APPENDIX J

Delineation of Potentially Jurisdictional Waters of the U.S. and California for Avila Ranch Development Plan

This Page Intentionally Left Blank.

Delineation of Potentially Jurisdictional Waters of the U.S. and California

for

Avila Ranch

San Luis Obispo
San Luis Obispo County, California

Prepared for

Avila Ranch LLC
c/o Stephen Peck, AICP
735 Tank Farm Road, Suite 240
San Luis Obispo, CA 93401

by

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES
1602 Spring Street
Paso Robles, CA 93446
(805) 237-9626

May 2015
Revised December 2015

838.02

This page intentionally blank.

Table of Contents

List of Tables

List of Figures

List of Charts

Cover Page: View west toward Tank Farm Creek. Photo taken February 24, 2014.

List of Acronyms and Abbreviations

AIRS: Aerial Imagery Research Service
APN: Assessor's Parcel Number
CDFW: California Department of Fish and Wildlife
CFR: Code of Federal Regulations
Corps: U.S. Army Corps of Engineers
CWA: Clean Water Act
EPA: Environmental Protection Agency
FAC: Facultative
FACW: Facultative wetland
FACU: Facultative upland
FEMA-FIRM: Federal Emergency Management Agency Flood Insurance Rate Map
GIS: Geographic Information System
JD: Jurisdictional Delineation
NA: No agreement
NI: No indicator
NL: Not listed
NO: Not known to occur
NRCS: Natural Resource Conservation Service
NTCHS: National Technical Committee for Hydric Soils
NWI: National Wetlands Inventory
OBL: Obligate wetland
OHWM: Ordinary High Water Mark
RAWS: Remote Area Weather Station
RPW: Relatively Permanent Water
RWQCB: Regional Water Quality Control Board
SSURGO: Soil Survey Geographic Database
SWANCC: Solid Waste Agency of Northern Cook County
TNW: Traditional Navigable Water
UPL: Obligate upland
UPRR: Union Pacific Railroad
U.S.: United States
USACE: U.S. Army Corps of Engineers
USDA: U.S. Department of Agriculture
USFWS: U.S. Fish and Wildlife Service
USGS: U.S. Geological Survey

This page intentionally blank.

1.0 Introduction

1.1 Purpose

This report provides a delineation of potentially jurisdictional wetlands and waters according to federal and state standards on lands associated with a proposed 157 acre development (Project or Study Area). The Study Area includes residential housing, commercial buildings, Buckley Road widening and extension to South Higuera, parks, bike paths, and open space in south San Luis Obispo near the San Luis Obispo Airport. This Jurisdictional Delineation Study Area consists of the development area as well as the Buckley Road extension and includes review of adjacent watersheds visible from nearby roads and from digital resources.

This document presents a comprehensive inventory and mapping effort of wetland and aquatic resources within the Study Area. The purpose of this delineation of waters of the U.S. and California is to inform planners, interested public, the United States Army Corps of Engineers (USACE or Corps), and the California Department of Fish and Wildlife (CDFW).

1.2 Baseline Information Reviewed For This Report

This report was conducted as an update to the Location of Areas Potentially Subject to U.S. Army Corps of Engineers Jurisdiction Report conducted by Olberding Environmental, Inc. in 2002 (fieldwork done in 2001). The 2002 report utilizes 1987 Corps-approved methodology and includes datasheets as well as a Jurisdictional Waters Map. The evidence for wetland conditions provided on datasheets was compared to current conditions to determine if the wetlands in the Study Area have changed, and/or to determine if the potential wetlands observed in 2001 qualify as wetlands under current guidelines approved by the Corps of Engineers.

In addition to data collected during site work, several sources of baseline information regarding topography, hydrology, soils, and wetland resources were reviewed. Summary information used to compile a preliminary jurisdictional determination are provided in Appendix A. These baseline sources include the U.S. Geological Survey (USGS) Hydrologic Atlas, USGS topographic maps, U.S. Department of Agriculture (USDA) Soil Survey and spatial data, and the National Wetlands Inventory. Historical aerial photographs were also downloaded from the Aerial Imagery Research Service (AIRS) at the University of California Santa Barbara Library. Note the scale of mapping and methods for developing these resources vary substantially, and thus the information presented may not be completely consistent with the findings of site-specific observation, data collection and analysis. Furthermore, many of these baseline datasets were not developed for purposes of jurisdictional determination, thus, some areas mapped as drainages may not readily meet the definition of waters of the U.S. under Clean Water Act (CWA) section 404, and may not be regulated under California Fish and Wildlife Code 1600.

1.3 Study Area Location and Geographic Setting

The Study Area includes Assessor's Parcel Numbers (APNs) 053-259-004, -005, and -006 and portions of 076-071-016, 076-081-024, and 076-081-026, located in the southern City of San Luis Obispo in San Luis Obispo County, California. The Study Area is located approximately one half mile east of Highway 101, at the corner of Vachell Lane and Buckley Road with a small strip running directly west from the southwest corner and meeting South Higuera Street. It is located within the Pismo Beach United States Geological Survey (USGS) 7.5 minute quadrangle. Elevation varies from approximately 98 to 125 feet above mean sea level.

The Study Area is located in a valley of the Santa Lucia Mountains between an inland range and a coastal range. The upslope watershed area includes approximately 900 acres that drain from a ridge of the Santa Lucia Range, part of downtown San Luis Obispo, and Islay Hill. Stormwater flows approximately two miles northeast to southwest from an elevation approximately 175 feet above mean sea level, through the neighboring tank farms, and then entering the site via the northern end of the drainage. Stormwater east of the Study Area may enter from the east, flow through a less prominent swale, running east to west before entering the drainage. Adjacent watersheds begin approximately four miles northeast, at elevations approximately 1,500 feet above mean sea level. The average slope of the contributing drainages is approximately five percent, and the average slope of the adjacent watersheds is approximately eight percent[1].

1.4 Responsible Parties

The U.S. Army Corps of Engineers regulates Waters of the U.S. Impacts to drainages and wetlands will also be regulated by the California Regional Water Quality Control Board and the California Department of Fish and Wildlife, not included in Table 1, Responsible Parties, below.

[1] Percent slope of contributing watershed calculated by dividing approximately 380 feet elevation gain by 7,400 feet (approximately 1.5 miles). Adjacent watershed slope is approximately 1,450 feet elevation gain divided by 18,000 feet (approximately 3.5 miles).

TABLE 1. RESPONSIBLE PARTIES.

Owner/Applicant	Project Engineer
Avila Ranch LLC c/o Stephen Peck, AICP 735 Tank Farm Road, Suite 240 San Luis Obispo, CA 93401 Contact: Stephen Peck (559) 731-5778	**Cannon Corp.** c/o John Rogers 1050 Southwood Drive San Luis Obispo, CA 93401 Contact: John Rogers (805) 544-7407
Regulatory Agencies	**Biological Consultant**
United States Army Corps of Engineers Los Angeles District Ventura Regulatory Field Office 2151 Alessandro Drive, Suite 110 Ventura, CA 93001 Contact: Crystal Huerta* (805) 585-2143	**Althouse and Meade, Inc.** 1602 Spring Street Paso Robles, CA 93446 Contacts: LynneDee Althouse, LD@alt-me.com Jacqueline Tilligkeit, JT@alt-me.com (805) 237-9626

*Crystal Huerta visited the site in October 2014. Erin Hanlon will likely be the project manager for the Avila Ranch Project, as she is responsible now for San Luis Obispo County Projects.

