heterotheca grandiflora* | telegraph weed | NL |
| *Hirschfeldia incana* | hoary mustard | NL |
| *Hordeum brachyantherum* | meadow barley | FACW |
| *Hordeum jubatum* subsp. *jubatum* | fox tail barley | FAC |
| *Hordeum marinum* subsp. *gussoneanum* | Mediterranean barley | FAC |
| *Hordeum murinum* subsp. *leporinum* | hare barley | FACU |
| *Hydrocotyle verticillata* | water pennywort | OBL |
| *Hypochaeris glabra* | smooth cat's ear | NL |
| *Iris pseudacorus* | horticultural iris | OBL |
| *Juglans hindsii* (waif) | Northern California black walnut | FAC |
| *Juncus bufonius var. congestus* | clustered toad rush | FACW |

| Species Name | Common Name | Indicator Status |
|---|---|---|
| *Juncus mexicanus* | Mexican rush | FACW |
| *Lactuca saligna* | willowleaf lettuce | UPL |
| *Lactuca serriola* | prickly lettuce | FACU |
| *Leersia oryzoides* | rice cutgrass | OBL |
| *Lemna minor* | duckweed | OBL |
| *Lepidium didymum* | swine cress | NL |
| *Lepidium draba* | whitetop | NL |
| *Lepidium latifolium* | broadleaf peppergrass | FAC |
| *Lepidium nitidum* | shining pepper grass | FAC |
| *Lepidium oxycarpum* | sharp podded pepper grass | OBL |
| *Lepidium pinnatifidum* | featherleaf pepperweed | NL |
| *Leptochloa fusca* subsp. *fascicularis* | breaded sprangletop | NL |
| *Lotus corniculatus* | birdfoot trefoil | FAC |
| *Lycopus asper* | rough bugleweed | OBL |
| *Lysimachia arvensis* | scarlet pimpernel | FAC |
| *Lythrum hyssopifolia* | hyssop loostrife | OBL |
| *Lythrum tribracteatum* | threebract loosestrife | OBL |
| *Malva nicaeensis* | bull mallow | NL |
| *Malva parviflora* | cheeseweed | NL |
| *Malvella leprosa* | alkali mallow | FACU |
| *Marrubium vulgare* | horehound | FACU |
| *Matricaria discoidea* | pineapple weed | FACU |
| *Medicago polymorpha* | burclover | FACU |
| *Medicago sativa* subsp. *sativa* | alfalfa | UPL |
| *Melilotus albus* | white sweet clover | NL |
| *Melilotus indicus* | sourclover | FACU |
| *Mentha pulegium* | pennyroyal | FACW |
| *Mentha spicata* | spearmint | FACW |
| *Myoporum laetum* | lollypop tree | FACU |
| *Myosurus minimus* subsp. *apus* | little mousetail | OBL |
| *Olea europaea* | olive | NL |
| *Parapholis incurva* | sicklegrass | FACU |

| Species Name | Common Name | Indicator Status |
|---|---|---|
| *Paspalum dilatatum* | dallisgrass | FAC |
| *Persicaria amphibia* | water smartweed | OBL |
| *Persicaria maculosa* | lady's thumb | FACW |
| *Persicaria punctata* | dotted smartweed | OBL |
| *Phalaris aquatica* | Harding grass | FACU |
| *Phalaris minor* | little-seeded canary grass | NL |
| *Phalaris paradoxa* | Hood canary grass | FAC |
| *Plagiobothrys bracteatus* | bracted popcorn flower | FACW |
| *Plantago lanceolata* | English plantain | FAC |
| *Plantago major* | common plantain | FAC |
| *Poa annua* | annual bluegrass | FAC |
| *Polygonum aviculare* subsp. *depressum* | common knotweed | FAC |
| *Polypogon monspeliensis* | rabbitsfoot grass | FACW |
| *Populus fremontii* subsp. *fremontii* | Fremont cottonwood | NL |
| *Portulaca oleracea* | common purslane | NL |
| *Pseudognaphalium luteoalbum* | cudweed | FAC |
| *Psilocarphus brevissimus* var. *brevissimus* | woolly marbles | FACW |
| *Ranunculus muricatus* | spiny buttercup | FACW |
| *Raphanus raphanistrum* | jointed charlock | NL |
| *Raphanus sativus* | wild radish | NL |
| *Rubus armeniacus* | Himalayan blackberry | FAC |
| *Rumex conglomeratus* | green dock | FACW |
| *Rumex crispus* | curly dock | FAC |
| *Rumex pulcher* | fiddle dock | FAC |
| *Rumex stenophyllus* | narrowleaf dock | FACW |
| *Salix exigua* var. *hindsiana* | sandbar willow | FACW |
| *Salix gooddingii* | Gooding’s black willow | FACW |
| *Salsola tragus* | Russian thistle | FACU |
| *Schoenoplectus acutus* var. *occidentalis* | common tule | OBL |
| *Schoenoplectus americanus* | chairmaker's bulrush | OBL |
| *Senecio vulgaris* | groundsel | FACU |
| *Sesuvium verrucosum* | verrucose sea purslane | FACW |

| Species Name | Common Name | Indicator Status |
|---|---|---|
| *Setaria parviflora* | knotroot bristle grass | FAC |
| *Silybum marianum* | milk-thistle | NL |
| *Sinapis arvensis* | charlock | NL |
| *Solanum americanum* | American black nightshade | FACU |
| *Solanum furcatum* | forked nightshade | UPL |
| *Solanum nigrum* | black nightshade | FACU |
| *Soliva sessilis* | common soliva | FACU |
| *Sonchus asper* subsp. *asper* | prickly sowthistle | FAC |
| *Sonchus oleraceus* | common sowthistle | UPL |
| *Sorghum halepense* | Johnsongrass | FACU |
| *Spergularia marina* | coastal sandspurrey | OBL |
| *Stellaria media* | common chickweed | FACU |
| *Suaeda nigra* | bush seepweed | OBL |
| *Symphyotricum subulatum* var. *parviflorum* | annual saltmarsh aster | OBL |
| *Tragopogon porrifolius* | purple salsify | NL |
| *Tribulus terrestris* | puncture vine | NL |
| *Trifolium fragiferum* | strawberry clover | FAC |
| *Triticum aestivum* | common wheat | NL |
| *Typha angustifolia* | narrow-leaved cattail | OBL |
| *Typha latifolia* | broad-leaf cattail | OBL |
| *Urtica dioica* subsp. *holosericea* | hoary nettle | OBL |
| *Verbena bonariensis* | purple top vervain | FACW |
| *Verbesina encelioides* subsp. *exauriculata* | golden crownbeard | FACU |
| *Veronica peregrina* subsp. *xalapensis* | purslane speedwell | FAC |
| *Vicia villosa* subsp. *villosa* | woolly vetch | NL |
| *Xanthium spinosum* | spiny cocklebur | FACU |
| *Xanthium strumarium* | cocklebur | FAC |
| *Zea mays* | Corn | NL |

# APPENDIX D WETLAND DELINEATION DATA FORMS

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Knightsen / Nunn City/County: Contra Costa Sampling Date: 4/13/10
Applicant/Owner: ECC Habit Conservancy State: CA Sampling Point: 1-a
Investigator(s): Erin McDermott Section, Township, Range: _____
Landform (hillslope, terrace, etc.): valley floor Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR): Med Cal Lat: 37.91899157 Long: -121.6326623604 Datum: WGS84
Soil Map Unit Name: Marcuse clay NWI classification: Pf
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ | No X | |
| Wetland Hydrology Present? | Yes _____ | No X | |

Remarks:
potentially alkali soils which are a problematic soil type

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5ft x 5ft) | | | |
|---|---|---|---|
| 1. Distichlis spicatus | 30 | Y | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 30 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

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

**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 Test 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, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks:
In bare area by telephone pole.

## SOIL

Sampling Point: 1a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR4/1 | 100 | | | | | clay | uniform in color |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Dark brown clay but no indicators present (Potentially a Problematic soil)
Moist but not saturated.

## 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 Tilled 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**)
- 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): ___

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

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

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

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

Remarks:

slight depression area but no primary indicators present. Soil is moist not saturated. Water appears to pond in winter but not into growing season

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn / Knightsen City/County: _____ Sampling Date: 4/13/16

Applicant/Owner: ECCHCP State: _____ Sampling Point: 3-b

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): Med Cal Lat: 37.96921333 Long: -121.62907916 Datum: WGS 84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: Pf

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

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

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

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

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ |
| Hydric Soil Present? | Yes _____ | No X |
| Wetland Hydrology Present? | Yes X | No _____ |

**Is the Sampled Area within a Wetland?** Yes X No _____

Remarks:
Soils on site are alkaline and may be considered Problematic Soil.

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5' x 5') | | | |
|---|---|---|---|
| 1. Hordeum brachyantherum | 80 | Y | FACW |
| 2. Festuca perennis | 2 | N | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 82 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 18 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: 3-6

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR4/1 | 100 | | | | | Clay | |
| 6-15 | 10YR4/1 | 100 | | | | | Sandy Clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Dark black, no mottles. Problematic soil?

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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 Tilled 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): ___

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

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 15"

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

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

Remarks:

Saturation Present in April!

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Num / Knightsen City/County: _____ Sampling Date: 4/13/16

Applicant/Owner: ECCHCP State: _____ Sampling Point: 3-C

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): Med Cal Lat: 37.9692133301 Long: -121.6290796 Datum: WGS 84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes _____ | No X | |
| Wetland Hydrology Present? | Yes X | No _____ | |

Remarks:

alkaline soils. Problematic soil.

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum (Plot size: 5'x5')** | | | |
| 1. Hordeum brachyantherum | 60 | Y | FACW |
| 2. Festuca perennis | 40 | Y | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

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

**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 Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: 3-C

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR 4/1 | 100 | | | | | clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Problematic soil; Hydric Soil assumed due to veg + hydrology + because mottles have not been observed on wetland soils on this site yet

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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 Tilled 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): ___

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

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 12"

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

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

Remarks:

Saturation present in April.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn / Knightsen City/County: Contra Costa Sampling Date: 4/13/16

Applicant/Owner: ECCITCP State: CA Sampling Point: 3-a

Investigator(s): Erin McDermott Section, Township, Range: _____

Landform (hillslope, terrace, etc.): pool - in valley bottom Local relief (concave, convex, none): Concave Slope (%): _____

Subregion (LRR): Med Cal Lat: 37.96915843 Long: -121.6290863 Datum: WGS 84

Soil Map Unit Name: Sacramento Clay, alkali NWI classification: PF

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes X | No _____ | |

Remarks:

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum** (Plot size: 5' x 5') | | | |
| 1. Lepidium nitidum | 10 | Y | FAC |
| 2. Hordeum brachyantherum | 10 | Y | FACW |
| 3. Distichlis spicata | 10 | Y | FAC |
| 4. Festuca perennis | 10 | Y | FAC |
| 5. Atriplex argentea expansa | 2 | N | FAC |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 42 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 58 % Cover of Biotic Crust _____

**Dominance Test worksheet:**

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

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

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

**Prevalence Index worksheet:**

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

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

X Dominance Test 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, unless disturbed or problematic.

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

Remarks:

In alkali seasonal wetland area

## SOIL

Sampling Point: 3-a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR4/1 | 90 | 7.5YR5/6 | 10 | | | clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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)
- X Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

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

Remarks:

Mottles are not bright, could be due to alkali soil which are problematic.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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 Tilled 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): ___

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

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 15"

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

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

Remarks:

Standing water observed in March 2016. Still saturated in April.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Knightsen / Nunn City/County: Contra Costa Sampling Date: 4/13/16

Applicant/Owner: ECCHCP State: CA Sampling Point: 2-a

Investigator(s): Erin McDermott Section, Township, Range: _____

Landform (hillslope, terrace, etc.): valley floor, swale Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): Med Cal Lat: 37.9690585596 Long: -121.6314000420 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ | No X | |
| Wetland Hydrology Present? | Yes X | No _____ | |

Remarks: Soils on site (Marcuse clay) may have strongly alkali inclusions.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum (Plot size: 5'x5')** | | | |
| 1. Festuca perennis | 40 | Y | FAC |
| 2. Phalaris paradoxa | 20 | Y | FAC |
| 3. Bromus diandrus | 2 | N | NL |
| 4. Lythrum hyssopifolia | 10 | N | OBL |
| 5. Medicago polymorpha | 10 | N | FACU |
| 6. Erodium cicutarium | 2 | N | NL |
| 7. Cressa truxillensis | 1 | N | FACW |
| 8. | | | |
| | 85 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks: In swale area. Vegetation is green + tall compared to adjacent areas. Dominated by weak FAC veg but some OBL present.