1.5 Current Land Condition

The Study Area is located in the City of San Luis Obispo, primarily between Buckley and Tank Farm Road. It consists of gently sloping hills and is actively farmed for safflower, cultivated pea, and cabbage planted in general east-west rows. Portions of the site appear to have been continuously farmed and irrigated since before 1940.

Active farmland occupies property south and east of the Study Area. North of the Study Area are industrial properties and a tank farm that was built by Union Oil in 1910. A Lockheed Martin office building and parking lot, built in 2005, occupies a separate parcel between Avila Ranch and Vachell Lane. Caltrans owns farmland and a residence west of Vachell Lane. These areas are highly manipulated.

Year-round farming activity on Avila Ranch and adjacent Caltrans farmland disturbs all but a few rock outcrops and deeply incised drainage features such as Tank Farm Creek and a ditch along the toe of slope east of the creek. Willows dominate Tank Farm Creek, and are confined to areas that are not easily reached with a plow. Wetland grasses and herbs dominate the managed ditch. Sandstone and shale rock outcrops on Avila Ranch and a serpentine rock outcrop adjacent to Higuera Street are dominated by introduced weeds, indicating a history of site disturbance.

1.5.1 *Soils*

The United States Department of Agriculture (USDA) Soil Survey of San Luis Obispo County, California Coastal Part (1984) and the Soil Survey Geographic Database (SSURGO) describe six map units that overlap the Property. A map of soil map units on the Property is included as Figure 5 in Section 6.

Concepcion loam, 2 to 5 percent slopes (**120**) is the dominant soil mapped on and adjacent to the Study Area. Concepcion consists of moderately well drained soils that formed from weekly consolidated stratified alluvium. The depth to restrictive features is 10 to 21 inches to abrupt textural change. The typical profile contains loam in the top 19 inches and clay to sandy clay loam to 63 inches. The geomorphic position of Concepcion soils is toeslope, and the landform position (three-dimensional) is tread.[2]

Cropley clay, 0 to 2 percent slopes (**127**) is another dominant soil mapped on the Study Area. Cropley consists of moderately well drained soils that formed from alluvium derived from sedimentary rock. The depth to restrictive features is more than 80 inches. The typical profile contains clay in the top 36 inches and silty clay loam to 60 inches. The geomorphic position of Cropley soils is toeslope or footslope, and the three-dimensional position is tread.

Salinas silty clay loam, 0 to 2 percent slopes (**197**) is mapped in the southern portion of the Study Area. Salinas consists of somewhat well drained soils formed from alluvium derived from sedimentary rock. The depth to restrictive features is more than 80 inches. The typical profile contains silty clay loam to 29 inches and stratified loam to silty clay loam to 72 inches. The geomorphic position of Salinas soils is toeslope or footslope, and the three-dimensional position is tread.

Marimel sandy clay loam, occasionally flooded (**169**) is mapped in the southwestern portion of the Study Area. Marimel consists of somewhat poorly drained soils formed from alluvium derived from sedimentary rock. The depth to restrictive layer is more than 80 inches. The typical profile consists of sandy clay loam to 16 inches and stratified loam to clay loam to silty clay loam to 60 inches. The geomorphic position of Marimel is toeslope or footslope, and the three-dimensional position is tread.

Diablo clay, 5 to 9 percent slopes (**129**) is mapped in a small area in the southwestern portion of the Study Area. Diablo consists of well drained soils formed from residuum weathered from mudstone, sandstone, and/or shale. The depth to restrictive layer is more than 80 inches. The typical profile consists of clay to 58 inches and weathered bedrock to 68 inches. The geomorphic position of Diablo is backslope or summit and the three-dimensional position is crest[3] or side slope.

Marimel silty clay loam, drained (**170**) is mapped in a small area in the northwestern portion of the Study Area. Marimel consists of well drained soils formed from alluvium derived from sedimentary rock. The depth to restrictive layer is more than 80 inches. The typical profile consists of silty clay loam to 16 inches over stratified loam to clay loam to silty clay loam to 60 inches. The geomorphic position of Marimel is footslope and the three-dimensional position is tread.

[2] Tread is a geomorphological term that describes a component of terraces, flood-plain steps, and other stepped landforms consisting of the flat to gently sloping, topmost and laterally extensive slope.
[3] Crest is a geomorphology term that describes a convex slope at the summit of a hill with thin soil, typically adjacent to a cliff face.

1.5.2 *Climate*

Average precipitation at the Arroyo Grande Area Weather Station (RAWS) totals 13.7 inches per water year (July to June), based on data from 2000 to December 2015 (Table 2; 2015, Western Regional Climate Center). The Arroyo Grande Weather Station, at 1048 feet elevation, is approximately 15 miles northeast of the site at 35.17917^{o} N, -120.39194^{o} W. Maximum rainfall is 31.5 inches (rain year 2011), and minimum rainfall is 0.75 inches (2002). Most precipitation falls as rain from October through April (11 inches average); the highest average rainfall month is December (3.4 inches on average).

As demonstrated in Table 2, the last 3 years have produced less than average rainfall decreasing the likelihood of prominent hydrophytic vegetation and hydrology in historical wetland areas.

TABLE 2. TOTAL PRECIPITATION DATA JUNE 2000 TO NOVEMBER 2015. Monthly precipitation for each rain year from Arroyo Grande RAWs weather data. Rain year runs July through June, with the rainy season from October to April. Grand total of year is named for ending year (e.g. July 2001 through June 2002 is rain year 2002).

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Grand Total
2000	-	-	-	-	-	0.00	0.00	0.00	0.02	2.60	0.01	0.15	--
2001	5.03	4.34	3.37	1.07	0.00	0.00	0.00	0.00	0.00	0.34	0.36	0.03	16.59
2002	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.16	7.09	0.75
2003	0.12	2.36	2.17	1.34	1.34	0.00	0.09	0.00	0.00	0.48	1.72	3.14	14.58
2004	0.86	4.48	0.74	0.00	0.00	0.00	0.00	0.00	0.00	5.01	0.73	2.72	11.51
2005	1.93	0.53	0.32	0.17	0.03	0.06	0.00	0.00	0.00	0.60	0.90	2.70	11.50
2006	2.99	1.85	5.84	0.84	0.26	0.00	0.00	0.00	0.00	0.21	0.24	2.24	15.98
2007	0.94	2.66	0.34	0.67	0.06	0.00	0.00	0.00	0.01	1.04	0.08	3.45	7.36
2008	8.95	0.65	0.05	0.16	0.00	0.00	0.00	0.00	0.00	0.33	2.05	3.03	14.39
2009	0.35	4.69	1.41	0.69	0.18	0.43	0.00	0.02	0.00	4.52	0.05	5.39	13.16
2010	8.15	4.75	1.66	2.96	0.29	0.00	0.01	0.00	0.00	2.05	2.39	12.52	27.79
2011	1.86	4.16	6.66	0.15	0.92	0.82	0.00	0.01	0.13	1.59	2.76	0.06	31.54
2012	2.63	0.71	3.22	2.18	0.00	0.00	0.00	0.02	0.00	1.19	1.33	4.64	13.29
2013	1.54	0.59	1.06	0.08	0.03	0.00	0.00	0.00	0.00	0.39	0.11	0.57	10.48
2014	0.04	3.44	2.01	0.89	0.00	0.00	0.00	0.00	0.00	0.39	0.91	0.57	7.45
2015	0.13	1.65	0.25	0.70	0.42	0.05	0.69	0.00	0.07	0.01	1.35	2.36	9.18

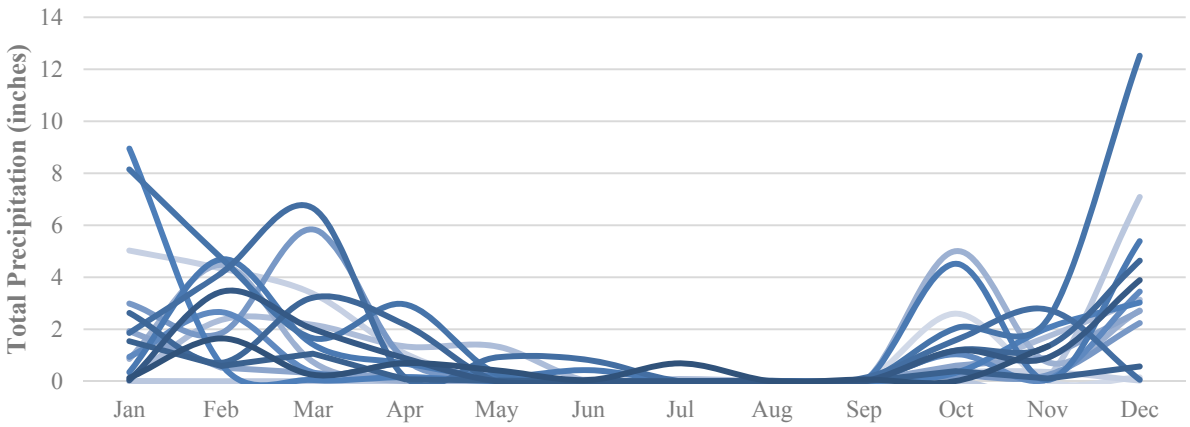


CHART 1. TOTAL PRECIPITATION FROM 2000 TO 2015. Rainfall data from Table 2 Arroyo Grande RAWs weather station is displayed graphically. Darker lines indicate more recent years.

1.5.3 *Hydrology and geomorphology*

The Study Area is within the Central Coastal watershed (USGS hydrologic unit number 18060006) which includes coastal creeks between Monterey Bay and Oceano, that all drain to the Pacific Ocean.

Northwest and south of the Study Area (not in the Study Area) are San Luis Obispo Creek and the East Fork of San Luis Obispo Creek. Most stormwater near the Study Area flows around the Study Area and into these two larger drainages. The main drainage running through the site (Tank Farm Creek) originates about 1.4 mile off-site, north of a historic oil tank farm. Within the tank farm, Tank Farm Creek is highly manipulated. Tank Farm Creek flows from the northeast to the southwest portion of Avila Ranch, and converges with the East Fork of San Luis Obispo Creek about 500 feet offsite. Water then flows less than a mile to San Luis Obispo Creek, a tributary to the Pacific Ocean at Avila Beach.

2.0 Regulatory Framework

2.1 Federal Jurisdiction

Section 404 of the Clean Water Act (CWA) authorizes the U.S. Army Corps of Engineers (USACE or Corps) to regulate activities that discharge dredged or fill material to wetlands and other waters of the United States. The term "waters of the United States" encompasses resources described by the Environmental Protection Agency (EPA) and the Corps regulations, 40 CFR § 230.3(s) and 33 CFR § 328.3(a). The geographic limits of relevant federal jurisdiction for non-tidal waters of the U.S. are defined at 33 CFR § 328.4(c). Recent Supreme Court cases, particularly the SWANCC (Solid Waste Agency of Northern Cook County) and Rapanos cases, have resulted in changes to interpretation of USACE jurisdiction (USACE, USEPA 2009).

The *Corps of Engineers Wetlands Delineation Manual* (hereafter "1987 Manual"; USACE 1987) defines wetlands (EPA regulations at 40 CFR § 230.3(t); Corps regulations at 33 CFR § 328.3(b)). Wetlands are considered "special aquatic sites" under the USACE definition. Special aquatic sites are afforded protection under the Clean Water Act (Sections 401 and 404). The Corps' 1987 Manual and various regional supplements describe the criteria that must be met to determine the presence of a wetland, the methods used to determine whether they are met, and the geographic extent of wetland areas identified in the field.

2.2 State Jurisdiction

The State of California uses a broader definition of waters and receives regulatory authority over wetlands and waters within the State as specified in Section 401 of the Clean Water Act; the Porter-Cologne Water Quality Act (State Water Code); the California Coastal Act; and Fish and Game Code Section 1600. Waters are defined in the California Water Code section 13050(e).

The wetland definition was recommended by the California Department of Fish and Wildlife (CDFW). The CDFW found the U.S. Fish and Wildlife Service (USFWS) wetland definition and classification system based on the 1979 Cowardin definition to be the most biologically valid (Cowardin et al. 1979). CDFW staff uses this definition as a guide in identifying wetlands while conducting on-site inspections for the implementation of its Commission's wetlands policy. The Regional Water Quality Control Board (RWQCB) is charged with protecting the beneficial uses of these aquatic systems from pollution and nuisance that may occur as a result of waste discharges in the region. The RWQCB may regulate impacts to wetlands and drainages under the Clean Water Act section 401 or use California Water Code Section 13260 for discharge of fill into Waters of the State. Additionally, areas within the California Coastal Commission's Coastal Zone are subject to a stricter definition than CDFW's. Wetlands found in the Coastal Zone are regulated under the California Coastal Act of 1976 (CCA), and are within jurisdiction of the California Coastal Commission. Under the CCA, wetlands are defined in California Public Resource Code § 30121.

3.0 Delineation Methods

3.1 Federal and State Jurisdiction

3.1.1 *Overview of methodology*

Potential jurisdictional wetlands and other waters were identified using techniques described in the 1987 Manual, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (2008b), and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (2008a and the updated datasheet from 2010). The USACE routine onsite method of wetland delineation was used. This includes locating data points within different topographic zones and habitat types that are associated with wetlands and uplands, with the majority of the data points located within the potential wetland boundary. Table 3 summarizes dates of field work and personnel attending each site visit.

TABLE 3. FIELD WORK LOG. Wetland delineation survey dates, actions taken, and field personnel are provided.

Survey Date	Activities	Personnel
April 11, 2014	Investigative soil pits for hydric indicators	K. Weichert and J. Tilligkeit
May 8, 2014	Sample sites investigating vegetation and soil pits	LD Althouse and J. Tilligkeit
June 4, 2014	Sample sites investigating vegetation and soil pits	J. Tilligkeit
July 10, 2015	Cross-sections along Tank Farm Creek	LD Althouse and J. Tilligkeit
October 2, 2015	Site visit with Crystal Huerta from USACE	LD Althouse and J. Tilligkeit
December 15, 2015	Sample sites and cross-sections	J. Pohlman and J. Tilligkeit

3.1.2 *Wetlands*

Soil pits were dug by hand at 13 intensively described data points, and field indicators for the three USACE parameters (hydrophytic vegetation, hydric soils, and wetland hydrology) were investigated and described in full. Data points were selected where presence of hydrophytic vegetation, wetland hydrology, or low relief indicated potential wetland. Adjacent pits were dug in upland locations to compare soil features in upland locations with soil conditions in suspected wetlands. Locations of all 13 formally described soil sample sites are recorded on the Jurisdictional Delineation Map (Exhibit A). The Wetland Determination Data Forms used for each formal soil sample site are included as Exhibit B. Photos of representative sites are included as part of Photo Collections in Section 8.0. Locations of photopoints can be found on Exhibit C.