## SOIL

Sampling Point: 2-a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR4/1 | 100 | | | | | clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks: dark brown clay. No redox features or other hydric soil indicators. Problematic soils so hydric soil assumed

## 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**)
- X Sediment Deposits (B2) (**Nonriverine**)
- X 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 Tilled 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**)
- 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): ___

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

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

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

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

Remarks: slight swale depression area but not strong. Water ponds in winter but not into the growing season. likely

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: _____ Sampling Date: 4/13/16

Applicant/Owner: ECORP State: _____ Sampling Point: 3-d

Investigator(s): E McDermott Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: 37.9693188 Long: -121.6290239 Datum: WGS84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: PF

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ | No X | |
| Wetland Hydrology Present? | Yes _____ | No X | |

Remarks:
alkaline soils

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum (Plot size: 5'x5')** | | | |
| 1. Bromus diandrus | 20 | Y | NL |
| 2. Festuca perennis | 80 | Y | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

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

**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 | _____ | x 1 = _____ |
| FACW species | _____ | x 2 = _____ |
| FAC species | 80 | x 3 = 240 |
| FACU species | _____ | x 4 = _____ |
| UPL species | 20 | x 5 = 100 |
| Column Totals: | _____ (A) | _____ (B) |

Prevalence Index = B/A = 340/100 = 3.4

**Hydrophytic Vegetation Indicators:**

___ Dominance Test 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, unless disturbed or problematic.

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

Remarks:
Veg looks different here due to Bromus diandrus co-dominance.

## SOIL

Sampling Point: B-d

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR4/1 | 100 | | | | | Clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Same soil as at 3-a to 3c which appeared to be wetlands. So assume hydric soil possible, but veg + hydro not present.

## 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 Tilled 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): ___

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

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

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

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

Remarks:

No saturation present. Soil is loose and dry.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: CC Sampling Date: 4/13/16

Applicant/Owner: ECCHCP State: _____ Sampling Point: 3-E

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): Med cal Lat: 37.9690027 Long: -121.6292489 Datum: WGS 84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: Pf

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

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

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

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

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ |
| Hydric Soil Present? | Yes X | No _____ assumed |
| Wetland Hydrology Present? | Yes _____ | No X |

**Is the Sampled Area within a Wetland?** Yes _____ No X

Remarks:

alkali soils

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Hordeum marinum gussone | 40 | Y | FAC |
| 2. Festuca perennis | 20 | Y | FAC |
| 3. Distichlis spicata | 20 | Y | FAC |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 80 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks:

FAC species only, nothing obligate.

## SOIL

Sampling Point: 3-e

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR 4/1 | 100 | | | | | clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Same soil as 3a to 3d. Problematic alkaline soil? Would assume hydric soil except no hydro.

## 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 Tilled 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**)
- 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): ___

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

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

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

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

Remarks:

No saturation present here.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: CC Sampling Date: 4/13/2016

Applicant/Owner: ECCHCP State: _____ Sampling Point: 4a

Investigator(s): E. McDermott Section, Township, Range: _____

Landform (hillslope, terrace, etc.): valley bottom Local relief (concave, convex, none): concave Slope (%): 1%

Subregion (LRR): Med Cal Lat: 37.96901163 Long: -121.630092 Datum: WGS84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes X | No (assumed) | |
| Wetland Hydrology Present? | Yes _____ | No X | |

Remarks:

Alkaline soils may not show hydric indicators

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum (Plot size: 5'x5')** | | | |
| 1. Festuca perennis | 25 | Y | FAC |
| 2. Rumex crispis | 50 | Y | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 75 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

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

**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 Test 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, unless disturbed or problematic.

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

Remarks:

Dominated by FAC veg. Not strong veg.

## SOIL

Sampling Point: 4-a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR 4/1 | 100 | | | | | clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Same soil as 3a – 3e, Problematic alkali soil with no

## 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 Tilled 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**)
- 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): ___

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

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

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

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

Remarks:

Soil is not saturated. Cracks are likely due to clay content.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: CC Sampling Date: 4/13/16

Applicant/Owner: ECCHCP State: _____ Sampling Point: 5a

Investigator(s): E. McDermott Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): concave Slope (%): 1%

Subregion (LRR): Med Cal Lat: 37.9689869 Long: -121.633716 Datum: WGS84

Soil Map Unit Name: Marcuse clay NWI classification: PF

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks: Problematic dark soils may have alkali inclusions, which do not exhibit hydric indicators.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Hordeum brachyantherum | 50 | Y | FAC |
| 2. Distichlis spicata | 20 | Y | FAC |
| 3. Festuca perennis | 20 | Y | FAC |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 90 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks: Dominated by FAC veg but not just Festuca perennis, which is widespread + ubiquitous on site.

## SOIL

Sampling Point: 5a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR4/1 | 100 | | | | | clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

dark clay no redox, but likely problematic soil. Can't determine if soil is hydric.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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 Tilled 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): ___

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

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 10"

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

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

Remarks:

Soil is saturated in April!

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: CU Sampling Date: 4/13/16

Applicant/Owner: ECCHCP State: _____ Sampling Point: 5b

Investigator(s): E. McDermott Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): Med Cal Lat: _____ Long: _____ Datum: WGS84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes X | No _____ | |

Remarks: Alkaline soils

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum (Plot size: 5'x5')** | | | |
| 1. Festuca perennis | 80 | Y | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 80 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: S6

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR4/1 | 100 | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

dark clay no redox Hydric soils assumed because they are problematic alkaline soils

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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 Tilled 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): ___

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

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 10"

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

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

Remarks:

Saturated here in April

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: CC Sampling Date: 11/30/16

Applicant/Owner: ECCHCP State: _____ Sampling Point: 6-a

Investigator(s): E. McDermott Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): Med Cal Lat: 37.96918907 Long: -121.63463649 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes X | No _____ | |

Remarks: Alkaline soils

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5' radius circle) | | | |
|---|---|---|---|
| 1. Festuca perennis | 30 | Yes | FAC |
| 2. Polygonum monspeliensis | 20 | Yes | FACW |
| 3. Cressa truxillensis | 1 | No | FACW |
| 4. Hordeum marinum gussoneanum | 20 | Yes | FAC |
| 5. Lactuca serriola | 1 | No | FACU |
| 6. Cirsium vulgare | <1 | No | FACU |
| 7. Sonchus oleraceus | <1 | No | UPL |
| 8. | | | |
| | 55 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks: Area stands out due to tall Festuca + understory of herbs. Wetland is a 5' radius circle on pt.

## SOIL

Sampling Point: 6-a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR3/1 | 100 | | | | | | |
| 8-12 | 10YR3/1 | 90 | 10YR7/1 | 10 | D | M | clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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)
- X 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: ___

Depth (inches): ___

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

Remarks:
Depleted dark surface? Or just alkali. In very strong obvious wetland w/ clearly alkaline soils. Hydric soils assumed

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- X 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 Tilled 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): ___

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

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 5 April 2016

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

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

Remarks:
In area that ponds in water. It is currently moist but not saturated. Saturated in April 2016.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: CC Sampling Date: 11/30/16

Applicant/Owner: ECCHCP State: _____ Sampling Point: 6-b

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): Med cal Lat: 37.969134 Long: -121.624639 Datum: WGS 84

Soil Map Unit Name: Morwise clay NWI classification: PF

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

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

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

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

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes 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: Alkaline soils

bowlday

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Festuca perennis | 60 | Yes | FAC |
| 2. Polypogon monspeliensis | 5 | No | FACW |
| 3. Hordeum marinum guss | 20 | Yes | FAC |
| 4. Cressa truxilensis | 1 | No | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 86 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 14 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: 6-b

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR3/1 | 100 | | | | | | |
| 8-12 | 10YR3/1 | 90 | 10YR7/1 | 10 | D | M | clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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)
- X 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: ___

Depth (inches): ___

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

Remarks:

Very light tan depletions, or maybe just alkaline soil? Hydric soil assumed.

## 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 Tilled 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): ___

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

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 10"

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

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

Remarks:

Saturation observed in 2015. Appears to be right on the boundary.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: CC Sampling Date: 11/30/16

Applicant/Owner: Ecetter State: CA Sampling Point: 6-C

Investigator(s): E. McDermott Section, Township, Range: _____

Landform (hillslope, terrace, etc.): valley Local relief (concave, convex, none): convex Slope (%): 1

Subregion (LRR): Med Cal Lat: 37.96929108 Long: -121.6344408 Datum: WGS84

Soil Map Unit Name: Piper Fine Sandy Loam NWI classification: PF

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ | No X | |
| Wetland Hydrology Present? | Yes _____ | No X | |

Remarks:

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Bromus diandrus | 60 | Yes | NL |
| 2. Hordeum murinum leporinum | 10 | No | FAC |
| 3. Hordeum murinum glaucum | 10 | No | FAC |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 80 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust _____

**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 | | x 1 = |
| FACW species | | x 2 = |
| FAC species | 20 | x 3 = 60 |
| FACU species | | x 4 = |
| UPL species | 60 | x 5 = 300 |
| Column Totals: | 80 (A) | 360 (B) |

Prevalence Index = B/A = 360/80 = 4.5

**Hydrophytic Vegetation Indicators:**

___ Dominance Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: 6-C

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16 | 10YR4/2 | 100 | | | | | Sandy loam | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks: loose + loamy soil. Barely moist.

## 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 Tilled 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): ___

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

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

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

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

Remarks: Site is elevated 6" above adj area

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: _____ Sampling Date: 11/30/16

Applicant/Owner: ECORP State: _____ Sampling Point: 7-a

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): Med Cal Lat: 37.9613403 Long: -121.6351551 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes X | No _____ | |

Remarks: Alkaline soils

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Distichlis spicata | 80 | Y | FAC |
| 2. Hordeum marinum gussoneanum | 10 | N | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 90 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

**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:**

✓ Dominance Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: 7-a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR4/1 | 100 | | | | | | |
| 6-14 | 10YR4/2 | 95 | 7.5YR4/6 | 5 | C | M | Clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks: Actually found bright mottles! First time on this project. Could be relict, whole site was likely wetland at some point.

## 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 Tilled 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): ___

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

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

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

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

Remarks: Adjacent to strong wetland, no indicators present.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: Coco Sampling Date: 11/30/16

Applicant/Owner: ECCHCP State: CA Sampling Point: 7b

Investigator(s): Erin McDermott Section, Township, Range: _____

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

Subregion (LRR): Med Cal Lat: 37.969134 Long: -121.635155 Datum: WGS84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes _____ | No X | |

Remarks: Alkaline soils which are problematic

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5x5) | | | |
|---|---|---|---|
| 1. Hordeum marinum gussoneanum | 5 | No | FAC |
| 2. Bromus diandrus | 80 | Yes | NL |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 85 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust _____

**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 | _____ | 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:**

__ Dominance Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: 7-b

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR3/2 | 100 | | | | | | |
| 8-16 | 10YR3/2 | 98 | 7.5YR5/8 | 2 | C | M | clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: _____

Depth (inches): _____

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

Remarks: Redox features present. Hydric soil could be met, even when entire site was in wetland.

## 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 Tilled 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): _____

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

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

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

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

Remarks: Elevated area adj to wetland.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: Coco Sampling Date: 11/30/16

Applicant/Owner: ECCHCP State: CA Sampling Point: 8-a

Investigator(s): Erin McDermott Section, Township, Range: _____

Landform (hillslope, terrace, etc.): valley floor Local relief (concave, convex, none): level Slope (%): _____

Subregion (LRR): Med cal Lat: 37.969330 Long: -121.635330 Datum: WGS84

Soil Map Unit Name: Marcuse clay NWI classification: PF

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ | No _____ | |
| Wetland Hydrology Present? | Yes _____ | No _____ | |

Remarks: Alkaline soils are considered a problematic soil

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum (Plot size: 5'x5')** | | | |
| 1. Distichlis spicata | 50 | Yes | FAC |
| 2. Festuca perennis | 30 | Yes | FAC |
| 3. Atriplex rosea | 1 | No | FACU |
| 4. Hord mar gussoni | 2 | No | FAC |
| 5. Cressa truxillensis | <1 | No | FACW |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | _____ = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

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

**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 Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: 8-a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR4/1 | 100 | | | | | clay | |
| 6-14 | 10YR4/2 | 95 | 5YR 5/6 | 5 | | | clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

redox features present. Could be wetland

## 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 Tilled 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**)
- 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): ___

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

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

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

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

Remarks:

right at boundary - swale [illegible] leading to wetland
Is likely wet after rains but does not pond water

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: Coco Sampling Date: 11/30/16

Applicant/Owner: ECCHEP State: _____ Sampling Point: 9-a

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): Med Cal Lat: 37.969534 Long: -121.635034 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes ? | No _____ | |

Remarks: Soils are alkaline which are problematic

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 10' radius) | | | |
|---|---|---|---|
| 1. Hordeum marinum gussoneanum | 10 | Yes | FAC |
| 2. Cressa truxillensis | 20 | Yes | FACW |
| 3. Festuca perennis | 55 | Yes | FAC |
| 4. Lepidium latifolium | 5 | No | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

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

**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 Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: 9-a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture clay | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR3/2 | 95 | 10YR4/6 | 5 | C | M | Sandy loam | |
| 15-16 | 10YR3/2 | 98 | 10YR4/4 | 2 | C | M | clay loam | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**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 Tilled 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**)
- 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): ___

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

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

?

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

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

Remarks: Low area but no other strong wetland hydrology indicators present. Likely ponds in very wet years. Lowest area likely ponds in most years.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: CC Sampling Date: 5/9/17

Applicant/Owner: ECCHCP State: _____ Sampling Point: 10-a

Investigator(s): L. McDermott and S. Bishop Section, Township, Range: _____

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

Subregion (LRR): Med cal Lat: 37.9652599 Long: -121.6203475 Datum: WGS 84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: PF

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes X | No _____ | |

Remarks: 2016/2017 very wet winter
Alkali soils. In ag field that is disked + irrigated. Adjacent

### VEGETATION – Use scientific names of plants. Sand dune was spread into this field.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Polypogon monspeliensis | 40 | Yes | FACW |
| 2. Lythrum hyssopifolia | 30 | Yes | OBL |
| 3. Xanthium strumarium | 3 | No | FAC |
| 4. Sorghum halapensis | 1 | No | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 74 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 26 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks: Location is on edge of field on rd edge
Road is not used frequently but tractors turn here, etc

## SOIL

Sampling Point: 10-a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR3/2 | 95 | 10YR2/1 | 5 | | | Sandy clay | above plow pan |
| 6-12 | 10YR3/2 | 97 | 10YR4/1 | 3 | | | Sandy clay | below plow pan compact & dry deeper |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: hard pan (plow plan)

Depth (inches): 6"

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

Remarks:

Hard pan present at 6". Area is plowed. No hydric indicators. Alkaline soils w/ sand mixed from adjacent sand dune which was leveled in past to increase drainage. Poorly drained.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- X Surface Water (A1) in winter
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- X 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 Tilled 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): ___

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

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

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

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

Remarks:

Observed to be flooded in winter 2016. Veg is stunted here & different than adj areas

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: CCC Sampling Date: 5/9/17

Applicant/Owner: ECCHCP State: Ca Sampling Point: 10-b

Investigator(s): E. McDermott / S. Bishop Section, Township, Range: _____

Landform (hillslope, terrace, etc.): valley floor Local relief (concave, convex, none): – Slope (%): _____

Subregion (LRR): Med Cal Lat: 37.9652255 Long: -121.6220014 Datum: WGS84

Soil Map Unit Name: Sacramento clay alkali NWI classification: PF

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ | No X | |
| Wetland Hydrology Present? | Yes _____ | No X | |

Remarks: Site is in a disked wheat field. Soil is tilled + furrowed and planted in wheat. Soil is alkaline w/ sand wind in from adjacent sand dune. Wet winter!

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Triticum aestivum | 20 | Y | NL |
| 2. Lythrum hyssopifolium | 1 | No | OBL |
| 3. Melilotus indica | 1 | No | FACU |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 22 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 78 % Cover of Biotic Crust _____

**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 _____ | 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:**

__ Dominance Test 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, unless disturbed or problematic.

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

Remarks: In cultivated wheat field. Wheat appears healthy + vigorous. Not stunted.

## SOIL

Sampling Point: 10-6

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-18 | 10YR3/2 | 97 | 10YR2/1 | 2 | | | clay loam | |
| | | | 10YR7/3 | <1 | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Black + white spots thru a uniform Matrix
Some patches of tan same color. Much moisture - lower than 10-7.

## 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 Tilled 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): ___

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

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

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

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

Remarks:

Not ponded in [illegible] 20[illegible] in.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn City/County: Coco Sampling Date: 5/9/17

Applicant/Owner: Eccher State: CA Sampling Point: 10-C

Investigator(s): L. McDermott + S. Bishop Section, Township, Range: _____

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

Subregion (LRR): Med Cal Lat: 37.965210 Long: -121.620981 Datum: WGS84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ | No X | |
| Wetland Hydrology Present? | Yes _____ | No X | |

Remarks: Soils are alkaline which are problematic

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Lythrum hyssopifolia | 50 | Yes | OBL |
| 2. Persicaria maculosa | 10 | No | FACW |
| 3. Polypogon monsp | 3 | No | FACW |
| 4. Brassica nigra | 1 | No | FACU |
| 5. Sorghum halapense | 10 | No | NL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 74 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 26 % Cover of Biotic Crust _____

**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 | 50 | x 1 = 50 |
| FACW species | 13 | x 2 = 26 |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | 11 | x 5 = 55 |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = 131/74 = 1.8

**Hydrophytic Vegetation Indicators:**

✓ Dominance Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: 10-c

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-18 | 10YR3/2 | 80 | 10YR2/1 | 20 | | | sandy clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks: No plow pan. Soil is sandier than 10-b. Light sand patches throughout. Adj sand dune was levelled into this field. Alkaline soils often don't have indicators though.

## 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 Tilled 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): ___

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

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

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

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

Remarks: right on edge of ponded area in 2016/2017. Boundary but out

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/9/17

Applicant/Owner: ECCHP State: Sampling Point: 11-a

Investigator(s): E. McDermott + S. Bishop Section, Township, Range:

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

Subregion (LRR): Med Cal Lat: 37.961035 Long: -121.620277 Datum: WGS84

Soil Map Unit Name: Sacramento clay, alkaline NWI classification: PF

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

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes [X] | No ○ | |
| Hydric Soil Present? | Yes [X] | No ○ | **Is the Sampled Area within a Wetland?** Yes [X] No ○ |
| Wetland Hydrology Present? | Yes [X] | No ○ | |

Remarks: very similar to 10-a, in similar landscape position. Alkaline soils can be problematic. Photo 1124 location is at edge of agricultural field.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** radius 5 ft | | | |
| 1. Polypogon monspeliensis | 30 | | FACW |
| 2. Lythrum hyssopifolia | 30 | | OBL |
| 3. Xanthium strumarium | 10 | | FAC |
| 4. Rumex crispus | 1 | | FAC |
| 5. Persicaria maculata | 1 | | FACW |
| 6. Convolv arvensis | 3 | | NL |
| 7. | | | |
| 8. | | | |
| Total Cover: | 75 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

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

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: % (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:**

- [ ] Dominance Test 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: In road bed. Hard pan @ 8". Appears similar to 10-a in soil + veg.

## SOIL

Sampling Point: 11-a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR3/2 | 80 | 10YR2/1 | 20 | | | sandy clay | plow pan |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ☒ No ☐

Remarks: No redox features. Alkaline Sand mixed in from levelling of sand dune in adjacent field. Assume hydric soil.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☑ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ☐ | No ☒ | Depth (inches): |
| Water Table Present? | Yes ☐ | No ☒ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ☐ | No ☒ | Depth (inches): |

**Wetland Hydrology Present?** Yes ☑ No ☐

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

Remarks: Soil crust caused by water ponding. Appears to be low in elevation.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/9/17

Applicant/Owner: Ecetter State: CA Sampling Point: 12-a

Investigator(s): E. McDermott, S. Bishop Section, Township, Range:

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

Subregion (LRR): Med Cal Lat: 37.960954 Long: -121.621203 Datum: WGS84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

Are Vegetation ☑ Soil ☑ or Hydrology ☑ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ○

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ☒ | No ○ | |
| Hydric Soil Present? | Yes ☒ | No ○ | Is the Sampled Area within a Wetland? Yes ☒ No ○ |
| Wetland Hydrology Present? | Yes ☒ | No ○ | |

Remarks: Soil is alkaline which is problematic soil type. Photo 1125
Winter 2016/2017 was unusually wet. Location is in plowed wheat field where wheat grows poorly.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Spergularia marina | 90 | Y | OBL |
| 2. Sesuvium verrucosum | 1 | N | FACW |
| 3. Cressa | 1 | N | FACW |
| 4. Distichlis spicata | 1 | N | FAC |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 93 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 7 % % Cover of Biotic Crust %

**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: 1 % (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:**

☑ Dominance Test 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 ○

Remarks: In planted wheat field. Veg is stunted + no wheat present likely due to ponding in winter

Sampling Point: 12-a

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 10YR4/3 | 100 | | | | | clay | |
| 5-16 | 10YR4/3 | 95 | 10YR5/6 | 5 | | C | clay | |
| | | | black spots? | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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:[4]**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ☑ No ☐

Remarks: Hydric soil assumed based on veg + hydrology.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

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

**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks: Water appears to pond here or be saturated here every year based on aerial photos

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/9/17

Applicant/Owner: ECCHCP State: Sampling Point: 12-6

Investigator(s): E. McDermott, S. Bishop Section, Township, Range:

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): Med cal Lat: 37.960954 Long: -121.620926 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

Are Vegetation ✓ Soil ✓ or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ✓

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ○ | No ✓ | |
| Hydric Soil Present? | Yes ✓ | No ○ | **Is the Sampled Area within a Wetland?** Yes ○ No ✓ |
| Wetland Hydrology Present? | Yes ○ | No ✓ | |

Remarks: Soil is alkaline. photo 1126 + 1130
Location is in disked field, Winter 2016/2017 was wetter than normal.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** (5 ft) | | | |
| 1. Polygonum aviculare | 15 | Y | FAC |
| 2. Triticum aestivum (wheat) | 40 | Y | NL |
| 3. Senecio vulgaris | <1 | N | FACU |
| 4. Melilotus indica | 2 | N | FACU |
| 5. Medicago polymorpha | 5 | N | FACU |
| 6. Lythrum hyssopifolia | <1 | N | OBL |
| 7. Convolvulus arvensis | 5 | N | NL |
| 8. | | | |
| Total Cover: | 68 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 32 % % Cover of Biotic Crust %

**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 | 0.5 | x 1 = | 0.5 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 15 | x 3 = | 45 |
| FACU species | 7.5 | x 4 = | 30 |
| UPL species | 45 | x 5 = | 225 |
| Column Totals: | 68 (A) | | 300 (B) |

Prevalence Index = B/A = 4.4

**Hydrophytic Vegetation Indicators:**

- ✓ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1] = 4.4
- ☐ 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 ✓

Remarks:

Sampling Point: 12-6

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 10YR 3/3 | 100 | | | | | | |
| 5-18 | 10YR 3/2 | 97 | 10YR 5/6 | 3% | C | M | clay | |
| | | | + black spots | <1% | C | M | clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ☒ No ○

Remarks: Not enough mottles to meet criteria, however no soil locations have had clear hydric soil indicators so we are assuming hydric soil.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- [ ] 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)
- [ ] 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)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ☒ Depth (inches):

Water Table Present? Yes ○ No ☒ Depth (inches):

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

**Wetland Hydrology Present?** Yes ○ No ☒

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

Remarks: No evidence of wetland hydrology Adjacent to area that appears to pond water

## WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/9/17

Applicant/Owner: Eco-LP State: [ ] Sampling Point: 13a

Investigator(s): E McDermott, S. Bishop Section, Township, Range:

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

Subregion (LRR): Med cal [ ] Lat: 37.956084 Long: -121.620970 Datum: WGS84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (X) No ( )

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

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

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes (X) ? | No ( ) |
| Hydric Soil Present? | Yes (X) ? | No ( ) |
| Wetland Hydrology Present? | Yes ( ) | No (X) |

**Is the Sampled Area within a Wetland?** Yes ( ) No (X)

Remarks:
Site is in disked agricultural field w/ problematic alkaline soil. Winter 2016/2017 was very wet. Site is dry now in May.

### VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5x5 | | | |
| 1. Beta vulgaris | 40 | Y | NL |
| 2. Spergularia marina | 10 | N | OBL |
| 3. Polygonum aviculare | 15 | Y | FAC |
| 4. Sesuvium verricosum | 1 | N | FACW |
| 5. Cynodon dactylon | 1 | N | FACU |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 67 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 33 % % Cover of Biotic Crust ___ %

**Dominance Test worksheet:**

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

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

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

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 10 | x 1 = | 10 |
| FACW species | 1 | x 2 = | 2 |
| FAC species | 15 | x 3 = | 45 |
| FACU species | 41 | x 4 = | 164 |
| UPL species | 0 | x 5 = | |
| Column Totals: | 67 (A) | | 221 (B) |

Prevalence Index = B/A = 3.3

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test 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:
Beta vulgaris is not listed. Polygonum aviculare is in uplands also. Prevalence index is not met.

## SOIL

Sampling Point: 13

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 10 YR 3/3 | 100 | | | | | clay | |
| 5-18 | 10YR 3/2 | 97 | 10YR 5/6 | 3 | C | M | clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ☒ No ☐

Remarks: Same soil as before not hydric, but have to assume its hydric due to problematic soil

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

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

**Wetland Hydrology Present?** Yes ☐ No ☒

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

Remarks: veg looks different some soil cracks due to high clay content

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn/Knightsen City/County: Coco Sampling Date: 5/9/17

Applicant/Owner: ECCCHCP State: CA Sampling Point: 13-6

Investigator(s): EM + SB Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): level Slope (%): _____

Subregion (LRR): Med cal Lat: 37.955963 Long: -121.620987 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes X | No _____ | |

Remarks: Soil is problematic alkaline soil. Location is in disked + planted wheat field. Winter 2016/2017 was exceptionally wet

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Polygonum aviculare | 20 | Yes | FAC |
| 2. Sesuvium vericosum | 5 | No | FACW |
| 3. Atriplex patula | 5 | No | FACW |
| 4. Melilotus indica | 20 | Yes | FACU |
| 5. Polygonum aviculare | 20 | Yes | FAC |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 70 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust _____

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (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 Test 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, unless disturbed or problematic.

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

Remarks:

Veg is stunted + wheat is not present likely due to ponding

## SOIL

Sampling Point: 13-6

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 10YR3/3 | 100 | | | | | clay | |
| 5-18 | 10YR3/2 | 97 | 10YR5/3 | 3 | C | M | clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

**Hydric Soil Present?** Yes ✓ No ___

Remarks: Assume hydric because soils on site have not been having redox features.

## 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 Tilled 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 ✓ Depth (inches): ___

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

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

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

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

Remarks:

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/9/17

Applicant/Owner: ECCHCP State: CA Sampling Point: 13C

Investigator(s): LM + SB Section, Township, Range: _____

Landform (hillslope, terrace, etc.): valley bottom Local relief (concave, convex, none): level Slope (%): _____

Subregion (LRR): Med Cal Lat: 37.955487 Long: -121.620899 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: PF

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes X | No _____ | |

Remarks: In ag field that is disked. Soils are alkaline.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum (Plot size: 5' x 5')** | | | |
| 1. Polygonum aviculare | 25 | Y | FAC |
| 2. Spergularia marina | 40 | Y | OBL |
| 3. Centromadia pungens | 2 | N | FAC |
| 4. Suaeda nigra | 1 | N | OBL |
| 5. Melilotus indica | 5 | N | FACU |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 73 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 27 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: 13-C

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clay | |
| Same as 13-6. | | | | | | | clay | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks: Assume hydric because alkaline soils on site have not had hydric soil indicators

## 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 Tilled 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 ✓ | Depth (inches): ___ |
| Water Table Present? | Yes ___ | No ✓ | Depth (inches): ___ |
| Saturation Present? (includes capillary fringe) | Yes ___ | No ✓ | Depth (inches): ___ |

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

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

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn/Knightsen City/County: Coco Sampling Date: 5/16/17

Applicant/Owner: ECCHIP State: [ ] Sampling Point: 14-a

Investigator(s): EM + SB Section, Township, Range:

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

Subregion (LRR): Med Cal [ ] Lat: 37.961057 Long: -121.625771 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes ( ) No ✓

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No ✓ | |
| Hydric Soil Present? | Yes ✓ | No ( ) assumed | **Is the Sampled Area within a Wetland?** Yes ( ) No ✓ |
| Wetland Hydrology Present? | Yes ( ) | No ✓ | |

Remarks: Site is disked agricultural field w/ problematic alkaline soil. Wet year.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Melilotus indica | 60 | Yes | FACU |
| 2. Atriplex rosea | 2 | No | FACU |
| 3. Atriplex patula | 1 | No | FACW |
| 4. Medicago polymorpha | 2 | N | FACU |
| 5. Polygonum aviculare | 2 | N | FAC |
| 6. Spergularia sp. | 2 | N | OBL |
| 7. | | | |
| 8. | | | |
| Total Cover: | % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

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

**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 | 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:**

- [ ] Dominance Test 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 ✓

Remarks: Dominated by upland veg. Appears green from a distance + Corresponds w/ signature. Unknown Spergularia.

## SOIL

Sampling Point: 149

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ☒ No ☐

Remarks:

No Soils data collected. since soils are inconclusive in this field

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ☐ | No ☒ | Depth (inches): |
| Water Table Present? | Yes ☐ | No ☒ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ☐ | No ☒ | Depth (inches): |

**Wetland Hydrology Present?** Yes ☐ No ☒

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

Remarks:

None. Signature on aerial photo but no indicators observed

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/16/17

Applicant/Owner: ECCCHCP State: Sampling Point: 15-a

Investigator(s): EM + SB Section, Township, Range:

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

Subregion (LRR): Med Cal Lat: 37.961792 Long: -121.625771 Datum: WGS84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

Are Vegetation ☑ Soil ☑ or Hydrology ☑ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ✓

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ● | No ○ | |
| Hydric Soil Present? | Yes ● | No ○ | **Is the Sampled Area within a Wetland?** Yes ✓ No ○ |
| Wetland Hydrology Present? | Yes ● | No ○ | |

Remarks: Location is in disked ag field with problematic alkaline soil

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 5'x5' Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. Spergularia marina | 40 | Y | OBL |
| 2. Polypogon monspeliensis | 5 | N | FACW |
| 3. Atriplex patula | 25 | Y | FACW |
| 4. Polygonum aviculare | 15 | N | FAC |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 85 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 15 % % Cover of Biotic Crust %

**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:**

- ✓ Dominance Test 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 ○

Remarks: Spergularia here, stands out from adj areas but hard to see. The wetlands in this field are characterized by Spegularia, Polypogon + Crypsis. The other species: Polygonum aviculare Atriplex patula are ubiquitous.

## SOIL

Sampling Point: 15a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ☒ No ☐

Remarks: No soil data taken due to inconclusive nature of soils. Hydric soil assumed

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☒ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ☐ | No ☒ | Depth (inches): |
| Water Table Present? | Yes ☐ | No ☒ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ☐ | No ☒ | Depth (inches): |

**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks: Deep soil cracks may be due to clay content. Veg is stunted + no wheat is present due to ponding in growing season

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/16/17

Applicant/Owner: ECCHCP State: CA Sampling Point: 15-6

Investigator(s): EM + SB Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): level Slope (%): _____

Subregion (LRR): Med Cal Lat: 37.962145 Long: -121.626638 Datum: WGS84

Soil Map Unit Name: Marause clay NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks: In disked agricultural field w/ problematic alkaline soils. Very wet year.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5' x 5') | | | |
|---|---|---|---|
| 1. Spergularia marina | 30 | Yes | OBL |
| 2. Polypogon monspeliensis | 10 | No | FACW |
| 3. Polygon aviculare | 25 | Yes | FAC |
| 4. Atriplex patula | 10 | No | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 75 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

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

**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 Test 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, unless disturbed or problematic.

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

Remarks:

## SOIL

Sampling Point: 15-6

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks: No soil data taken since soils in this field are inconclusive. Hydric soil assumed

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- X 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 Tilled 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): ___

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

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

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

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

Remarks:

Soil cracks may be due to clay content. Site is irrigated but veg here is stunted. likely due to poor growing season which may result in indicators

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/16/17

Applicant/Owner: EcoTech State: Sampling Point: 16a

Investigator(s): EM + SB Section, Township, Range:

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

Subregion (LRR): Med cal Lat: 37.964181 Long: -121.626494 Datum: WGS84

Soil Map Unit Name: Marcuse clay NWI classification: ~~PSS~~ Pf

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

Are Vegetation ☑ Soil ☑ or Hydrology ☑ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ✓

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ○ | |
| Hydric Soil Present? | Yes ✓ | No ○ | **Is the Sampled Area within a Wetland?** Yes ✓ No ○ |
| Wetland Hydrology Present? | Yes ✓ | No ○ | |

Remarks: Photo 1240 In disked ag field planted w/ wheat. Soils are alkaline and problematic. last winter (2016/2017) was wet

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Polypogon monspeliensis | 5 | N | FACW |
| 2. Sperautaria marina | 3 | N | OBL |
| 3. Lythrum hyssopifolia | 1 | N | OBL |
| 4. Polygonum aviculare | 10 | Yes | FAC |
| 5. Melilotus indicus | 2 | N | FACU |
| 6. Cyperus schoenodes | 5 | N | FACW |
| 7. Atriplex prostrata | 10 | Yes | FACW |
| 8. Lotus corniculatus | 1 | N | FAC |
| Total Cover: | 37 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 63 % % Cover of Biotic Crust %

**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:**

- ☒ Dominance Test 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 ○

Remarks:

## SOIL

Sampling Point: 16 9

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR3/2 | 97 | 10YR4/6 | 3 | C | M | clay | |
| 4-16 | 10YR3/2 | 94 | 10YR4/6 | 6 | C | M | clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ☒ No ☐

Remarks: Hydric Soils with indicators!

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

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

**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks: Soil is moist starting at 5".
Veg is stunted + sparse, no wheat is present.

## WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/16/17

Applicant/Owner: ECCCHCP State: Sampling Point: 16b

Investigator(s): EM + SB Section, Township, Range:

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

Subregion (LRR): Med cal Lat: 37.964227 Long: -121.626223 Datum: WGS84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

Are Vegetation ✓ Soil ✓ or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ( ) No ( )

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No ( ) | |
| Hydric Soil Present? | Yes ( ) | No ( ) | **Is the Sampled Area within a Wetland?** Yes ( ) No ✓ |
| Wetland Hydrology Present? | Yes ( ) | No ( ) | |

Remarks: In disked and planted wheat field w/ problematic alkali soils. Photo 1241

### VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 5'x5' Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. Polygonum aviculare | 15 | Y | FAC |
| 2. Rumex crispus | <1 | N | FAC |
| 3. Medicago polymorpha | 2 | N | FACU |
| 4. Wheat | 10 | Y | NL |
| 5. Polypogon monspeliensis | <1 | N | FACW |
| 6. Lotus corniculatus | 1 | N | FAC |
| 7. Melilotus indica | 4 | N | FACU |
| 8. | | | |
| Total Cover: | 33 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 67 % % Cover of Biotic Crust %

**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 | 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:**

- ■ Dominance Test 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 ✓

Remarks: Wheat is present at this location and is absent in wetland areas

## SOIL

Sampling Point: 16b

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR 3/2 | | 10YR 4/6 | 0 | | | clay | |
| 4-8 | 10YR 3/2 | | 10YR 4/6 | 2% | | | clay | |
| 8-16 | 10YR 3/2 | | 10YR 4/6 | 6% | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes [x] No [ ]

Remarks:

More mottles starting at depth, likely due to shallow groundwater table
Feels sandier than 16A. Shallow groundwater.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- [ ] 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)
- [ ] 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)
- [ ] Thin Muck Surface (C7)
- [ ] 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):

Water Table Present? Yes [ ] No [x] Depth (inches):

Saturation Present? (includes capillary fringe) Yes [ ] No [x] Depth (inches):

**Wetland Hydrology Present?** Yes [ ] No [x]

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

Remarks:

Water does not appear to pond here

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Knightsen/Nunn City/County: Coco Sampling Date: 5/10/17
Applicant/Owner: ECCCHCP State: [ ] Sampling Point: 17a
Investigator(s): EM + SB Section, Township, Range:
Landform (hillslope, terrace, etc.): valley bottom Local relief (concave, convex, none): level Slope (%):
Subregion (LRR): Med Cal [ ] Lat: 37.967224 Long: -121.631303 Datum: WGS84
Soil Map Unit Name: Marcuse clay NWI classification: Pf
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 ( ) No (X)
Are Vegetation [ ] Soil [✓] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (X) | No ( ) | |
| Hydric Soil Present? | Yes (X) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (X) No ( ) |
| Wetland Hydrology Present? | Yes (X) | No ( ) | |

Remarks: Location is on edge of disced ag field w/ problematic alkaline soils Site is dry now but received record precip the prior winter. Photo 1254

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Polypogon monspeliensis | 30 | Y | FACW |
| 2. Lythrum hyssopifolia | 15 | Y | OBL |
| 3. | | | |
| 4. Xanthium strumarium | 2 | N | FAC |
| 5. Polygonum aviculare | 1 | N | FAC |
| 6. Melilotus indica | 1 | N | FACU |
| 7. | | | |
| 8. | | | |
| Total Cover: | 49 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 51 % % Cover of Biotic Crust %

**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 Test 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: In area visibly different than surrounding area w/ dense Polypogon monspeliensis + Lythrum. No wheat here Field is plowed into furrows w/ Polypogon on mounds & Lythrum in furrows. Location is in lowest pt in field (visible) w/ strongest wetland vegetation. Lythrum is present on access rds etc likely due to high precip this year

## SOIL

Sampling Point: 17a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 3/2 | 100 | | | | | | |
| 6-14 | 10YR 3/2 | 98 | 10YR 6/8 | 1-2% | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes (X) No ( )

Remarks: Small concentrations of mottles. Not of sufficient amounts to meet hydric soil criteria but alkaline soil can minimize indicators, Hydric Dissim?

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- [ ] 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)
- [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)
- [ ] Thin Muck Surface (C7)
- [ ] 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):

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

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

**Wetland Hydrology Present?** Yes (X) No ( )

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

Remarks: Hard to say. Site appears to have been saturated this year based on soil surface crust. No obvious indicators. Soil surface crust. This year received above normal rainfall [illegible]



ponded lots @ random location

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Knightsen City/County: Coco Sampling Date: 5/16/17
Applicant/Owner: ECCCHCP State: Sampling Point: 18a
Investigator(s): EM + SB Section, Township, Range:
Landform (hillslope, terrace, etc.): valley floor Local relief (concave, convex, none): level Slope (%):
Subregion (LRR): Med Cal Lat: 37.959248 Long: -121.636591 Datum: WGS84
Soil Map Unit Name: Marcuse clay NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ☒ (If no, explain in Remarks.)
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ☑
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ☑ | No ○ | |
| Hydric Soil Present? | Yes ☑ | No ○ | **Is the Sampled Area within a Wetland?** Yes ☒ No ○ |
| Wetland Hydrology Present? | Yes ☑ | No ○ | |

Remarks:
Photos: 1255 + 1256
Very wet winter. In disked ag field w/ problematic alkaline soils.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' 5A | | | |
| 1. Spergularia marina | 60 | YES | OBL |
| 2. Melilotus indica | <1 | N | FACU |
| 3. Lepidium pinnatifida | 1 | N | NL |
| 4. Polygonum aviculare | 1 | N | FAC |
| 5. Atriplex patula | 1 | N | FACW |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

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

**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:**
☒ Dominance Test 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 ○

Remarks:
In area dominated by Spergularia marina, it is visibly different than surrounding veg which is dominated by wheat + Lythrum.

## SOIL

Sampling Point: 18a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16 | 10YR3/2 | 94% | | | | | clay (loam) | |
| 0-16 | 10YR4/4 | 6% | | | | | " | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ☑ No ☐

Remarks: Areas of lighter soil mixed in. Soil fails loamier than at wetland data pts. Chunks of gravel white in soil. Soils are inconclusive. Alkali soil may obscure hydric indicators. also soils are significantly disturbed. Hydric soils assumed

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

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

**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks: Looks like water ponds here in winter however could be obscured by on site irrigation.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn/Knightsen City/County: Coco Sampling Date: 5/16/17

Applicant/Owner: EBMUD State: Sampling Point: 19a

Investigator(s): EM + SB Section, Township, Range:

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

Subregion (LRR): Med Cal Lat: 37.958943 Long: -121.636105 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: none

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

Are Vegetation ☑ Soil ☑ or Hydrology ☑ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ☑

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ☑ | No ○ | |
| Hydric Soil Present? | Yes ☑ | No ○ ? | **Is the Sampled Area within a Wetland?** Yes ☑ No ○ |
| Wetland Hydrology Present? | Yes ☑ | No ○ | |

Remarks:

Ag field, disked, alkaline soils. Very wet year 2016/2017

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 3'x3' | | | |
| 1. Spergularia marina | 65 | | OBL |
| 2. Lepidium pinnatifa | 1 | | NL |
| 3. Polygon monspeliensis | <1 | | FACW |
| 4. Melilotus indica | 1 | | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 67 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 33 % % Cover of Biotic Crust ___ %

**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:**

☒ Dominance Test 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 ○

Remarks:

Obvious veg break w/ Sperg dom here. Visible on aerial as scaldy area.

## SOIL

Sampling Point: 19a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR3/2 | 100% | | | | | Clay | |
| 4-18 | 10YR3/2 | 94 | 10YR4/4 | 6 | | | clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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:[4]**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

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

**Hydric Soil Present?** Yes ☑ No ☐ ?

Remarks: Same as 18a. No hydric soil indicators however, soil is disturbed and alkaline soil may obscure indicators. Likely historically hydric

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ☐ No ☒ Depth (inches):
Water Table Present? Yes ☐ No ☒ Depth (inches):
Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches):

**Wetland Hydrology Present?** Yes ☑ No ☐

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

Remarks: Water likely ponded here, however high rainfall in surrounding made water pond in many ~~of~~ areas.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nmn / Knightsen City/County: Coco Sampling Date: 5/16/17
Applicant/Owner: ECCHCP State: Sampling Point: 196
Investigator(s): EM + SB Section, Township, Range:
Landform (hillslope, terrace, etc.): valley bottom Local relief (concave, convex, none): level Slope (%):
Subregion (LRR): Med cal Lat: 37.961526 Long: -121.635864 Datum: WGS84
Soil Map Unit Name: Marcuse clay NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)
Are Vegetation ☒ Soil ☒ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ○
Are Vegetation ☐ Soil ☒ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ● | No ☒ | |
| Hydric Soil Present? | Yes ☒ | No ○ | **Is the Sampled Area within a Wetland?** Yes ○ No ☒ |
| Wetland Hydrology Present? | Yes ☒ | No ○ | |

Remarks:
Disked ag field, alkaline soils, high rain year 2016/2017

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Polygonum aviculare | 20 | Y | FAC |
| 2. Melilotus indica | 20 | Y | FACU |
| 3. Medicago polymorpha | 3 | N | FACU |
| 4. Speowlaria marina | 2 | N | OBL |
| 5. Polypogon monspeli | 1 | N | FACW |
| 6. Xanthium strumarium | 1 | N | FAC |
| 7. Lythrum hyssopifolium | 1 | N | OBL |
| 8. | | | |
| Total Cover: | 48 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 52 % % Cover of Biotic Crust % %

**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 | 3 | x 1 = | 3 |
| FACW species | 1 | x 2 = | 2 |
| FAC species | 21 | x 3 = | 63 |
| FACU species | 23 | x 4 = | 92 |
| UPL species | 0 | x 5 = | |
| Column Totals: | 48 (A) | | 160 (B) |

Prevalence Index = B/A = 3.3

**Hydrophytic Vegetation Indicators:**

- ● Dominance Test 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 ✓

Remarks:

## SOIL

Sampling Point: 19b

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16 | 10YR 3/2 | 94 | 10YR 5/6 | 6 | C | M | Clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ☑ No ☐

Remarks: Areas of horse manure + other areas w/ none. Redox is inclusions likely due to disturbing

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

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

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

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

**Wetland Hydrology Present?** Yes ☑ No ☐

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

Remarks: Could pond, not clear. Many areas ponded in winter 2016/2017 due to high rainfall

## WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Knightsen / Nunn City/County: Coco Sampling Date: 5/16/17

Applicant/Owner: Ecechep State: Sampling Point: 20a

Investigator(s): EM, SB Section, Township, Range:

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

Subregion (LRR): Med Cal Lat: 37.969479 Long: -121.625126 Datum: WGS84

Soil Map Unit Name: Marcuse clay NWI classification: PF

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ○

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ○ | No ✓ | |
| Hydric Soil Present? | Yes ○ | No ○ | **Is the Sampled Area within a Wetland?** Yes ○ No ○ |
| Wetland Hydrology Present? | Yes ○ | No ○ | |

Remarks: Abnormally wet winter 2016-2017, lots of water ponded everywhere. Soils are alkaline which are problematic Photo 1267

### VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Festuca perennis | 30 | Y | FAC |
| 2. Bromus diandrus | 12 | Y | NL |
| 3. Hordeum murinum leporinum | 12 | Y | FACU |
| 4. Melilotus indica | 5 | N | FACU |
| 5. Medicago polymorpha | 1 | N | FACU |
| 6. Polypogon monspeliensis | 1 | N | FACW |
| 7. Lythrum hyssopifolia | 1 | N | OBL |
| 8. | | | |
| Total Cover: | 62 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 38 % % Cover of Biotic Crust %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (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 | 1 | x 1 = | 1 |
| FACW species | 1 | x 2 = | 2 |
| FAC species | 30 | x 3 = | 90 |
| FACU species | 18 | x 4 = | 72 |
| UPL species | 12 | x 5 = | 60 |
| Column Totals: | 62 (A) | | 225 (B) |

Prevalence Index = B/A = 3.6

**Hydrophytic Vegetation Indicators:**

- ● Dominance Test 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 ☒

Remarks: Clear veg break between 20a + 20b. Dominated by tall annual grasses. Festuca perennis is ubiquitous in uplands too.

## SOIL

Sampling Point: 20a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | 10YR3/2 | 95% | 10YR4/6 | 5% | | | Sandy clay loam | |
| 10-18 | 10YR3/2 | 98% | 10YR4/4 | 2% | | | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ☑ No ☐

Remarks: May be relict hydric soil

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

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

**Wetland Hydrology Present?** Yes ☐ No ☑

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

Remarks: Elevated about adjacent ponded area by 1' elevation On berm. Small mammal hole present.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/16/17

Applicant/Owner: ECCCHCP State: Sampling Point: 20-6

Investigator(s): EM + SB Section, Township, Range:

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

Subregion (LRR): Med Cal Lat: 37.969540 Long: -121.635132 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ✓

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ○ | |
| Hydric Soil Present? | Yes ✓ | No ○ | **Is the Sampled Area within a Wetland?** Yes ✓ No ○ |
| Wetland Hydrology Present? | Yes ✓ | No ○ | |

Remarks:
Very high rainfall year with lots of flooding.
Alkaline soils are problematic.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Rumex crispus | 3 | Y | FAC |
| 2. Cressa truxillensis | 5 | Y | FACW |
| 3. Lythrum hyssopifolia | 1 | N | OBL |
| 4. Hordeum marinum guss | 2 | N | FAC |
| 5. Juncus mex canus | 1 | N | FACW |
| 6. Distichlis spicatus | 1 | N | FAC |
| 7. | | | |
| 8. | | | |
| Total Cover: | 11 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 89 % % Cover of Biotic Crust %

**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:**

✓ Dominance Test 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 ○

Remarks:
Very low cover likely due to ponding this winter.
See site revisit in 2018. Hydric veg was not present in 2018.