Sufficient pits were dug to verify that specific assemblages of plant species associated with specific landforms and hydrology were also associated with wetland soil conditions. Each formal sample site evaluation was recorded on a Wetland Determination Data Form—Arid West Region (USACE 2008).

Wetland hydrology

The presence or absence of wetland hydrology field indicators was assessed following methodology presented in the 1987 Manual and the 2008 Supplement. Wetland scientists looked for indicators as described in those documents, including but not limited to high water table, site topography, drift lines, drainage patterns, sediment deposits, inundation, observation of wet conditions during the growing season, and saturation of soils.

Wetland vegetation

Vegetation in each stratum was identified to species and recorded. The indicator status of plants was confirmed by referring to the *National Wetland Plant List* (USACE 2015).

Species dominance was noted for each stratum using the "50/20 Rule." Percent absolute cover was estimated by species for each stratum, and species were ranked in decreasing order of coverage. Dominant species were selected from the ranked list in descending order until their cumulative cover exceeded 50 percent of total cover for each stratum. Any species that alone formed 20 percent or more of the total cover for one stratum was also considered dominant. Dominance test and prevalence index was calculated for all samples where possible.

For most sample sites, species dominance could not be determined due to the Study Area being plowed. Presence and absence was determined using the small amount of vegetation growing and the plowed remains.

Wetland soil

Soils were examined according to methodology presented in the 2008 Arid West Supplement and 1987 Manual. Hydric soil indicators were recognized on the basis of soil characteristics verified in the USDA-NRCS publication, *Field Indicators of Hydric Soils in the United States* (version 7.0, USDA-NRCS 2010) and the NTCHS definition of hydric soils.

Soil profiles were described for selected soil morphological characteristics such as texture, Munsell color, moisture, horizonation, and presence/absence of redoximorphic features. Soil samples were examined in the field with a hand lens where appropriate. Testing for hydric soils was performed by looking for one or more of the field indicators, which include low chroma, mottling, gleying, concretions, iron masses, depletions, and sulfidic odor. Soil series and map units were noted from United States Department of Agriculture (USDA) soils maps; however, due to coarse scale and general nature of soil survey maps, these data were used only to understand the general character of soils on site. Observations and test pits were used to investigate site-specific soil conditions.

Pits were dug to 12 inches in each of the 2001 wetland locations (Figure 9) and in a new potential wetland location south of the Lockheed property.

3.1.3 *Other waters of the U.S.*

For features that do not contain vegetation suggestive of wetlands, evidence of Ordinary High Water Mark (OHWM) was used to determine extent of Corps jurisdiction over other waters of the U.S. The OHWM Manual lists and describes indicators associated with areas that become flooded or ponded, but are not dominated by wetland vegetation and the duration of flooding, ponding and/or near-surface soil saturation (less than or equal to 12 inches) is not sufficient to cause hydric soils to form or wetland hydrology conditions to occur. Ordinary High Water Mark was identified and noted according to guidance provided in documentation listed in Section 3.1.1. Arid West Ephemeral and Intermittent Streams OHWM Datasheets are included under Exhibit D.

Cross-sections

Cross sections were completed along each jurisdictional drainage where there was a substantial change in either OHWM or TOB width. For representative cross sections, individual hydrogeomorphic floodplain units were described through vegetation cover, sediment texture, and hydrology indicators. OHWM was determined based on hydrology indicators described on the Arid West OHWM Datasheets and was defined as the division between the active floodplain and low terrace. Three photos were taken at each cross section: upstream, downstream, and substrate. Locations of cross sections are shown on Exhibit C.

Waters connectivity/adjacency

Connectivity of features to adjacent Traditional Navigable Waters was assessed via site work and investigation of aerial photos, and USGS topographic maps. Evidence of physical, chemical, and/or biological influence, size of watershed, and connectivity to TNWs was considered.

3.2 Mapping Methodology

Boundaries of waters of the U.S. and California were interpolated from field observations, aerial photographs, topographic mapping provided by Cannon, and review of the 2002 Olberding report. Information was then imported into ArcGIS for production of Exhibit A.

4.0 Technical Findings

4.1 Plant Communities

Vegetation observed on the subject site was used to identify location and extent of wetlands on the subject site. A list of species observed during delineation work and used to determine boundaries of wetlands versus uplands is provided Table 4.

TABLE 4. PLANT LIST. Vegetative indicators recorded on site during wetland delineation work. Plant species not included in the 2015 NWPL are noted "NL" (not listed). Jepson Manual Second Edition names are provided in brackets where they differ from current NWPL names and for species not included in NWPL (Hickman 1993).

NWPL Scientific Name	Common Name	CNPS Status	Wetland Indicator Status
Herbs			
Anagallis arvensis	Scarlet pimpernel	None	NL
Avena fatua	Wild oat	None	NL
Avena sativa	Cultivated oat	None	UPL
Brassica nigra	Black mustard	None	NL
Carex sp.	Sedge	None	-
Cirsium vulgare	Bull thistle	None	FACU
Conium maculatum	Poison hemlock	None	FACW
Convolvulus arvensis	Bindweed	None	NL
Cynara cardunculus	Artichoke	None	NL
Dipsacus sativus	Fuller's teasel	None	NL
Elymus glaucus	Blue wildrye	None	FACU
Epilobium brachycarpum	Annual willowherb	None	NL
Foeniculum vulgare	Fennel	None	NL
Helminthotheca echioides	Bristly ox-tongue	None	FACU
Hirschfeldia incana	Mustard	None	NL
Hordeum vulgare	Barley	None	NL
Lotus corniculatus	Birdfoot trefoil	None	FAC
Malvella leprosa	Alkali mallow	None	FACU
Melilotus albus	White sweet clover	None	NL
Melilotus officinalis	Yellow sweet clover	None	UPL
Matricaria discoidea	Pineapple weed	None	FACU
Phalaris aquatica	Harding grass	None	FACU
Plantago lanceolata	English plantain	None	FAC
Polypogon monspeliensis	Annual beardgrass	None	FACW
Raphanus sativa	Wild radish	None	NL

NWPL Scientific Name	Common Name	CNPS Status	Wetland Indicator Status
Schoenoplectus californicus	California tule	None	OBL
Silybum marianum	Milk thistle	None	NL
Sonchus asper	Prickly sow-thistle	None	FAC
Spergula arvensis	Stickwort	None	NL
Spergularia rubra	Red sand spurrey	None	FAC
Stephanomeria sp.	Lettuce	None	-
Typha angustifolia	Narrow-leaved cattail	None	OBL
Shrubs			
Baccharis pilularis	Coyote brush	None	NL
Salix lasiolepis	Arroyo willow	None	FACW
Trees			
Populus fremontii	Fremont cottonwood	None	NL

4.2 Federal Jurisdictional Areas

Our 2014 and 2015 field work resulted in delineation of 3.03 acres of potential federal jurisdictional wetlands, regulated as Clean Water Act Section 404 waters of the U.S., special aquatic sites within the Study Area. A summary of findings for each wetland feature can be found in Section 5. A discussion of significant nexus is provided below.

The site was visited on October 2, 2014 by Crystal Huerta, U.S. Army Corps of Engineers Project Manager to verify the draft delineation. Modifications to this document are based on her on-site investigation and input.

4.2.1 *Federal wetlands*

Wetlands are considered "special aquatic sites" under the USACE definition. Special aquatic sites are afforded protection under the Clean Water Act Sections 401 and 404.

Most areas mapped in 2001 as potentially wetland were significantly disturbed due to farming practices that have been occurring prior to 1940. Historically, the soil and vegetation have been directly affected by the plowing activity and Tank Farm Creek was rerouted around the tank farm to the north of the property, affecting the hydrology of the site. Vegetation and hydrology were also considered naturally problematic due to several years of drought in the area.

Three onsite drainages were considered potential federal wetlands: the main portion of Tank Farm Creek from the confluence to the southwest corner of the property (henceforth referred to as Tank Farm Creek), the portion of Tank Farm Creek from the tank farm property north of the Study Area to the confluence (North-South Drainage), and a farm drainage ditch flowing from the eastern neighbor's property to the confluence (East-West Drainage).

Wetland plant communities

Plant communities associated with wetlands potentially under federal jurisdiction included obligate species such as *Typha angustifolia* and *Schoenoplectus californicus*. Facultative-wetland species such as *Conium maculatum* and *Salix lasiolepis* were also present.

Along Tank Farm Creek and North-South Drainage is Arroyo willow (*Salix lasiolepis*) dominated riparian habitat with sporadic Fremont's cottonwoods (*Populus fremontii*) creating areas of varying canopy thickness. Poison hemlock (*Conium maculatum*) and bristly ox tongue (*Helminthotheca [=Picris] echioides*) line the majority of the drainage. Within the drainage, patchy disturbance areas occur with narrow-leafed cattail (*Typha angustifolia*), Fuller's teasel (*Dipsacus sativus*), and cocklebur (*Xanthium strumarium*). California bulrush (*Schoenoplectus [=Scirpus] californicus*) and harding grass (*Phalaris aquatica*) was also observed in the East-West drainage.

Hydric soil

Depletions and redox concentrations were found in all three drainages. This is indicative of long periods of pooling water creating wetland conditions rather than non-wetland waters. A detailed list of hydric soil indicators unique to each drainage can be found in Table 5 in Section 5.

Wetland hydrology

Within the study area, base flow is within a defined creek channel. Pooling was observed in Tank Farm Creek during one site visit, likely from irrigation water. Clear topographic features define the bed and bank of both channels with benches evident at the edge of the base flow channel.

Peak discharges from San Luis Obispo Tank Farm (SLOTF) to the project site (Tank Farm Creek) are estimated by Cannon (2015) at 60 cubic feet per second (cfs) in a 2-year storm and 81 cfs in a 10-year storm. The drainage receives 469 cfs during a 100-year event that includes a combined discharge of water flowing directly in Tank Farm Creek combined with overflow water that spills over the southernmost berm of SLOTF.

Due to the drought, we did not expect to find standing water or saturation at any of the sample sites. Historical aerial photography was used to look for signs of saturation or inundation. A few locations in the onsite drainages passed the FAC-Neutral test and had evidence of water stained leaves or drift deposits.

Cross-sections were completed along each drainage and are shown below. Locations of cross-sections can be found on Exhibit C.

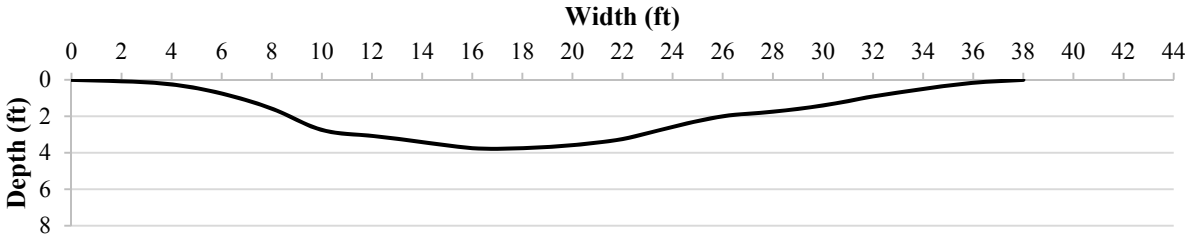


CHART 2. CROSS-SECTION A. Cross-section A along North-South drainage looking upstream.

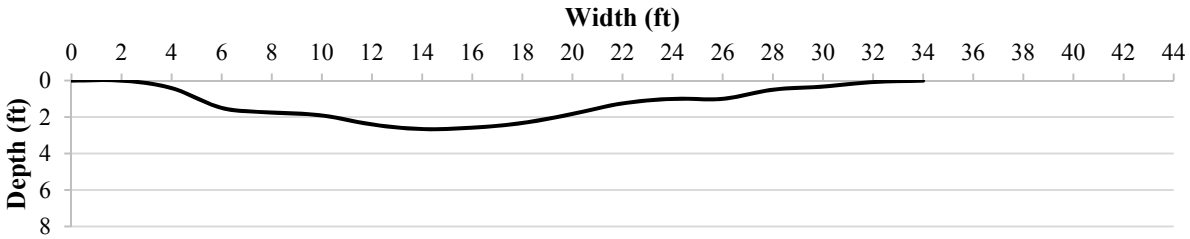


CHART 3. CROSS-SECTION B. Cross-section B along North-South drainage looking upstream. An OHWM datasheet and photopoints were completed (Exhibits C and D).

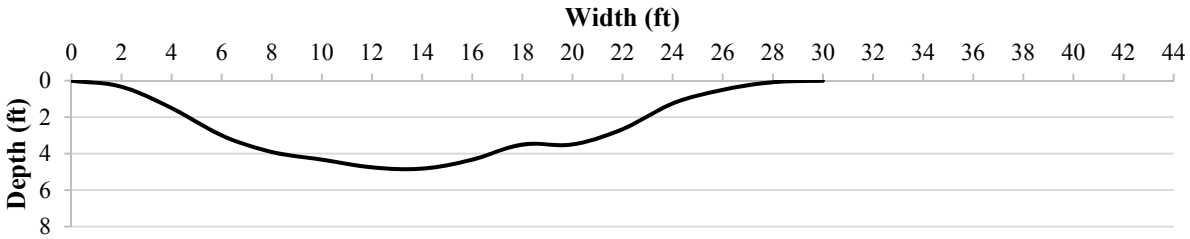


CHART 4. CROSS-SECTION C. Cross-section C along Tank Farm Creek looking upstream.

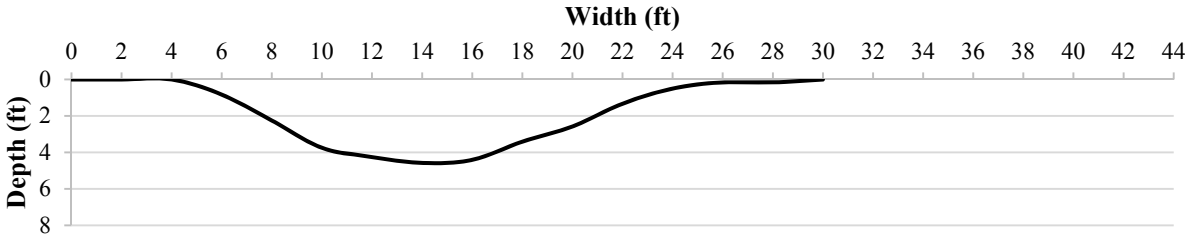


CHART 5. CROSS-SECTION D. Cross-section D along Tank Farm Creek looking upstream.