Sampling Point: 20b

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR3/2 | | 10YR4/6 | 2 | C | M | Sandy loam | |
| 4-12 | 10YR3/2 | | 10YR4/6 | 20 | C | M | Sandy loam | |
| 12-18 | 10YR3/2 | | 10YR4/6 | 20 | C | M | Sandy loam clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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:[4]**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ✓ No ○

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [x] Sediment Deposits (B2) (**Nonriverine**)
- [x] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [x] 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)
- [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)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ✓ Depth (inches):

Water Table Present? Yes ○ No ✓ Depth (inches):

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

**Wetland Hydrology Present?** Yes ✓ No ○

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

Remarks:

This area clearly ponded based on soil indicators, matrix 2 vegetation, and have soil

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: _____ City/County: _____ Sampling Date: 3/26/18

Applicant/Owner: Same as 20-6 State: _____ Sampling Point: 20-6

Investigator(s): _____ Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes _____ | No X | |

Remarks: Revisiting in 2018 since 2017 was so wet

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum (Plot size: 5'x5')** | | | |
| 1. Medicago polymorpha | 35 | Y | FACU |
| 2. Festuca perennis | 35 | Y | FAC |
| 3. Erodium cicutarium | 10 | N | NL |
| 4. Centromadia pungens | 1 | N | FAC |
| 5. Rumex crispus | 2 | N | FACW |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 83 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 17 % Cover of Biotic Crust _____

**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 | 38 | x 3 = 114 |
| FACU species | 45 | x 4 = 180 |
| UPL species | | x 5 = |
| Column Totals: | 83 (A) | 294 (B) |

Prevalence Index = B/A = 3.5

**Hydrophytic Vegetation Indicators:**

- ___ Dominance Test 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, unless disturbed or problematic.

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

Remarks:

Sampling Point: _____

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No _____

Remarks:

See data form from 2017

## 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 Tilled 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 _____ Depth (inches): _____

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

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

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

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

Remarks:

No hydric indicators present

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/16/17

Applicant/Owner: ECCCHCP State: CA Sampling Point: 20c

Investigator(s): EM, SB Section, Township, Range:

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

Subregion (LRR): Med cal Lat: 37.969594 Long: -121.635233 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ☒

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ☑ | No ○ | |
| Hydric Soil Present? | Yes ○ | No ☑ | **Is the Sampled Area within a Wetland?** Yes ○ No ☒ |
| Wetland Hydrology Present? | Yes ○ | No ☑ | |

Remarks:
Very wet winter 2016/2017, lots of flooding.
Soil is alkaline and problematic

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Fest perennis | 30 | Y | FAC |
| 2. Hord mar gussoneanum | 30 | Y | FAC |
| 3. Rumex crispus | 1 | N | FAC |
| 4. Lythrum hyssopifolia | 1 | N | OBL |
| 5. Crassa truxillensi | 1 | N | FACW |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

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

**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:**

- ☒ Dominance Test 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 ○

Remarks:

Sampling Point: 20-C

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR3/2 | 98 | 10YR4/6 | 2 | | | Clay loam | |
| 6-12 | 10YR3/2 | 95 | 10YR4/6 | 5 | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

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

**Hydric Soil Present?** Yes ☒ No ☐

Remarks: Very hard to dig. Dry clay soil. Shallow groundwater. Could be relict hydric soil

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ☐ | No ☒ | Depth (inches): |
| Water Table Present? | Yes ☐ | No ☒ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ☐ | No ☒ | Depth (inches): |

**Wetland Hydrology Present?** Yes ☐ No ☒

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

Remarks: No indicators present. Inundated a few inches above only ponded area. Clear break in veg & hydrology indicators.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: ECCC HCP State: CA Sampling Point: 21-a

Investigator(s): EM + SB Section, Township, Range:

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

Subregion (LRR): Med Cal Lat: 37.969379 Long: -121.632751 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: PF

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ○

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ○ | |
| Hydric Soil Present? | Yes ○ | No ✓ | **Is the Sampled Area within a Wetland?** Yes ○ No ✓ |
| Wetland Hydrology Present? | Yes ○ | No ✓ | |

Remarks: Very wet winter in 2016/2017 w/ lots of ponding
Alkaline soils can be problematic
1372 photo

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Melilotus indica | 1 | N | FACU |
| 2. Festuca perennis | 45 | Y | FAC |
| 3. Hordeum bmar gussoneanum | 15 | Y | FAC |
| 4. Cressa truxillensis | 1 | N | FACW |
| 5. Bromus diandrus | 10 | N | NL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 72 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

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

**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:**

- ☒ Dominance Test 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 ○

Remarks: Clear veg break between here + adj wetland. Veg here is tall + dense, but still meets criteria due to dominance by Festuca perennis

Sampling Point: 21a

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR2/2 | 99 | 10YR4/6 | 1 | C | M | clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ☑

Remarks: soil is very hard + dry. Extremely difficult to dig
Not sufficient mottles.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ☑ Depth (inches):

Water Table Present? Yes ○ No ☑ Depth (inches):

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

**Wetland Hydrology Present?** Yes ○ No ☑

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

Remarks:

No indicators present. Elevated ~4-6" above adj low area

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Knightsen / Nunn City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: Ecec Hep State: [ ] Sampling Point: 21-6

Investigator(s): EM SB Section, Township, Range:

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

Subregion (LRR): Med clay [ ] Lat: 37.969342 Long: -121.632756 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: PF

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes ( ) No (✓)

Are Vegetation [ ] Soil [✓] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (✓) | No ( ) | |
| Hydric Soil Present? | Yes (✓) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (✓) No ( ) |
| Wetland Hydrology Present? | Yes (✓) | No ( ) | |

Remarks:
Wet winter 2016/2017
alkaline soils are problematic
photo 1294 + 1295

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Cress drusillensis | 3 | Y | FACW |
| 2. Festuca perennis | <1 | N | FAC |
| 3. Hordeum marinum gussoneanum | 2 | N | FAC |
| 4. Chenopodium album | <1 | N | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 6 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

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

**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 Test 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 ( )

Remarks:
Very low cover of veg. Bare soil due to ponding water late into the season. See data point revisit May 26/2018.
Very weak Wetland veg was present.

Sampling Point: 5/19/17

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-18 | 10YR2/2 | 95 | 10YR4/6 | 5 | C | M | clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ✓ No ○

Remarks: Soil is moist throughout, easy to dig

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) **(Nonriverine)**
- [x] Sediment Deposits (B2) **(Nonriverine)**
- [ ] Drift Deposits (B3) **(Nonriverine)**
- [ ] Surface Soil Cracks (B6)
- [x] Inundation Visible on Aerial Imagery (B7)
- [x] 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)
- [ ] 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)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ✓ | Depth (inches): |
| Water Table Present? | Yes ○ | No ✓ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ○ | No ✓ | Depth (inches): |

**Wetland Hydrology Present?** Yes ✓ No ○

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

Remarks: Site was ponded in Jan, Feb + March 2017 during site visits
Strong signature on aerial photo.
See site revisit 2018 No wetland hydrology

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: See 21-6 from 2017 City/County: _____ Sampling Date: 3/26/18

Applicant/Owner: _____ State: _____ Sampling Point: 21-6

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes _____ | No X | |

Remarks: Winter 2016/2017 was wet. Data pt location was revisited in 2018

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Hordeum marigussoneanum | 60 | Y | FAC |
| 2. Medicago polymorpha | 10 | N | FACU |
| 3. Festuca perennis | 10 | N | FAC |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 80 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks: Not as strong wetland veg as 2017. Hordeum marigusson present in uplands on site

## SOIL

Sampling Point: 21-6

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**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 Tilled 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): ___

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

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

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

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

Remarks:

Not saturated

Were Cow hoofprints present, other indicators not present.

which shows ponding occurs in winter

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn Knightsen City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: State: CA Sampling Point: 21-c

Investigator(s): EM, SB Section, Township, Range:

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

Subregion (LRR): Med cal Lat: 37.969259 Long: -121.632899 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ✓

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ○ | |
| Hydric Soil Present? | Yes ○ | No ✓ | **Is the Sampled Area within a Wetland?** Yes ○ No ✓ |
| Wetland Hydrology Present? | Yes ✓ | No ○ | |

Remarks: 2016/2017 was abnormally wet. photo 1373
Soils are alkaline + problematic

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Festuca perennis | 20 | Y | FAC |
| 2. Cressa truxillensis | 2 | N | FACW |
| 3. Hordeum marinum gussoneanum | 20 | Y | FAC |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 42% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 58 % % Cover of Biotic Crust %

**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:**

- ✓ Dominance Test 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 ○

Remarks:
In area that has lower cover of veg than upland pt 21-a but higher cover than 21c in wetland. Intermediate area that is likely saturated in very wet years, and wetland veg can germinate + grow.

## SOIL

Sampling Point: 21c

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 99 | 10YR4/6 | 1 | | | clay | |
| 12-15 | 10YR 3/1 | 45 | 10YR4/6 | 1 | | | clay | sandier soil at this depth |
| | 10YR4/2 | 44 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ✓

Remarks: Some white areas in soil, concentrations of calcium carbonate?
Soil is hard + dry, difficult to dig.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ✗ | Depth (inches): |
| Water Table Present? | Yes ○ | No ✗ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ○ | No ✗ | Depth (inches): |

**Wetland Hydrology Present?** Yes ✓ No ○

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

Remarks:
In area that had saturation in Jan-March 2017. No saturation or wetland hydro indicators in 2016.
This area ponds during high rainfall years, but not normal years.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: ECCCHCP State: CA Sampling Point: 22-a

Investigator(s): EM + SB Section, Township, Range:

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

Subregion (LRR): Med Cal Lat: 37.969085 Long: -121.634881 Datum: WGS 84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ✓

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ○ | |
| Hydric Soil Present? | Yes ✓ | No ○ | **Is the Sampled Area within a Wetland?** Yes ✓ No ○ |
| Wetland Hydrology Present? | Yes ✓ | No ○ | |

Remarks: Abnormally high rainfall in winter 2016/2017 Photo 1305 1306
Alkaline Soil

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Herd man oussoneanum | 30 | Y | FAC |
| 2. Chenopodium album | 1 | N | FACU |
| 3. Cressa truxillensis | 3 | N | FACW |
| 4. Festuca perennis | 1 | N | FAC |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 35 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 55 % % Cover of Biotic Crust %

**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:**

- ✓ Dominance Test 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 ○

Remarks: In area between obvious wetland + obvious upland.