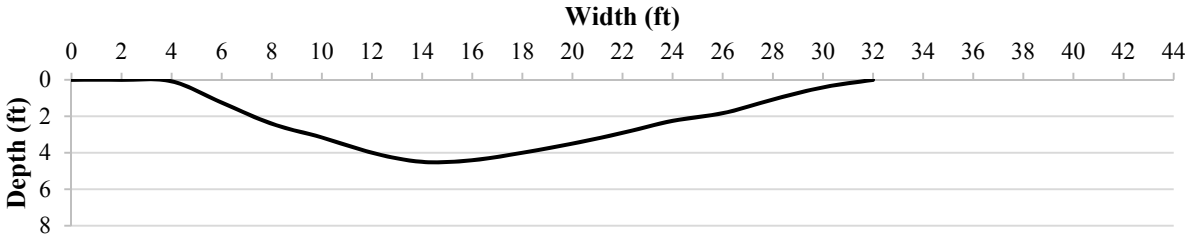


CHART 6. CROSS-SECTION E. Cross-section E along Tank Farm Creek looking upstream.

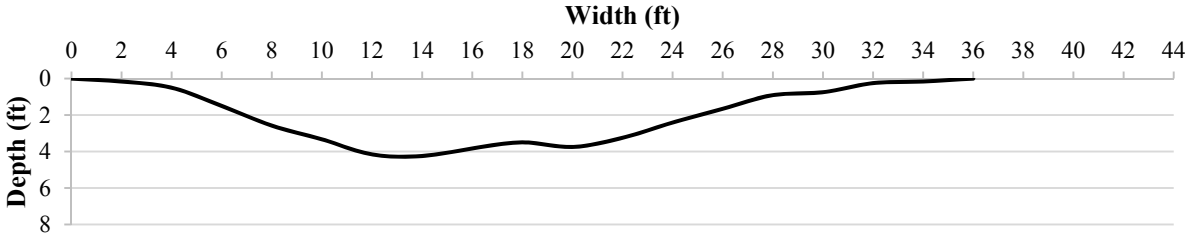


CHART 7. CROSS-SECTION F. Cross-section F along Tank Farm Creek looking upstream.

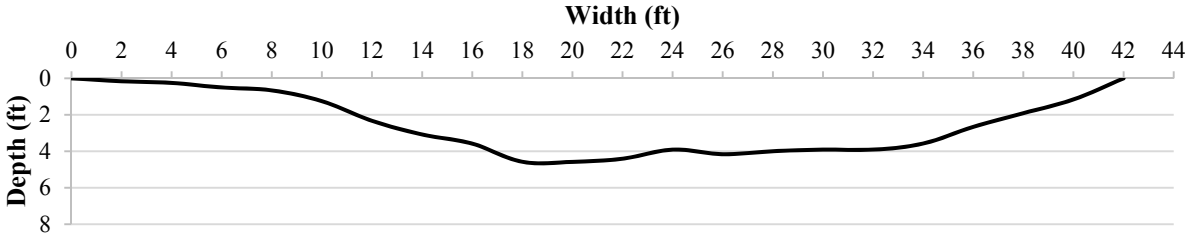


CHART 8. CROSS-SECTION G. Cross-section G along Tank Farm Creek looking upstream.

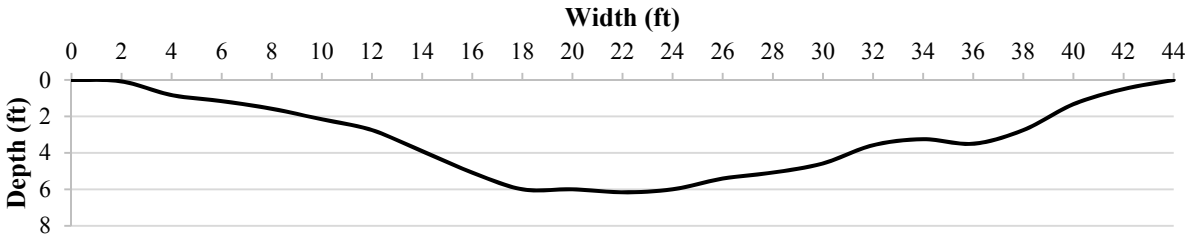


CHART 9. CROSS-SECTION H. Cross-section H along Tank Farm Creek looking upstream. An OHWM datasheet and photopoints were completed (Exhibits C and D).

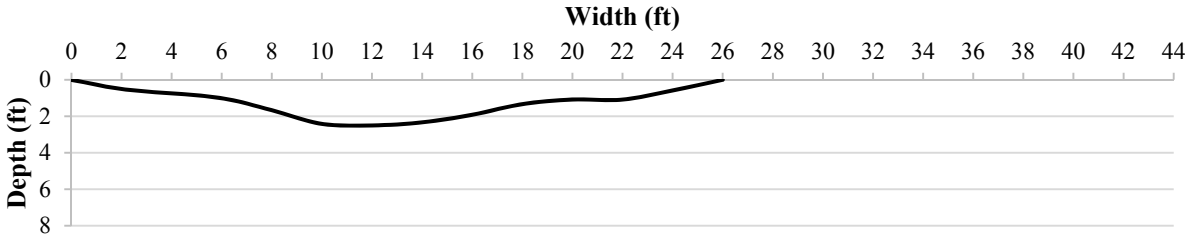


CHART 10. CROSS-SECTION I. Cross-section I along Tank Farm Creek looking upstream. An OHWM datasheet and photopoints were completed (Exhibits C and D).

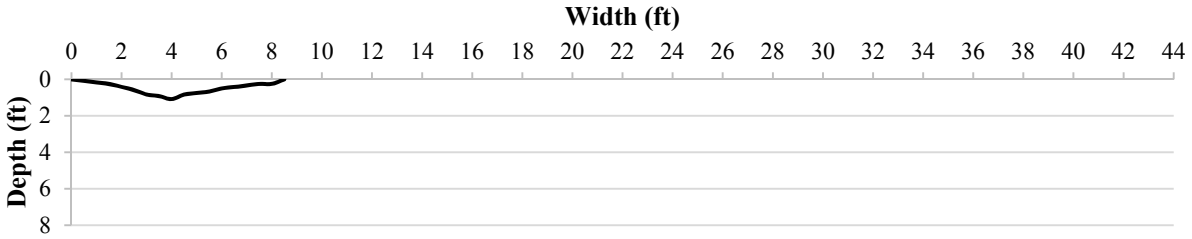


CHART 11. CROSS-SECTION J. Cross-section J along East-West drainage looking upstream. An OHWM datasheet and photopoints were completed (Exhibits C and D).

4.2.2 *Federal other waters*

All drainages within the Study Area contained hydric soil and hydrophytic vegetation meeting the requirements for federal wetlands. No additional waters were found.

4.2.3 *Significant nexus*

San Luis Obispo Creek, the major drainage in the vicinity of the subject watershed, connects to Traditional Navigable Waters, specifically, the Pacific Ocean, approximately 7 miles from the Study Area. Prior to reaching the ocean, water flows through the Study Area via Tank Farm Creek, exits the Study Area and flows approximately 500 feet to the East Fork of San Luis Obispo Creek and then a mile to the main San Luis Obispo Creek drainage that flows directly to the Pacific Ocean.

4.3 State of California Jurisdictional Areas

Our 2014 and 2015 field work resulted in delineation of 7.08 acres of potential state jurisdictional wetlands, regulated under the Porter-Cologne act. State wetlands include all areas that are federal jurisdictional wetlands, and also include additional features that lack one or more indicators necessary to meet federal standards.

4.3.1 *State wetlands*

The Study Area contained two types of wetlands that did not meet all three requirements for federal wetlands. These additional areas include farmed wetlands and areas along Tank Farm Creek between the top of bank and edge of riparian canopy.

Wetland plant communities

In the farmed wetlands, minimal vegetation was present. All farmed wetlands had signs of weedy plants such as *Malvella leprosa, Convolvulus arvensis,* or *Helminthotheca echioides*. The Lockheed wetland site had remnants of *Polypogon monspeliensis* in the plowed ground. Due to the site conditions, vegetation was considered significantly disturbed and naturally problematic at all farmed wetland sites.

State jurisdiction of Tank Farm Creek and North-South Drainage is extended to the edge of the willow and cottonwood canopy.

Wetland hydrology

Wetland hydrology was considered naturally problematic due to the drought. We did not expect to find standing water or saturation. Oxidized rhizospheres were also unlikely in plowed areas due to the absence of living roots. Aerial photographs were relied on for signs of saturation or inundation. Also, if there appeared to be some reduction of crop growth in the area, we considered this a sign of hydrology. A list of hydrology indicators can be found for each wetland in Table 7.

Hydric soil

Soil was also considered problematic due to disturbed conditions. Farmed wetlands had minimal redox concentrations and depletions. Each farmed wetland had a soil matrix color of 10YR 2/1 or 3/1 to 18 inches with 4 or 5 inches of plowed soil as the top horizon. Although the farmed wetland areas contained depletions and redox concentrations, the depth and percentages did not match a hydric soil indicator. Riparian canopy along Tank Farm Creek did not contain any sign of hydric soil.

5.0 Jurisdictional Delineation

5.1 Federal Jurisdictional Areas

Federal wetland characteristics are summarized in Table 5. Each wetland was given a unique name and the sample sites and cross-sections associated with the wetland are listed. As previously mentioned, cross-sections were completed for the potential federal wetlands located within the drainage features. Wetland indicators and ordinary high water mark indicators are also listed. Table 6 provides area in acres and square feet for each potential federal wetland. No federal non-wetland waters were found within the Study Area.

TABLE 5. FEDERAL JURISDICTIONAL WETLAND CHARACTERISTICS. Corresponding sample sites, physical characteristics, and indicators are given for each feature in the Study Area. Indicator abbreviations are provided below.

Feature	Sample Site(s)	Upland Sample Site(s)	Cross Section	Habitat	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Hydrology Indicator	OHWM Indicator
East West Drainage	6	9	J	Depressional wetland	PR	F3	B10/C9	V/B
North South Drainage	7	8	B	Depressional wetland	DT/PI	A11	C9/D5	V/B/S
Tank Farm Creek	10	12	H/I	Streams and rivers	DT/PI	A11	B9/C9/D5	V/B/S

Abbreviations:

A11: Depleted Below Dark Surface	B10: Drainage Patterns	DT: Dominance Test	PR: Problematic Hydrophytic Vegetation
B: Break in bank slope	C9: Saturation Visible on Aerial Imagery	F3: Depleted Matrix	S: Change in average sediment texture
B9: Water-Stained Leaves	D5: FAC-Neutral Test	PI: Prevalence Index	V: Change in vegetation species or cover

TABLE 6. FEDERAL JURISDICTIONAL WETLAND MEASUREMENTS. Calculated federal jurisdictional wetland areas are given for the Study Area.

Feature	Area (ac)	Area (sq ft)
North South Drainage	0.41	17,647
East West Drainage	0.53	23,042
Tank Farm Creek	2.10	91,289
Total Federal Wetlands	**3.03**	**131,978**

5.2 State Jurisdictional Areas

State wetland characteristics are summarized in Table 7. Wetlands that are exclusively state jurisdiction as well as additional federal wetlands are summarized in the table. Tank Farm Creek is divided into the creek itself to the top of bank and riparian areas outside the top of bank. Areas within the creek were considered federal jurisdiction due to the general presence of hydrophytic vegetation and hydric soil. Willow canopy beyond top of bank did not show evidence of hydric soil and are therefore exclusively state jurisdiction. Areas are provided in Table 8. Non-wetland waters were not found within the Study Area.

TABLE 7. STATE JURISDICTIONAL WETLAND CHARACTERISTICS. Corresponding sample sites, habitat, and indicators are given for each feature in the Study Area.

Feature	Sample Site(s)	Upland Sample Site(s)	Cross-section	Habitat Type	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Hydrology Indicator	OHWM Indicator
Bowl Wetland	4	None	None	Depressional wetland	PR	None	C3/C9	n/a
Corner Wetland	2	None	None	Depressional wetland	PR	None	B7/C9	n/a
East West Drainage	6	9	J	Depressional wetland	PR	F3	B10/C9	V/B
Lockheed Wetland	1	None	None	Depressional wetland	PI/DT	None	B10/C9/D5	n/a
North South Drainage	7	8	B	Depressional wetland	DT/PI	A11	C9/D5	V/B/S
Tank Farm Creek	10	12	H/I	Streams and rivers	DT/PI	A11	B9/C9/D5	V/B/S
Tank Farm Riparian	11	12	H/I	Streams and rivers	PI	None	B10/C9	V/B/S

Abbreviations:
A11: Depleted Below Dark Surface
B: Break in bank slope
B7: Inundation Visible on Aerial Imagery
B9: Water-Stained Leaves
B10: Drainage Patterns
C3: Oxidized rhizospheres along Living Roots
C9: Saturation Visible on Aerial Imagery
D5: FAC-Neutral Test
DT: Dominance Test
F3: Depleted Matrix
PI: Prevalence Index
PR: Problematic Hydrophytic Vegetation
S: Change in average sediment texture
V: Change in vegetation species or cover

TABLE 8. STATE JURISDICTIONAL WETLAND MEASUREMENTS. Calculated state jurisdictional wetland areas are given for the Study Area.