## SOIL

Sampling Point: 2ia

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 3/1 | 100 | | | | | clay | |
| 6-18 | 10YR 3/1 | 85 | 10YR 5/1 | 10 | D | M | clay | |
| | | | 10YR 4/6 | 5 | C | M | clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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)
- [x] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ✓ No ○

Remarks: Redox features present. May be relict

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [x] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] 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)
- [ ] 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)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ✓ No ○ Depth (inches): 0.5 in

Water Table Present? Yes ○ No ✓ Depth (inches):

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

**Wetland Hydrology Present?** Yes ✓ No ○

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

Remarks: Water ponded here in January 2011 based on field observations, which was an abnormally wet year.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: ECCC HCP State: CA Sampling Point: 226

Investigator(s): EM + SB Section, Township, Range:

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

Subregion (LRR): Lat: 37.969028 Long: -121.634927 Datum: WGS84

Soil Map Unit Name: Marcuse clay NWI classification: Pf

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ✓

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ○ | |
| Hydric Soil Present? | Yes ✓ | No ○ | **Is the Sampled Area within a Wetland?** Yes ✓ No ○ |
| Wetland Hydrology Present? | Yes ✓ | No ○ | |

Remarks: Very wet winter. Soils are alkaline photo 1304

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Suada nigra | 10 | Y | OBL |
| 2. Atriplex argentea expansa | 10 | Y | FAC |
| 3. Spergularia marina | 10 | Y | OBL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 30 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

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

**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:**

- ☒ Dominance Test 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 ○

Remarks:

Sampling Point: 22b

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR3/2 | 99 | 10YR5/8 | <1 | C | M | clay | |
| 6-18 | 10YR3/2 | 70 | 10YR5/8 | <1 | C | M | clay | |
| | | | 10YR 4/6 | 5 | C | M | clay | |
| | | | black | 20 | | | clay | |
| | | | 10YR5/2 | 5 | D | M | clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ✓ No ○

Remarks: Soil is very mottled comprised of numerous colors.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [x] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [x] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] 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)
- [ ] 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)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ✓ Depth (inches):

Water Table Present? Yes ○ No ✓ Depth (inches):

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

**Wetland Hydrology Present?** Yes ✓ No ○

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

Remarks: Saturated in spring 2016.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Sampling Date: 5/19/17

Applicant/Owner: ECCCHCP State: Sampling Point: 23a

Investigator(s): EM + SB Section, Township, Range:

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

Subregion (LRR): Med cal Lat: 37.972189 Long: -121.634810 Datum: WGS84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: Pf

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ✓

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ○ | No ✓ | |
| Hydric Soil Present? | Yes ○ | No ✓ | **Is the Sampled Area within a Wetland?** Yes ○ No ✓ |
| Wetland Hydrology Present? | Yes ✓ | No ○ | |

Remarks: Very wet winter. Soils are alkaline which can be problematic photo 1321-27

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Brassica nigra | 3 | Y | NL |
| 2. Cressa truxillensis | 3 | Y | FACW |
| 3. Juncus xiphioides | 1 | N | OBL |
| 4. Medicago polymorpha | 3 | Y | FACU |
| 5. Hordeum marginatum | 1 | N | FAC |
| 6. Festuca perennis | 1 | N | FAC |
| 7. Sonchus asper | 1 | N | FACU |
| 8. Rumex crispus | 1 | N | FAC |
| Total Cover: | 14 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 86 % % Cover of Biotic Crust %

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 3 | x 2 = | 6 |
| FAC species | 2 | x 3 = | 6 |
| FACU species | 3 | x 4 = | 12 |
| UPL species | 3 | x 5 = | 15 |
| Column Totals: | 11 (A) | | 39 (B) |

Prevalence Index = B/A = 3.5

**Hydrophytic Vegetation Indicators:**

- ● Dominance Test 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 ✓

Remarks: In area that is not clearly wetland or upland. Out based on veg. Mapped wetlands where dominated by Cressa + Rumex. Not wetland is Brassica nigra + Medicago. Distichlis island is included. Wolvella island is excluded.

## SOIL

Sampling Point: 23a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR2/1 | 100 | | 0 | | | clay | |
| 4-12 | 10YR2/1 | 98 | 10YR3/6 | 2 | C | M | clay | |
| 12-18 | 10YR2/1 | 90 | 10YR3/6 | 10 | C | M | clay | Lots of redox at depth |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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:[4]**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ✓

Remarks: Redox features at depth likely due to shallow water table.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

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

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

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

**Wetland Hydrology Present?** Yes ✓ No ○

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

Remarks: In area that is trampled [illegible] Inundated in winter 2016/2017 which was abnormally wet. Water ponded many [illegible]

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Knightsen / Nunn City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: Ecc HLP State: Sampling Point: 24a

Investigator(s): S. Bishop, E McDermott Section, Township, Range:

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

Subregion (LRR): Med. Cal Lat: 37.972140 Long: -121.632885 Datum: WGS84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: Pf

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No (

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( | No ✓ | |
| Hydric Soil Present? | Yes ✓ | No ( | **Is the Sampled Area within a Wetland?** Yes ( No ✓ |
| Wetland Hydrology Present? | Yes ✓ | No ( | |

Remarks:
Winter 2016/2017 was unusually wet. 1331
Soils on site are alkaline which can be problematic

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 5'x 5' Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. Cressa truxillensis | 2 | N | FACW |
| 2. Malvella leprosa | 1 | N | FACU |
| 3. Brassica nigra | 10 | Y | NL |
| 4. Festuca perennis | 5 | Y | FAC |
| 5. Atriplex prostrata | 1 | N | FACW |
| 6. Medicago polymorpha | 3 | N | FACU |
| 7. Polygonum aviculare | <1 | N | FAC |
| 8. | | | |
| Total Cover: | 22% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 68 % % Cover of Biotic Crust %

**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 | 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:**

- ☐ Dominance Test 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 ✓

Remarks:

## SOIL

Sampling Point: 24a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR 2/1 | 100 | | | | | clay | |
| 4-12 | 10YR 2/1 | 98 | 10YR 3/6 | 2 | C | M | Clay | |
| 12-18 | 10YR 2/1 | 90 | 10YR 3/6 | 10 | C | M | clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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:[4]**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ✓ No ○

Remarks: Redox features at depth likely due to shallow water table.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☒ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ✓ Depth (inches):

Water Table Present? Yes ○ No ✓ Depth (inches):

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

**Wetland Hydrology Present?** Yes ✓ No ○

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

Remarks: Cattle hoofprints, slightly elevated & 4-6" above adj wetland. Inundated in 2016/2019 but not normally inundated.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Knightsen / Nunn City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: ECCCHCP State: CA Sampling Point: 24-6

Investigator(s): EM, SB Section, Township, Range:

Landform (hillslope, terrace, etc.): swale in valley bottom Local relief (concave, convex, none): concave Slope (%):

Subregion (LRR): Med cal Lat: 37.972141 Long: -121.632851 Datum: WGS 84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: Pf

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ✓

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ○ | |
| Hydric Soil Present? | Yes ✓ | No ○ | **Is the Sampled Area within a Wetland?** Yes ✓ No ○ |
| Wetland Hydrology Present? | Yes ✓ | No ○ | |

Remarks:
Soils are alkaline.
Last winter 2016/2017 was very wet.
photo 1335
photos 1332-4 are feature

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 5'x5' Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. Cressa truxillensis | 7 | Y | FACW |
| 2. Atriplex patula | 5 | Y | FACW |
| 3. Atriplex argentea | 2 | N | FAC |
| 4. Juncus butonius | 1 | N | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 15 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 85 % % Cover of Biotic Crust %

**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:**

- ✓ Dominance Test 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 ○

Remarks:
very low cover. Mostly open bare dirt

## SOIL

Sampling Point: _____

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✓ No ○

Remarks: No soil data taken. Assumed to be hydric based on 23a.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ✓ | Depth (inches): _____ |
| Water Table Present? | Yes ○ | No ✓ | Depth (inches): _____ |
| Saturation Present? (includes capillary fringe) | Yes ○ | No ✓ | Depth (inches): _____ |

**Wetland Hydrology Present?** Yes ✓ No ○

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

Remarks: Inundated in aerial 3/2017. Mapped lowest elevation of swale as a wetland based on veg. Assume lowest area inundates in wet years. Hydrology indicators are present

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: See 24-b from 2017 City/County: _____ Sampling Date: 3/26/18

Applicant/Owner: _____ State: _____ Sampling Point: 24-b

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No _____ |
| Hydric Soil Present? | Yes _____ | No _____ | |
| Wetland Hydrology Present? | Yes _____ | No _____ | |

Remarks: Revisited site again in 2018 since 2017 was after very wet winter.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum (Plot size: 5'x5')** | | | |
| 1. Atriplex patula | 25 | Y | FACW |
| 2. Hordeum marinum gussoni | 25 | Y | FAC |
| 3. Frankenia salina | 1 | N | FACW |
| 4. Bromus diandrus | 2 | N | NL |
| 5. Brassica nigra | 1 | N | NL |
| 6. Melilotus indica | 1 | N | NL |
| 7. Carduus pycnocephalus | 1 | N | NL |
| 8. | | | |
| | 56 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 44 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks:

Sampling Point: 24-6

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Same as 2017

## 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 Tilled 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): ___

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

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

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

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

Remarks:

Cattle hoofprints present Wetland hydrology not as strong, but mapped it as a wetland

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nuhn / Knightsen City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: ECCCHCP State: Sampling Point: 25 a

Investigator(s): EM, SB Section, Township, Range:

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

Subregion (LRR): Med cal Lat: 37.972253 Long: -121.632649 Datum: WGS84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: Pf

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ○ | No ☒ | |
| Hydric Soil Present? | Yes ☒ | No ○ | **Is the Sampled Area within a Wetland?** Yes ○ No ☒ |
| Wetland Hydrology Present? | Yes ○ | No ☒ | |

Remarks:

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5x5' | | | |
| 1. Brassica nigra | 10 | Y | NL |
| 2. Malvella leprosa | 10 | Y | FACU |
| 3. Festuca perennis | 10 | Y | FAC |
| 4. Bromus diandrus | 10 | Y | NL |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 40 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 60 % % Cover of Biotic Crust %

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 % (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:**

- Dominance Test 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 ☒

Remarks:

## SOIL

Sampling Point: 25a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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:[4]**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ☑ No ☐

Remarks: Hydric soil assumed to be the same as 23a.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☒ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

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

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

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

**Wetland Hydrology Present?** Yes ☐ No ☑

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

Remarks: Due to wet winter. Cattle hoofprints, otherwise very weak. Assumed only wet in very wet winters like 2016/2017

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn/Knightsen City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: ECCCHCP State: ☐ Sampling Point: 26a

Investigator(s): EM, SB Section, Township, Range:

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

Subregion (LRR): Med Cal ☐ Lat: 37.971973 Long: -121.630751 Datum: NAD84

Soil Map Unit Name: Sacramento clay alkali NWI classification: Pf

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ○ | No ☒ | |
| Hydric Soil Present? | Yes ☒ | No ○ | **Is the Sampled Area within a Wetland?** Yes ○ No ☒ |
| Wetland Hydrology Present? | Yes ☒ | No ○ | except no veg yet |

Remarks: Alkaline soil is problematic. Area ponded in winter 2016/2017 which was very wet. photos 1338 pt 1339 vp/an 1340 feature (pond)

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 5'x5' Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. Chenopodium album | <1 | | FACU |
| 2. Malvella leprosa | <1 | | FACU |
| 3. Brassica nigra | <1 | | NL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 3 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 97 % % Cover of Biotic Crust %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 % (A/B)

**Prevalence Index worksheet:**

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

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- Dominance Test 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 ☒

Remarks: Unvegetated, may become vegetated as soil dries, however very compacted by cattle. Cattle disturbance, deep hoofprints and lumpy soil. Cattle may have disturbed seedlings that germinated or level of disturbance = no veg



Area mapped as upland (no data pt) is similar to 25a + 24b: Brassica + Malvella See data point revisit 5/26/18

Sampling Point: 26a

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR 3/1 | 98 | 10YR 4/6 | 2 | | | Clay | |
| 4-10 | 10YR 2/1 | 98 | 10YR 4/6 | 2 | | | Clay | |
| 10-15 | 10YR 2/1 | 95 | 10YR 5/8 | 5 | | | Clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

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

**Hydric Soil Present?** Yes [x] No [ ]

Remarks: Redox at depth suggests seasonal groundwater. Redox at surface also.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [x] Drift Deposits (B3) (**Nonriverine**)
- [x] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] 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)
- [ ] 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)
- [ ] Thin Muck Surface (C7)
- [ ] 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):
Water Table Present? Yes [ ] No [x] Depth (inches):
Saturation Present? (includes capillary fringe) Yes [ ] No [x] Depth (inches):

**Wetland Hydrology Present?** Yes [x] No [ ]

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

Remarks: Ponded here in winter. No evidence of ponding in 2015/2016.

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: See 26-a from 2018 City/County: _____ Sampling Date: 3/26/18

Applicant/Owner: _____ State: _____ Sampling Point: 26-a

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No X | **Is the Sampled Area within a Wetland?** Yes _____ No _____ |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes _____ | No X | |

Remarks: Revisited location in 2018 since 2017 was so wet.

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Brassica nigra | 15 | N | NL |
| 2. Medicago polymorpha | 30 | Y | FACU |
| 3. Festuca perennis | 20 | Y | FAC |
| 4. Erodium cicutarium | 15 | N | NL |
| 5. Lactuca serriola | 1 | N | FACU |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 81 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

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

**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 _____ | 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:**

- ___ Dominance Test 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, unless disturbed or problematic.

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

Remarks:

Sampling Point: 26-a

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Same as 2017

## 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 Tilled 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): ___

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

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

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

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

Remarks:

No hydric indicators present

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Sec 28-a from 2017 City/County: _____ Sampling Date: 3/26/18

Applicant/Owner: _____ State: _____ Sampling Point: 28-a

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

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

Remarks: Revisited location in 2018 since 2017 was after very wet winter.

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | ____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | ____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Brassica nigra | 60 | Y | NL |
| 2. Medicago polymorpha | 10 | N | FACU |
| 3. Festuca perennis | 20 | N | FAC |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 90 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | ____ = Total Cover | | |

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: D (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 ____ | 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:**

- ___ Dominance Test 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, unless disturbed or problematic.

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

Remarks: In field dominated by dense mustard.

Sampling Point: 28-a

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Same as 2017

## 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 Tilled 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): ___

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

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

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

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

Remarks:

No hydric indicators

## WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn/Knightsen City/County: Coco Sampling Date: 5/19/17
Applicant/Owner: Ecke HCP State: CA Sampling Point: 28a
Investigator(s): EM, SB Section, Township, Range:
Landform (hillslope, terrace, etc.): valley bottom Local relief (concave, convex, none): Slope (%):
Subregion (LRR): Med cal Lat: 37.971089 Long: -121.628653 Datum: WGS 84
Soil Map Unit Name: Sacramento clay NWI classification: Pf
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ✓ (If no, explain in Remarks.)
Are Vegetation ☑ Soil ☐ or Hydrology ☑ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ✓
Are Vegetation ☐ Soil ☑ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ○ | |
| Hydric Soil Present? | Yes ✓ | No ○ | **Is the Sampled Area within a Wetland?** Yes ✓ No ○ |
| Wetland Hydrology Present? | Yes ✓ | No ○ | |

Remarks: On all these sites cattle have trampled the wetlands severely
Photos 1346 - 1350

### VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 5'x5' Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. Malvella leprosa | 5 | Y | FACU |
| 2. Cressa leprosa | 5 | Y | FACW |
| 3. Crypsis schoenoides | < 1 | N | FACW |
| 4. Frankenia salina | < 1 | N | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 11 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 89 % % Cover of Biotic Crust %

**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 | | x 1 = | |
| FACW species | 6 | x 2 = | 12 |
| FAC species | | x 3 = | |
| FACU species | 5 | x 4 = | 20 |
| UPL species | | x 5 = | |
| Column Totals: | 11 (A) | | 32 (B) |

Prevalence Index = B/A = 2.9

**Hydrophytic Vegetation Indicators:**

- ☐ Dominance Test 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 ○

Remarks: See location revisit 5/26/18.
Veg criteria not met in 2018.

## SOIL

Sampling Point: 23a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR2/2 | 70 | 10YR5/8 | 15 | C | M | Clay | |
| | | | 10YR5/1 | 15 | D | M | Clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ✓ No ○

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [x] Sediment Deposits (B2) (**Nonriverine**)
- [x] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [x] Inundation Visible on Aerial Imagery (B7)
- [x] 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)
- [ ] 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)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ✓ Depth (inches):

Water Table Present? Yes ○ No ✓ Depth (inches):

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

**Wetland Hydrology Present?** Yes ✓ No ○

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

Remarks: Saturated during winter 2016/2017 w/ standing water. See data point revisit in 2018 No hydrology indicators in 2018

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Knightsen / Nunn City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: ECCCHCP State: Sampling Point: 27a

Investigator(s): EM, SB Section, Township, Range:

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

Subregion (LRR): Med cull Lat: 37.972063 Long: -121.629140 Datum: WGS84

Soil Map Unit Name: Piper loamy sand NWI classification: Pf

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

Are Vegetation ☒ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ☒

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ○ | No ☒ | |
| Hydric Soil Present? | Yes ☒ | No ○ | **Is the Sampled Area within a Wetland?** Yes ○ No ☒ |
| Wetland Hydrology Present? | Yes ○ | No ☒ | |

Remarks:
Winter was unusually wet. Areas ponded + disturbed veg. Soils on site are alkaline

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** 5'x5' | | | |
| 1. Lythrum hyssopifolia | 1 | N | OBL |
| 2. Brassica nigra | 3 | Y | NL |
| 3. Bromus diandrus | 3 | Y | NL |
| 4. Malvella leprosa | 1 | N | FACU |
| 5. Lactuca serriola | 2 | Y | FACU |
| 6. Festuca perennis | 1 | N | FAC |
| 7. Marrubium vulgare | 1 | N | FACU |
| 8. Medicago lupulina | 2 | Y | FACU |
| Total Cover: | 14 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

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

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 % (A/B)

**Prevalence Index worksheet:**

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

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ☒ Dominance Test 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 ☒

Remarks:
Site is characterized by mix of veg, both upland + wetland

## SOIL

Sampling Point: 27a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ✓ No ○

Remarks:

No soil data collected. Hydric soil assumed

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ✓ | Depth (inches): |
| Water Table Present? | Yes ○ | No ✓ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ○ | No ✓ | Depth (inches): |

**Wetland Hydrology Present?** Yes ✓ No ○

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

Remarks:

Site was ponded in winter 2016/2017 but not ponded in winter 2015/2016 or 2017/2018.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: Ecec HCP State: CA Sampling Point: 29-a

Investigator(s): EM, SB Section, Township, Range:

Landform (hillslope, terrace, etc.): valley bottom Local relief (concave, convex, none): ~level Slope (%):

Subregion (LRR): Med cal Lat: 37.972037 Long: -121.627378 Datum:

Soil Map Unit Name: Sacramento clay alkali NWI classification: Pf

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

Are Vegetation ☐ Soil ☐ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ☒

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ○ | No ☒ | |
| Hydric Soil Present? | Yes ☒ | No ○ | **Is the Sampled Area within a Wetland?** Yes ○ No ☒ |
| Wetland Hydrology Present? | Yes ☒ | No ○ | |

Remarks:
Soil is alkaline. Photo 1255 - 1361
Prior winter was very wet. Adjacent landowner is pumping water into this area + it is ponding.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: % | | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: % | | | |
| **Herb Stratum** | | | |
| 1. Malvella leprosa | 10 | Y | FACU |
| 2. Brassica nigra | 1 | N | NL |
| 3. Festuca perennis | 1 | N | FAC |
| 4. Atriplex patula | 1 | N | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: 13 % | | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: % | | | |

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

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: % (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:**

- ☒ Dominance Test 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 ☒

Remarks:
Revisited in 2018.

## SOIL

Sampling Point: 29a

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**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[4]:**

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

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ✓ No ○

Remarks: Hydric Soil assumed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ 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)
- ☐ 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)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ✓ | No ○ | Depth (inches): 2 |
| Water Table Present? | Yes ○ | No ✓ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes ✓ | No ○ | Depth (inches): 10" |

**Wetland Hydrology Present?** Yes ✓ No ○

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

Remarks:
ponded in winter 2016/2017
- Standing water present in ditch, appears to be due to farmers activities (and spring rain/snow).
Pump w/ flowing water observed on property adj to east. [illegible] in 2018 no hydrology indicators observed

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: See 29-a from 2017 City/County: _____ Sampling Date: 3/26/18

Applicant/Owner: _____ State: _____ Sampling Point: 29-a

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No X | **Is the Sampled Area within a Wetland?** Yes _____ No _____ |
| Hydric Soil Present? | Yes _____ | No _____ | |
| Wetland Hydrology Present? | Yes _____ | No _____ | |

Remarks: Revisited 29-a in 2018 because 2017 was after an abnormally wet year.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Brassica nigra | 50 | Y | NL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 50 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust _____

**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 | _____ | 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:**

- ___ Dominance Test 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, unless disturbed or problematic.

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

Remarks:

Sampling Point: 29-a

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Same as 2017

## 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 Tilled 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): ___

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

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

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

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

Remarks:

no wetland hydro indicators

Water did not [illegible] in 2018

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: E CCC HCP State: CA Sampling Point: 30 - a

Investigator(s): EM, SB Section, Township, Range: _____

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

Subregion (LRR): Med cal Lat: 37.970177 Long: -121.629342 Datum: WGS 84

Soil Map Unit Name: Sacramento clay alkali NWI classification: Pf

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes X | No _____ | |

Remarks: Soil is alkaline. Winter 2016/2017 was very wet + caused flooding everywhere.

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Brassica nigra | 5 | Y | NL |
| 2. Cressa truxillensis | 5 | Y | FACW |
| 3. Malvella leprosa | 1 | N | FACU |
| 4. Lactuca serriola | 1 | N | FACU |
| 5. Festuca perennis | 2 | N | FAC |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 14 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 86 % Cover of Biotic Crust _____

**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 | | x 1 = |
| FACW species | 5 | x 2 = 10 |
| FAC species | 2 | x 3 = 6 |
| FACU species | 7 | x 4 = 28 |
| UPL species | | x 5 = |
| Column Totals: | 14 (A) | (B) |

Prevalence Index = B/A = 3.14

**Hydrophytic Vegetation Indicators:**

__ Dominance Test 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, unless disturbed or problematic.

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

Remarks:

Sampling Point: 30-a

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Hydric soil assumed

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X 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 Tilled 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): ___

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

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

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

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

Remarks:

Ponded in winter 2016/2017 which was not typical
See 2018 revisit, no hydrology indicators present

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: ECCC HCP State: Ca Sampling Point: 30-6

Investigator(s): EM, SB Section, Township, Range: _____

Landform (hillslope, terrace, etc.): valley bottom Local relief (concave, convex, none): Concave Slope (%): _____

Subregion (LRR): Med Cal Lat: 37.969863 Long: -121.629044 Datum: WGS84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: PF

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes X | No _____ | |

Remarks:
Soil is alkaline
Very wet winter 2016/2017 caused flooding + is obscuring hydrology.

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Atriplex argentea | 2 | Y | FAC |
| 2. Cressa truxillensis | 2 | Y | FACW |
| 3. Frankenia salina | 2 | Y | FACW |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 6 = Total Cover | | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 94 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks:

Sampling Point: 30-6

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Hydric soil assumed

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X 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 Tilled 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): ___

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

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

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

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

Remarks:

Water ponded in winter 2016/2017 here.
Site was revisited in 2018. no hydrology indicators were observed

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: See 30-b from 2017 City/County: _____ Sampling Date: 3/26/18

Applicant/Owner: _____ State: _____ Sampling Point: 30-b

Investigator(s): E. McDermott Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes _____ | No X | |

Remarks:

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Atriplex patula | 40 | Y | FACW |
| 2. Festuca perennis | 40 | Y | FAC |
| 3. Erodium cicutarium | 3 | N | NL |
| 4. Brassica nigra | 10 | N | NL |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 93 = Total Cover | | |

| Woody Vine Stratum (Plot size: 7) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

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

**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 Test 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, unless disturbed or problematic.

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

Remarks:

Atriplex patula is present in ruderal uplands on levee banks. on site Festuca perennis is ubiquitous.

Sampling Point: 30-6

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks:

Same as 2017

## 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 Tilled 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): ___

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

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

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

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

Remarks:

No hydrology indicators present in 2018.

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Nunn / Knightsen City/County: Coco Sampling Date: 5/19/17

Applicant/Owner: ECCC Ftup State: _____ Sampling Point: 31-a

Investigator(s): EM, SB Section, Township, Range: _____

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

Subregion (LRR): Med cal Lat: 37.969059 Long: -121.630109 Datum: WGS 84

Soil Map Unit Name: Sacramento clay, alkali NWI classification: Pf

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 _____ No X

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes X | No _____ | |
| Wetland Hydrology Present? | Yes _____ | No X only in 16/17 | |

Remarks:
Soils are alkaline + problematic.
Winter 2016/2017 was exceptionally wet.

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | | = Total Cover | |

| Sapling/Shrub Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | | = Total Cover | |

| Herb Stratum (Plot size: 5'x5') | | | |
|---|---|---|---|
| 1. Rumex crispus | 20 | Y | FAC |
| 2. Cressa truxillensis | 1 | N | FACW |
| 3. Frankenia salina | 1 | N | FACW |
| 4. Festuca perennis | 1 | N | FAC |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 23 | = Total Cover | |

| Woody Vine Stratum (Plot size: _____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | | = Total Cover | |

% Bare Ground in Herb Stratum 77 % Cover of Biotic Crust _____

**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 Test 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, unless disturbed or problematic.

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

Remarks:

Sampling Point: 31-a

## SOIL

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: ___

Depth (inches): ___

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

Remarks: Hydric Soil assumed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- X 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 Tilled 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): ___

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

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

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

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

Remarks: Ponded water in 2016/2017, but not 2015/2016. very wet winter