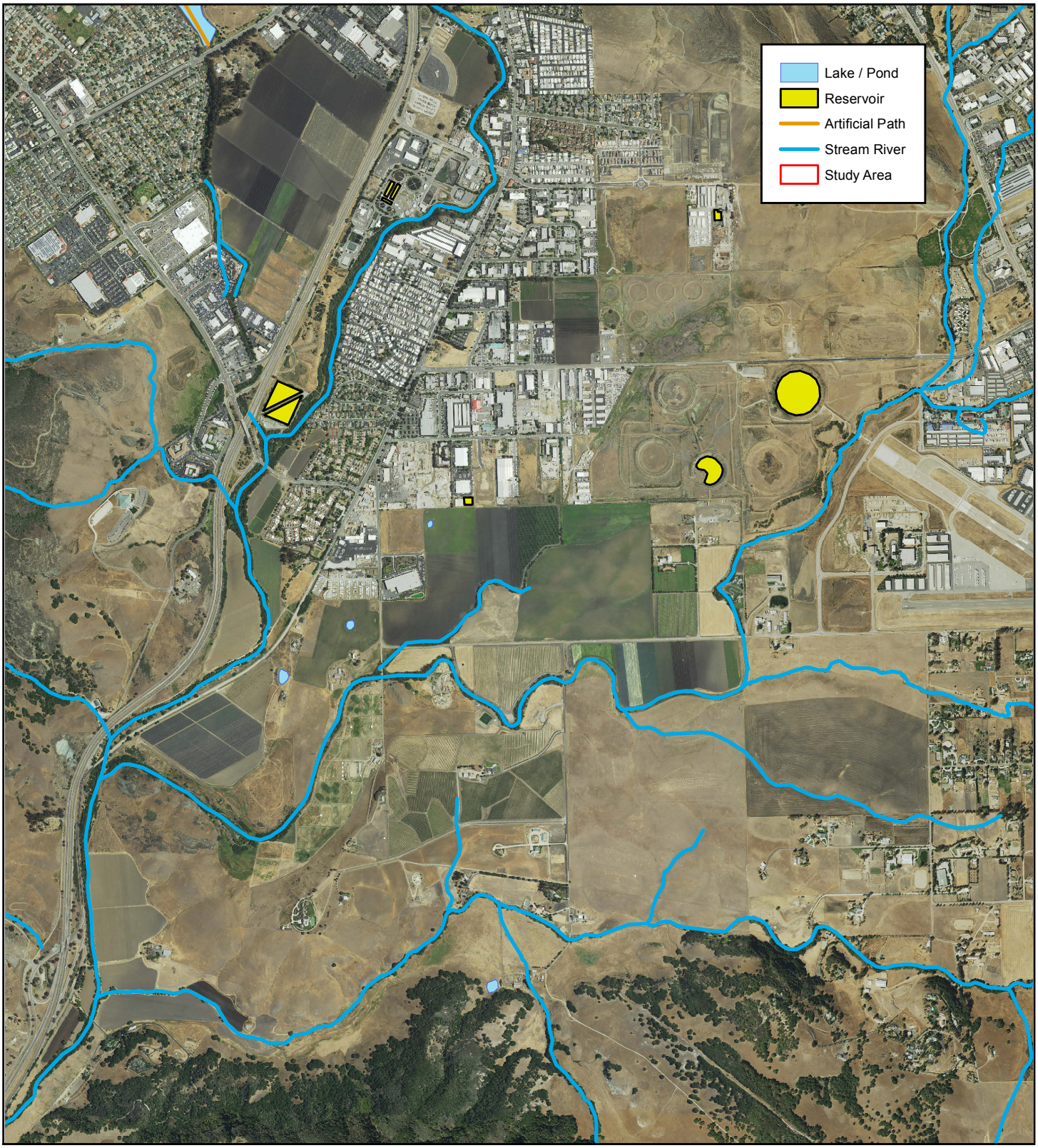
Feature	Area (ac)	Area (sq ft)
Bowl Wetland	1.85	80,386
Corner Wetland	0.29	12,832
East West Drainage	0.53	23,042
Lockheed Wetland	0.69	29,918
North South Drainage	0.41	17,647
Tank Farm Drainage	2.10	91,289
Tank Farm Willow Riparian	1.95	84,774
Total Wetlands	**7.80**	**339,888**

This report is subject to verification by the United States Army Corps of Engineers and the California Department of Fish and Wildlife.

This page intentionally blank.

6.0 Figures

Figure 1. USGS NHD Data



Avila Ranch
San Luis Obispo

2014 San Luis Obispo County
NAIP Aerial Imagery
Map Updated: December 31, 2015 03:43 PM

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES

Figure 2. USGS 8-digit HUC

Avila Ranch
San Luis Obispo

Map Updated: December 31, 2015 03:49 PM

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES

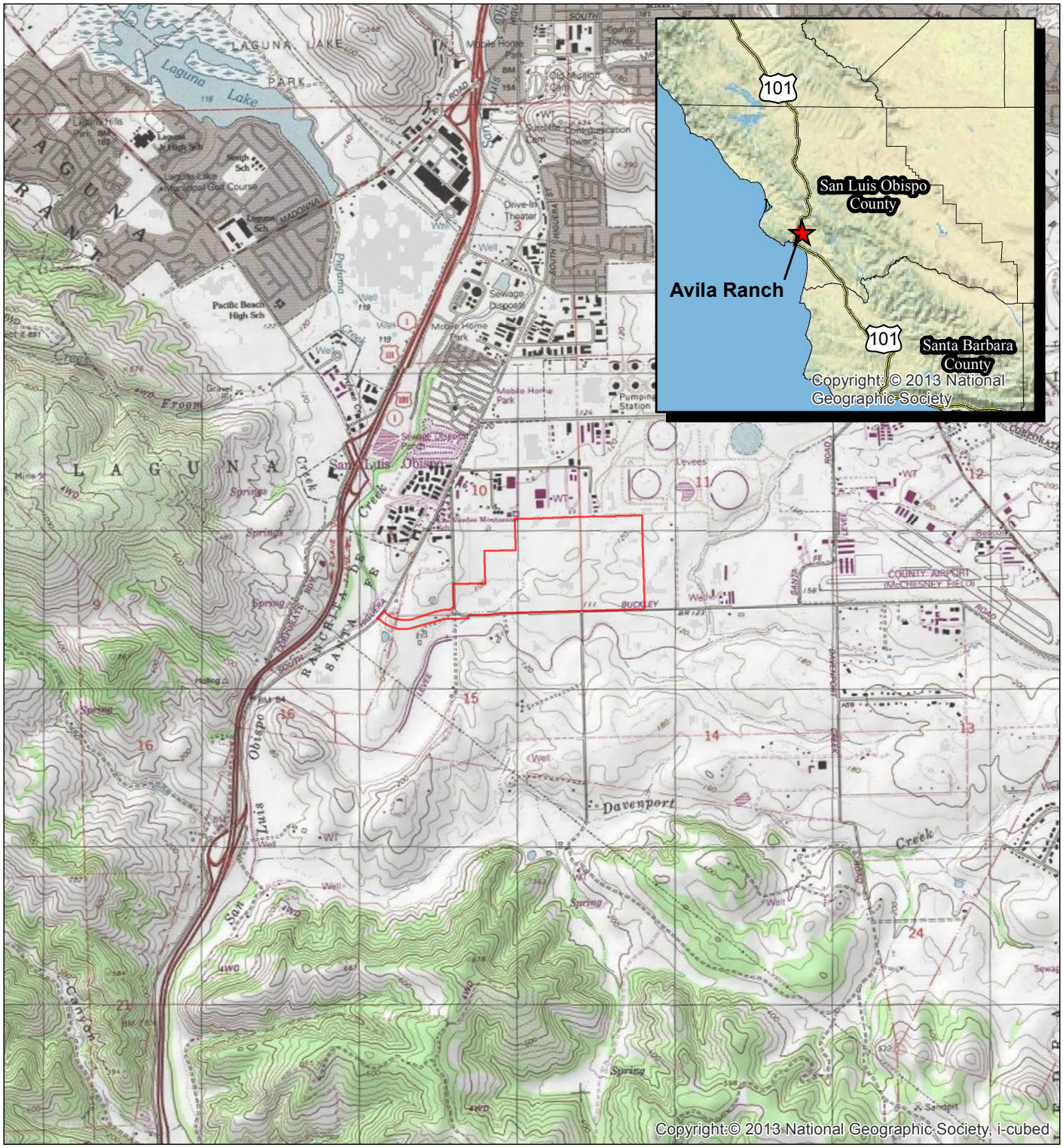
Figure 3. USGS 10-digit HUC

Avila Ranch
San Luis Obispo

Map Updated: December 31, 2015 03:47 PM

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES

Figure 4. USGS Topographic Map



N
W E
S

Legend

Study Area

0 0.5 1 2 Miles

Avila Ranch
San Luis Obispo

Map Updated: December 31, 2015, 03:54 PM

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES