Draft

Aquatic Resource Delineation Report

Prepared for:

Stanislaus County

AECOM

November 2016

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ACRONYMS AND ABBREVIATIONS

CWA	Clean Water Act
EPA	Environmental Protection Agency
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GPS	Global Positioning System
msl	mean sea level
NRCS	Natural Resources Conservation Service
NI	No Indicator
NL	Not Listed
OBL	Obligate
OHWM	Ordinary High Water Mark
RPW	Relatively Permanent Water
SCS	Soil Conservation Service
TNW	Traditional Navigable Water
UPL	Upland
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

INTRODUCTION

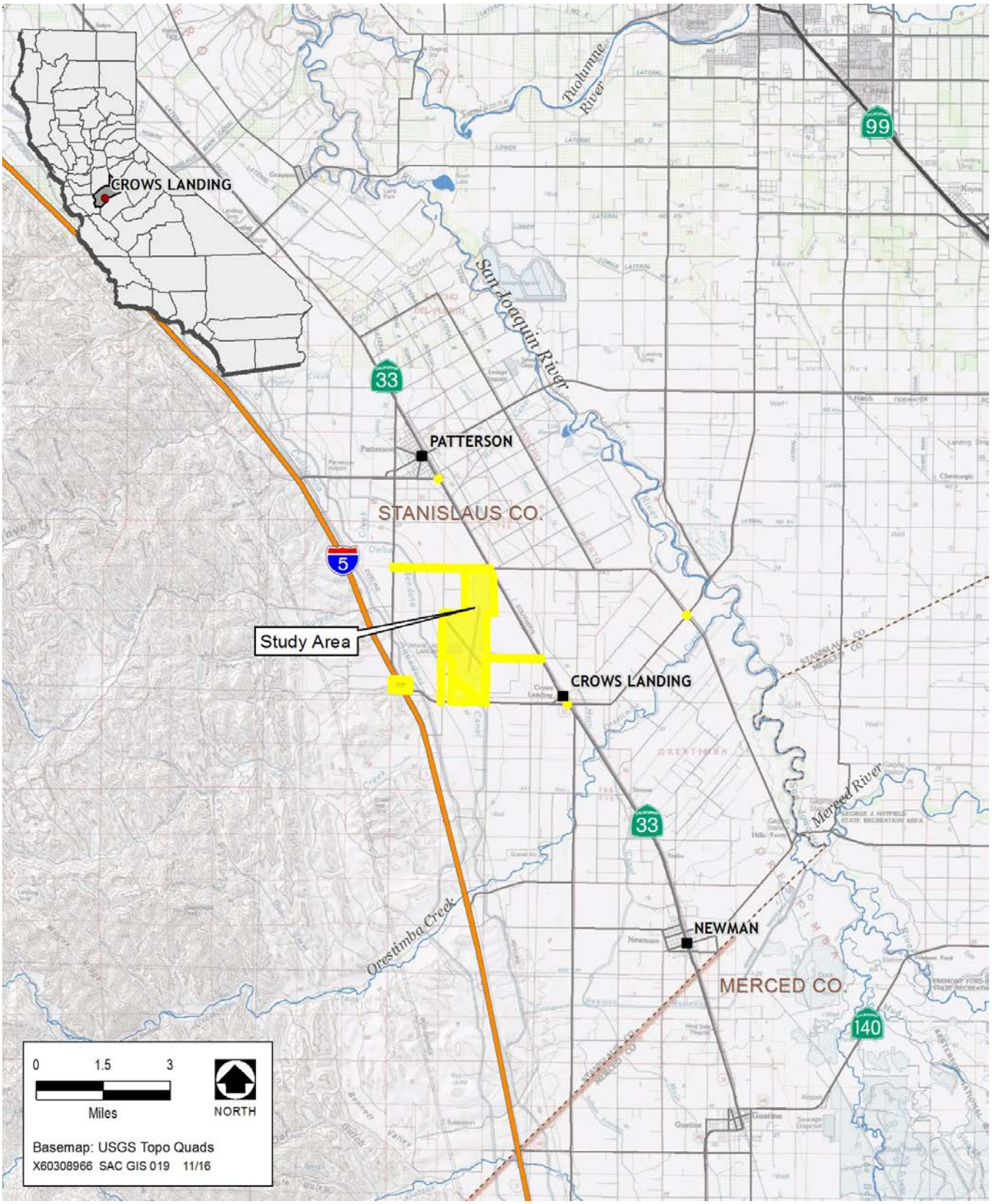
The proposed Crow's Landing Industrial Business Park (CLIBP) (project) is located in Stanislaus County, California. The approximately 1,647-acre study area for this delineation consists of the 1,528-acre CLIBP project site and 119 acres of off-site infrastructure improvement areas. The project site is situated approximately 3 miles southeast of the City of Patterson, 17 miles southwest of the City of Modesto, and 1mile east of Interstate 5 (Exhibit 1). Off-site improvement areas for road and intersection upgrades are located adjacent to and surrounding the project site (Exhibit 1). Access to the study area is available from Bell Road via the Fink Road exit off of Interstate 5.

The study area is located in Sections 8, 9, 17, and 20 within the U.S. Geological Survey (USGS) 7.5-minute Crow's Landing quadrangle, Township 6 South, Range 8 East (Exhibit 2). Site topography is relatively flat with an elevation range of roughly 110 to 200 feet above mean sea level (msl) and slopes generally to the northeast toward State Route 33. The majority of the project site is used for agriculture, consisting of corn, tomato, and legume field crops. Additional crops found in the off-site roadway improvement areas include almond, walnut, and pistachio orchards. A Naval Auxiliary Landing Field that was transferred from the Navy to NASA in 1994 and was decommissioned in 1997 is located in the center of the project site. Beginning in 1999, NASA began the process of transferring ownership of the property to Stanislaus County. Prior to completing the land transfer to Stanislaus County, NASA initiated a series of clean-up operations to remediate soil and groundwater contamination that resulted from operation of the site as a Navy Auxiliary Landing Facility and then as a NASA flight facility.

The site includes two decommissioned military runways and associated aprons and taxiways, internal roadways, a control tower, lighting towers, and remnants of the former airfield lighting and navigational aids (a segmented circle). All structures associated with the defunct Naval facilities have been razed leaving concrete and asphalt pads, paved roads, landscaping, and disturbed ground. Only the former air traffic control tower and former airfield lighting vaults remain. A site that formerly housed Navy ammunition bunkers and refuse disposal pits is located north of the runway intersection. Two excavated sewer treatment basins that were part of the Navy's sewer system are located in the northeast portion of the site, but they are no longer used and overgrown with ruderal vegetation.

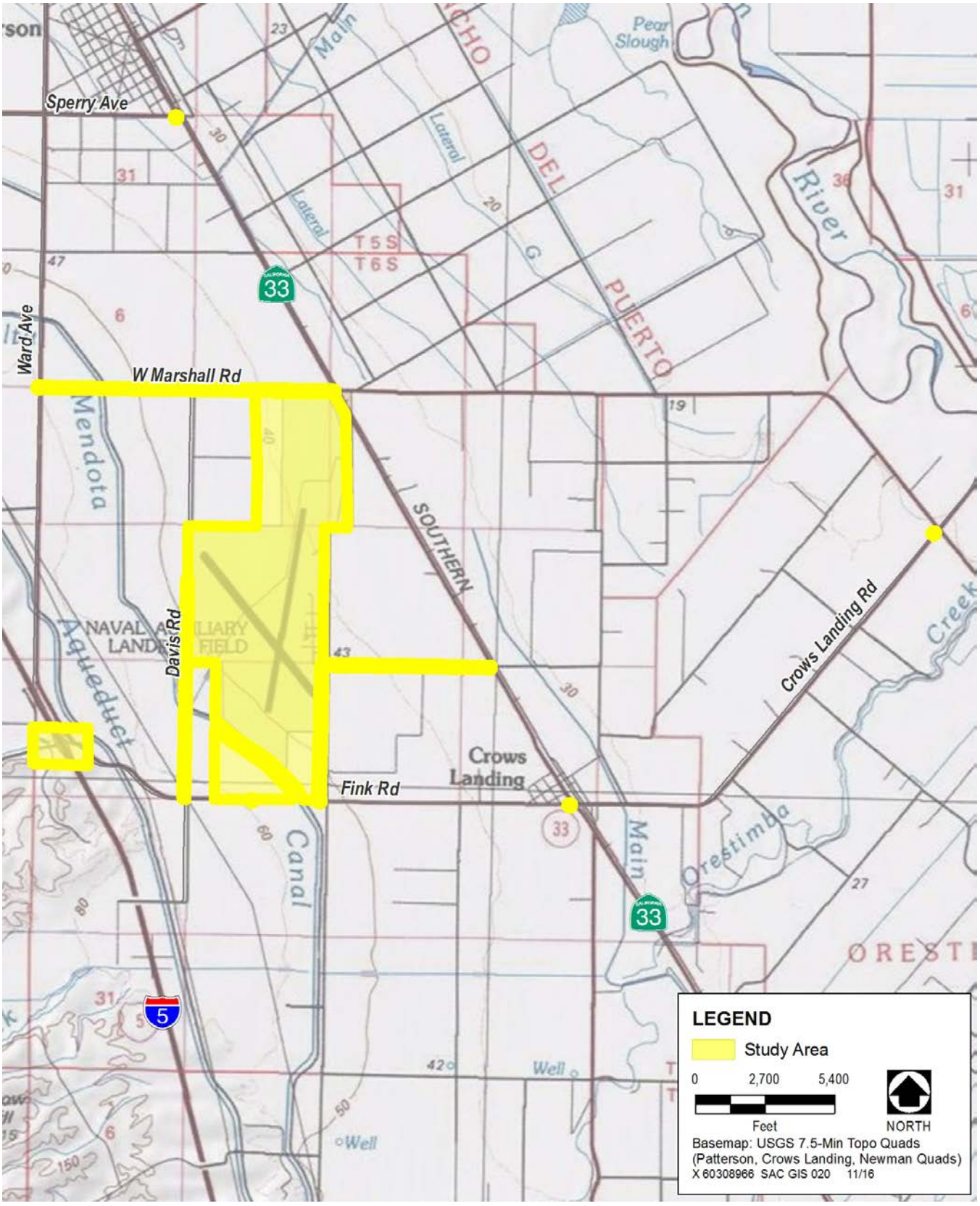
A channelized creek, Little Salado Creek, traverses the study area and multiple smaller ditches and basins are also present. Aside from agricultural fields, paved runways are the largest land cover on the project site and paved roadways are the largest land cover in the off-site improvement areas. The Delta-Mendota Canal bisects the project site in a northwest-southeast direction in a separate right-of-way that is excluded from the project site. The California Aqueduct flows in a north-south direction just west of the project boundary. The San Joaquin River, a traditional navigable water of the United States, is located approximately 4 miles east of the project site.

The purpose of this report is to provide an accurate quantification and delineation of waters of the United States, including wetlands, as defined by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA) for the project. The delineation of waters of the United States is considered preliminary until verified by the Sacramento District of the USACE.



Source: Stanislaus County 2013

Regional Location of the Project Site **Exhibit 1**



Source: Stanislaus County 2013

Project Site and Vicinity **Exhibit 2**

PROJECT DESCRIPTION

The proposed project would be developed over an approximately 30-year timeframe and include the following major components:

- Adoption of a specific plan and rezone to support the development of various aviation-compatible land uses on the former military site;
- Planning and construction of initial "backbone" infrastructure to ready the site for long-term leaseholds and development (e.g., water supply, wastewater, hydrology and drainage improvements, and dry utilities);
- Planning and construction of internal roadways and phased improvements to off-site roads and intersections in the project vicinity;
- Adoption of an Airport Layout Plan (ALP) and Narrative Report to support the development of a public-use, general aviation airport to support and complement the proposed CLIBP; and
- An amendment to the Stanislaus County Airport Land Use Compatibility Plan (ALUCP) to provide new policies specific to the new public-use airport.

The proposed specific plan identifies a suite of general land use types. As shown in Table 1, seven general land use categories were identified for development on the project site. These land uses would be developed in three 10-year phases to create approximately 14,000 to 15,000 jobs at full build out.

As shown in Table 1, approximately 83 percent of the site (or approximately 1,274 of the estimated 1,528 acres) has been identified for development. The remaining 254 acres would accommodate necessary infrastructure. Each broad land use category is described in the specific plan and summarized below. The specific plan also identifies several, more defined land uses that could be developed in the specific plan area in accordance with the broad categories presented in Table 1.

Table 1
Anticipated Development by Land Use Category (acres)

Land Use	Description	Total Use (acres)
Logistics/Distribution	Packaging, warehouse, and distribution, etc.	349
Light Industrial	Light industrial manufacturing, machine shops, etc.	350
Business Park	Research and development, business support services, etc.	78
Public Facilities	Municipal and County offices, professional offices, emergency services, etc.	68
General Aviation	Airport runways, aprons, hangars, etc.	370
Aviation Related	Parcel distribution, aviation classroom training, etc.	46
Green Space / Multimodal Transportation Corridor	Bicycle and pedestrian path, greenway, monument to military use.	13
All Uses by Phase		1,274
Infrastructure	Internal roadways, water and wastewater systems, stormwater drainage, etc.	254
Plan Area Total		1,528

Off-site two-lane roadways would be rebuilt as a part of the project, including portions of Bell Road, Davis Road, Ike Crow Road and Marshall Road. Marshall Road would be expanded from two to four lanes adjacent to the

project site as a part of the project. Proposed improvements at the Fink Road-Interstate 5 interchange include widening beneath the Interstate 5 overpass to construct a left-turn lane to the southbound onramp. Signal lights would also be installed at the following off-site intersection locations:

- Sperry Avenue at State Route 33
- Marshall Road at Ward Avenue
- Marshall Road at State Route 33
- Marshall Road at project site entrance
- Ike Crow Road at State Route 33
- Fink Road at Bell Road
- Fink Road at project site entrance
- Crow's Landing Road at Marshall Road
- Fink Road at State Route 33
- Fink Road at Interstate 5 northbound ramps

DELINEATION METHODS

Before conducting the field delineation survey of the study area, AECOM wetland ecologists reviewed color aerial imagery of the project site on Google Earth, National Wetlands Inventory (NWI) data, and the Natural Resources Conservation Service's (NRCS) soil survey of *Stanislaus County, California, Western Part* (NRCS Web Soil Survey 2013, 2016) to determine areas of potential USACE jurisdiction. Aquatic resources delineation was conducted at the project site on November 26 and December 26, 2013, by AECOM wetland ecologists Tammie Beyerl and Pam Valle. Delineation of the off-site improvement areas was conducted by AECOM wetland ecologist Charlie Battaglia on October 18, 2016. Daytime temperatures were in the low to high 60˚F range and skies were sunny and clear during all of the delineation field surveys. Annual precipitation was below average in the area through December, 2013 (DWR 2013), but was 111 percent of average for the water year as of September 30, 2016 (DWR 2016).

The USACE 1987 wetlands delineation manual (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Environmental Laboratory 2008) were used to delineate wetlands that are potentially subject to USACE jurisdiction under Section 404 of the CWA. The 1987 manual and 2008 Arid West Supplement provide technical guidelines and methods for the three-parameter approach to determining the location and boundaries of jurisdictional wetlands. This approach requires that an area support positive indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to be considered a jurisdictional wetland. Routine wetland determination data forms were completed for 17 sample points and are provided in Appendix A. Potential jurisdictional areas were identified and mapped in the field and later digitized onto aerial imagery. Sample point locations were recorded digitally using a global positioning system (GPS) data logger (Trimble XH) and imported onto an electronic version of the aerial photograph. GPS data were recorded in North American Datum of 1983.

To determine whether the area at a sample point was dominated by hydrophytic vegetation, plant species at each sample site were recorded and the wetland indicator status was recorded for the dominant species using USACE's *National Wetlands Plant List for the Arid West Region* (Lichvar and Kartesz 2013). A species is considered dominant when that species—individually or collectively—accounts for 50 percent of the total absolute cover in a vegetation stratum. Additional codominant species are identified if those species account for at least 20 percent of the absolute cover in a designated vegetation stratum (Environmental Laboratory 2008).

Hydrophytic species include those listed as obligate (OBL), facultative wetland (FACW), or facultative (FAC) species, which correspond to a given species frequency of occurrence in wetlands. The plant indicator categories are defined as:

- OBL: greater than 99 percent occurrence in wetlands,
- FACW: between 66 percent and 99 percent occurrence in wetlands, and
- FAC: between 33 percent and 66 percent occurrence in wetlands.

For purposes of this delineation, a sample site was considered to have hydrophytic vegetation if greater than 50% of the dominant species had an indicator status of FAC or wetter. This report uses the following indicators to identify species not considered hydrophytic:

- *Facultative upland (FACU)*— species that usually occur in nonwetlands (67 percent–99 percent estimated probability) but are occasionally found in wetlands (1 percent–33 percent estimated probability),

- *Obligate upland (UPL)*— species that may occur in wetlands in another region, but almost always (greater than 99 percent) occur in nonwetlands in California (Region 0) under natural conditions,

- *No indicator (NI)*—species for which insufficient information was available to determine an indicator status, and

- *Not listed (NL)*—species not listed in *National Wetland Plant List* (Lichvar et. al. 2016).

Standard protocol states that a species with an NL designation should be considered UPL when the delineator completes the "Prevalence Index Worksheet" portion of the wetland delineation data form (Environmental Laboratory 2010). Botanical nomenclature follows *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012).

Wetland hydrology was assessed by recording observations such as inundation, oxidized rhizospheres along living root channels, and saturation signatures on aerial imagery. In addition, the potentially jurisdictional areas were all evaluated in terms of their status as a navigable waterway or their adjacency or hydrological connection to a navigable waterway.

Waters of the United States were delineated based on the ordinary high water mark (OHWM) using the OHWM field guide (Lichvar and McColley 2008). A drainage feature's OHWM typically corresponds with characteristics such as shelving, scour lines, and other natural linear features which define the bed and bank portion of the channel that floods under normal conditions (USACE 2005).

Soils were examined by digging soil test pits to determine whether hydric soils exist in a sampling location. Soils were described in terms of depth, matrix color, moisture status, and other diagnostic features indicative of hydric soils, such as the presence of concretions and oxidized rhizospheres (a redoximorphic feature, according to Vepraskas [1995]). Hydric soil indicators were based on those provided in the 1987 USACE manual, 2008 Arid West Supplement, *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils* (USDA and NRCS 2010), and Vepraskas (1995).

The *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (USACE 2007) was consulted to aid the preliminary determination that an area would be subject to USACE jurisdiction under CWA Section 404. The significant nexus test—outlined in a memorandum jointly authored by the U.S. Environmental Protection Agency (EPA) and USACE—was applied to each potentially jurisdictional habitat type (Grumbles and Woodley 2008). To facilitate jurisdictional determination consistent with the guidance, each water body delineated was evaluated as a Traditional Navigable Water (TNW), Relatively Permanent Water (RPW), or non-RPW based on the following definitions:

- *TNWs*—all waters subject to the ebb and flow of the tide, or waters that are presently used, have been used in the past, or may be used in the future to transport interstate or foreign commerce, and all waters that are navigable in fact under federal law for any purpose
- *RPWs*—waters that flow continuously at least seasonally (typically at least 3 months of the year) and are not TNWs
- *Non-RPWs*—waters that do not have continuous flow at least seasonally
- The following types of water bodies are subject to CWA jurisdiction:
- all TNWs and adjacent wetlands,
- relatively permanent tributaries of TNWs and wetlands with a continuous surface connection to such tributaries, and
- Non-relatively permanent tributaries of TNWs and adjacent wetlands if they have a significant nexus to a TNW. Non-RPWs and adjacent wetlands are determined to have a significant nexus to a TNW if they significantly affect the chemical, physical, or biological integrity of a downstream TNW.
- The "Clean Water Rule: Definition of Waters of the United States (Final Rule)" was also consulted to aid the preliminary determination that an area would be subject to USACE jurisdiction under CWA Section 404 (80 FR 37054, June 29, 2015). The conclusions of this report are consistent with the new Final Rule.

SOIL SURVEY RESULTS

Table 2 provides a list of the soil map units that occur on the project site, according to the Soil Survey of *Stanislaus County, California, Western Part*, a brief description, and the hydric status of the soil map unit. The locations of these soil units within the study area, as mapped by NRCS, are depicted on the soils map in Appendix B.

Table 2
Soil map units that occur in the study area according to the Soil Survey of *Stanislaus County, California, Western Part*

Name	Map Unit	Soil Series	Taxonomic Class	Description	Hydric?
Capay clay, 0 to 2 percent slopes	100	Capay	Fine, smectitic, thermic Typic Haploxererts	Very deep, moderately well-drained soils formed in alluvium derived mostly from sandstone and shale. Found on alluvial fans, alluvial flats, interfan basins, and basin rims. Used for growing irrigated crops such as tomatoes, sugar beets, beans, and grain sorghum; dryland grain crops; and irrigated or dryland pasture. Vegetation in uncultivated areas is typically characterized by dense cover of annual grasses and forbs. These soils have 1 to 2 centimeter wide cracks that open and close at least once each year and remain open for 150 days or less during summer. Some pedons have a water table between a depth of 4 to 6 feet and some areas are subject to rare, occasional, or frequent flooding.	No
Capay clay, wet, 0 to 2 percent slopes	101				
Capay clay, loamy substratum, 0 to 2 percent slopes	102				
Capay clay, 0 to 2 percent slopes, rarely flooded	106				
Vernalis-Zacharias complex, 0 to 2 percent slopes	120	Vernalis and Zacharias	See series below	See individual descriptions for Vernalis and Zacharias soil series below.	No
Vernalis loam, 0 to 2 percent slopes	122	Vernalis	Fine-loamy, mixed, superactive, thermic Calcic Haploxerepts	Very deep, well-drained soils on alluvial fans and floodplains. Formed in alluvium from mixed rock sources. Used mostly for irrigated crops, but some areas used for livestock grazing or dry farming small grains. Uncultivated areas are typically vegetated with annual grasses and forbs. These soils are usually dry between depths of 5 to 15 inches from late April through November or early December and moist in some or all parts the rest of the year.	No
Vernalis clay loam, 0 to 2 percent slopes	125				
Stomar clay loam, 0 to 2 percent slopes	130	Stomar	Fine, smectitic, thermic Mollic Haploxeralfs	Very deep, well-drained soils formed in alluvium from sedimentary rocks. Found on dissected alluvial fans and terraces. Used for irrigated cropland including field crops, row crops, and orchards. Also used for dryland crops such as grain and, to a lesser degree, for urban development or livestock grazing. Vegetation in uncultivated areas is typically characterized by annual grasses and forbs. These soils are dry in all parts between depths of 4 to 12 inches from mid-May to November and moist in all parts from mid-December to May.	No
Zacharias clay loam, 0 to 2 percent slopes	140	Zacharias	Fine-loamy, mixed, superactive, thermic Typic Haploxerepts	Very deep, well-drained soils formed in alluvium from mixed rock. Found on alluvial fans and low stream terraces. Used primarily for irrigated cropland, including field crops, row crops, and orchards; pasture and livestock grazing. Vegetation in uncultivated areas is typically characterized by annual grasses and forbs. These soils are moist between depths of 5 to 15 inches in some or all parts from November until May and dry in all parts the rest of the year.	No
Dumps	176			No description	No

Table 2
Soil map units that occur in the study area according to the Soil Survey of *Stanislaus County, California, Western Part*

Name	Map Unit	Soil Series	Taxonomic Class	Description	Hydric?
Calla-Carbona complex, 30 to 50 percent slopes	255	Calla and Carbona	Calla: Fine-loamy, mixed, superactive, thermic Typic Calcixerepts Carbona: Fine, smectitic, thermic Vertic Haploxerolls	Very deep, well-drained clay and clay loam soils found on dissected and uplifted terraces; parent material is alluvium from calcareous sedimentary rock (Calla) and mixed rock (Carbona). The soil in all parts between 6 and 18 inches is dry from May through October and moist in all parts from late-December to mid-March. These soils are used for livestock grazing or for irrigated orchards. The natural vegetation is annual grasses and forbs such as soft chess, filaree, foxtail fescue, and wild oats.	No
Elsalado loam, 0 to 2 percent slopes	274	Elsalado	Coarse-loamy, mixed, superactive, thermic Fluventic Haploxerepts	Deep, well-drained loam soils found on alluvial fans; parent material is alluvium derived from sandstone-shale and the soils are slightly or moderately alkaline. The soil between 7 and 22 inches is dry in all parts from mid-May to November and is moist in all parts from mid-December to May. Used for irrigated cropland, including field crops, row, crops, and orchards. Natural vegetation is annual grasses and forbs.	No

Source: NRCS Official Soil Series Descriptions 2016, NRCS Web Soil Survey 2016

DELINEATION RESULTS

Sites qualifying as waters of the United States according to Section 404 of the CWA are depicted on the aquatic resources delineation maps in Appendix C. Delineation sample sites are also depicted on the aquatic resources delineation map and are cross-referenced to the wetland determination data forms provided in Appendix A. Habitat descriptions for waters of the United States and nonjurisdictional habitats are included below; a habitat map is provided as Exhibit 3. Representative photographs of habitat types described below are provided in Appendix D and a list of plant species observed during the field survey is provided in Appendix E.

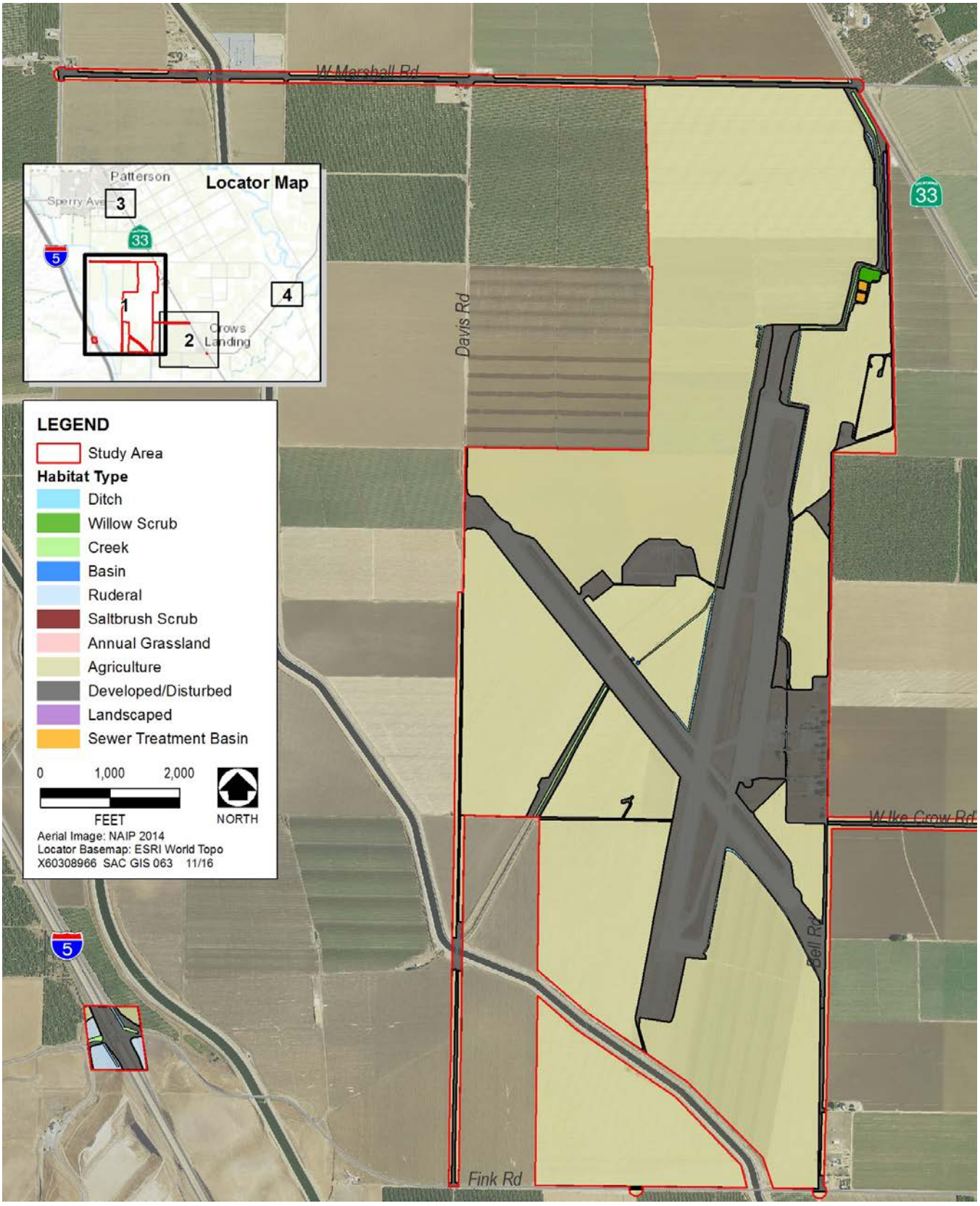
JURISDICTIONAL HABITAT TYPES

A total of 4.66 acres of potentially jurisdictional waters of the United States, including wetlands, are present within the 1,647-acre study area (Table 3). The study area contains approximately 3.65 acres of RPW in Little Salado Creek and small excavated collection basins. Approximately 1.01 acre of willow scrub wetland is present on the project site adjacent to Little Salado Creek.

Table 3
Potentially Jurisdictional Features

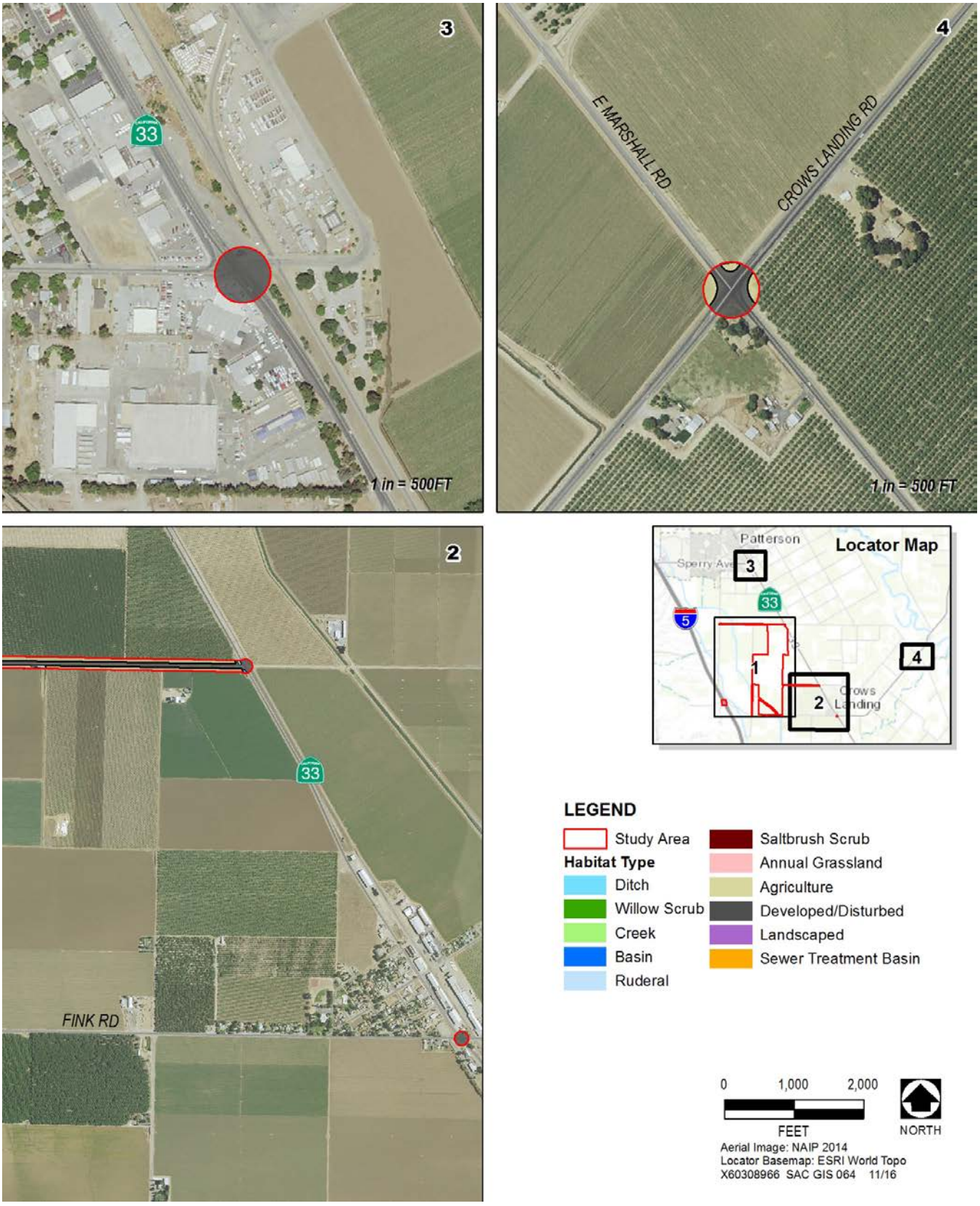
Waters of the United States	Acres
Relatively Permanent Waters (RPW)	**3.65**
Little Salado Creek (LSC)	***3.60***
LSC1	1.29
LSC2	0.99
LSC3	0.98
LSC4	0.01
LSC5	0.13
LSC6	0.20
Basins (BN)	***0.05***
BN1	0.04
BN2	0.01
Wetlands Adjacent to RPWs	**1.01**
Willow Scrub Wetland (WS1)	***1.01***
Total Jurisdictional Features	**4.66**

Source: Data compiled by AECOM in 2014



Source: Data compiled by AECOM in 2014

Habitat Map **Exhibit 3**



Source: Data compiled by AECOM in 2014

Habitat Map **Exhibit 3**

WATERS OF THE UNITED STATES

RELATIVELY PERMANENT WATERS

RPWs are tributaries to TNWs that typically have continuous flow for at least 3 months of the year. These features meet the criteria of waters of the United States and are subject to USACE jurisdiction under Section 404 of the CWA. RPWs within the project site consist of a channelized creek known as Little Salado Creek and two small excavated basins. These features were delineated based on their OHWM.

SEASONAL STREAM

Little Salado Creek is single-thread, channelized, seasonal stream that flows through the project site in a northeasterly direction. There are a total of approximately 3.60 acres of Little Salado Creek within the study area (3.26 acres on the project site and 0.34 acre in the off-site improvement areas). The average width of the OHWM through the project site is approximately 20 feet, but it ranges from 4 feet to 40 feet in width. The creek bed is characterized by clay loam soil with high shrink swell potential creating large, deep cracks as the channel dries. The channel contains patches of emergent vegetation characterized by weedy wetland species including barnyard grass (*Echinochloa crus-galli*) (FACW), dotted smartweed (*Persicaria punctata*) (OBL), broad-leaved cattail (*Typha latifolia*) (OBL), and tall flatsedge (*Cyperus eragrostis*) (FACW).

Little Salado Creek runs from the eastern foothills of the Diablo Range west of the project site, crosses under the Delta Mendota Canal through a box culvert, and then flows in a modified channel through agricultural fields and onto the project site. On the east side of the Delta-Mendota Canal, Little Salado Creek serves as a tailwater irrigation drain ditch for the surrounding agricultural fields. The channel was straightened, deepened, and confined within earthen levees through the project site beginning in 1943 when the air facility was constructed. Little Salado Creek ends in the northeast corner of the project site where the water is discharged through a culvert under Highway 33 into a single 24-inch diameter drain pipe that flows east along Marshall Road for about 4.5 miles to its final discharge point at the San Joaquin River.

Little Salado Creek crosses through the off-site improvement area at the Interstate 5-Fink Road interchange in a highly modified and fragmented channel that runs along the north side of Fink Road and crosses under the Interstate 5 overpass through a culvert. This is the apparent realigned flow channel of historic Little Salado Creek. Flow in this portion of the creek is ephemeral and vegetation in the channel and on the banks is composed of weedy, primarily upland species including ripgut brome (*Bromus diandrus*) (NL), black mustard (*Brassica nigra*) (NL), and Russian thistle (*Salsola tragus*) (FACU).

Little Salado Creek was delineated as an RPW feature subject to USACE jurisdiction under Section 404 of the CWA because it has an OHWM, supports continuous uninterrupted flow for a portion of the year, and is hydrologically connected to a TNW (i.e., the San Joaquin River). Data forms 1, 2, 6, and 16 in Appendix A contain information about the habitat in the channel of Little Salado Creek in the study area.

BASINS

Two small excavated basins comprising a total of 0.05 acre are present toward the center of the project site where Little Salado Creek meets the edge of a runway. One of the basins is directly connected to Little Salado Creek via culvert while the other is connected by pump. Based on review of aerial imagery, these basins were created in 2011 and are typically inundated for long duration during the growing season. BN1 was created by widening and deepening the channel of Little Salado Creek and building an earthern berm across the downstream end of the excavated area. BN2 was excavated in uplands and water from Little Salado Creek is pumped into BN2. The basins have the same bed substrate as the channel of Little Salado Creek and support the same vegetation assemblages at the high water line. The bottoms of the basins were bare of vegetation during the field delineation and had large deep soil cracks.

These basins were delineated as RPWs subject USACE jurisdiction under Section 404 of the CWA because they each have an OHWM, are continuously inundated for a portion of the year, and were excavated in or are connected to Little Salado Creek.

WETLANDS ADJACENT TO RELATIVELY PERMANENT WATERS

Wetlands adjacent to RPWs are not automatically subject to USACE jurisdiction under Section 404 of the CWA (Grumbles and Woodley 2008). The post-Rapanos guidance significant nexus test requires that wetlands adjacent to RPWs contribute substantially to the physical, chemical, and biological character of the downstream traditionally navigable water (TNW). The significant nexus evaluation includes consideration of hydrologic and ecological factors in addition to the aforementioned physical, chemical, and biological parameters associated with the wetland adjacent to a RPW.

WILLOW SCRUB WETLAND

Approximately 1.01 acre of willow scrub wetland habitat occurs within a created basin adjacent to Little Salado Creek. The basin was created in a cooperative effort by the Boy Scouts of America, the Navy, NRCS, and the Resource Conservation District to provide wildlife habitat. Vegetation in the basin is characterized by dense cover of narrow-leaf willow (*Salix exigua*) (FACW) and Goodding's black willow (*Salix gooddingii*) (FACW). The ground surface below the willows has heavy cover of leaf litter and woody debris and did not support herbaceous vegetation at the time of the delineation. Characteristics such as shelving, scour lines, or other natural linear features indicating an OHWM are not present in this created basin and surface water was not observed in the basin in any aerial imagery going back to 1998. A culvert with a control gate connects the basin to Little Salado Creek through the creek's levee, but water from the creek has not been diverted to the basin for many years.

Oxidized root channels, a primary indicator of wetland hydrology were observed in the willow scrub wetland habitat. Based on the absence of an OHWM, it is assumed that the water table is high in this location and the wetland vegetation is supported by groundwater. Redox dark surface, a hydric soil indicator, was observed in the willow scrub wetland. The willow scrub wetland would be classified under the Cowardin Classification System as a palustrine scrub-shrub, persistent, saturated wetland (Cowardin 1979). This area is not mapped in the National Wetlands Inventory.

This area is considered a jurisdictional habitat by the USACE under Section 404 of the CWA because it is adjacent to Little Salado Creek, a RPW, and meets the three parameter definition of a wetland. Data form 4 provides information about the willow scrub wetland habitat on the project site.

NONJURISDICTIONAL HABITATS

A total of approximately 1,641 acres of nonjurisdictional upland habitats consisting of agriculture, saltbush scrub, sewer treatment basin, landscaped, developed/disturbed areas, and ditches are present on the project site (Table 4). These habitats, except the ditches, are determined to be nonjurisdictional because they are not dominated by hydrophytic vegetation, do not have indicators of wetland hydrology or hydric soils, and/or are located outside an OHWM. The ditches are determined to be nonjurisdictional waters because they have only ephemeral or intermittent flow, are not relocated tributaries or excavated in tributaries, and do not drain wetlands. This delineation is considered preliminary until verified by the USACE.

Table 4 Potentially Nonjurisdictional Habitats	
Upland Habitat Types	Acres
Agriculture	1,207.03
Saltbush Scrub	0.17
Sewer Treatment Basin	0.89
Landscaped	1.73
Developed/Disturbed	423.83
Ruderal	5.16
Ditches (D)	**2.56**
D1	0.18
D2	0.01
D3	0.01
D4A	0.41
D4B	0.23
D4C	0.03
D4D	0.04
D4E	0.02
D4F	0.02
D4G	0.05
D5	0.65
D6	0.34
D7	0.03
D8	0.03
D9	0.03
D10	0.04
D11	0.11
D12	0.03
D13	0.03
D14	0.13
D15	0.14
Total Nonjuridictional Features	**1,641.37**
6367Source: Data compiled by AECOM in 2014	

AGRICULTURE

The predominant land cover type on the project site is agriculture consisting of sugar beets, peas, beans, tomatoes, grain sorghum, spinach, melons, and corn crops. Outside of the runways and former Naval facilities sites, the remaining lands, approximately 1,146 acres, have been leased to private tenants and actively farmed since the Crows Landing Naval auxiliary Landing Field was commissioned in 1943. The majority of the site was actively farmed prior to 1943. The agricultural lands are harvested seasonally then tilled and replanted. Crops on the project site are irrigated with water taken from Little Salado Creek and pumped through spray irrigation systems and temporary irrigation channels. As evidenced by small areas of the project site, such as the former firing range, that have been taken out of agricultural production, these areas would likely become dominated by ruderal upland vegetation, as described below, if active cultivation and irrigation ceased because they are not supported by natural wetland hydrology. The agricultural lands are considered non-jurisdictional under Section 404 of the CWA because they do not meet the three criteria for wetlands and are not located within the OHWM of a jurisdictional feature.

SALTBUSH SCRUB

Approximately 0.17 acre of saltbush scrub is present on the project site. This habitat was created as part of a cooperative effort by the Boy Scouts of America, the Navy, NRCS, and the Resource Conservation District to provide wildlife habitat. The saltbush scrub habitat is located on the bank of an excavated basin containing willow

scrub habitat, which was also created through the cooperative effort. The saltbush scrub community has a shrub layer dominated exclusively by big saltbush (*Atriplex lentiformis*) (FAC). The herb layer is characterized by low cover of blessed milk thistle (*Silybum marianum*) (NL) and annual yellow sweetclover (*Melilotus indicus*) (FACU). This area is not dominated hydrophytes and lacks hydric soil indicators and evidence of recent wetland hydrology; therefore, it is not subject to USACE jurisdiction under Section 404 of the CWA. Data form 5 in Appendix A provides information about the saltbush scrub habitat on the project site.

SEWER TREATMENT BASINS

Two sewer treatment basins that were excavated in uplands are present on the project site adjacent to Little Salado Creek. The total area of the basins is approximately 0.89 acre. These treatment basins are associated with the former Naval facilities sewer system and are not currently in use. Sewage was previously collected in a concrete trunk line and sent to a processing tank then to these basins for settling and drying. In 2003, the Navy conducted clean-up operations to remove refuse, debris, contaminated soil, and incinerator ash from the basins.

Vegetation in the basins is dominated by upland herbaceous plants including black mustard and annual willowherb (*Epilobium brachycarpum*) (NL). Other common associates include yellow star thistle, blessed milk thistle, curly dock (*Rumex crispus*) (FAC), and common sunflower (*Helianthus annuus*) (FACU). Characteristics such as shelving, destruction of vegetation, presence of litter or debris, or other natural linear features indicating an OHWM are not present in the basins and surface water was observed infrequently in aerial imagery going back to 1998. The basins were completely dry at the time this delineation field survey was conducted. These basins do not exhibit wetland hydrology indicators and are not dominated by wetland vegetation; soil pits were not excavated in this habitat type because the vegetation and hydrology parameters are lacking and they are created sewer treatment basins. It was therefore determined that these features do not meet the three criteria to be considered a jurisdictional wetland feature under Section 404 of the CWA. Data form 3 in appendix A provides information about the sewer treatment basins.

LANDSCAPED

A 1.73-acre strip of roadside landscaping is present along the eastern boundary of the project site between Bell Road and the east side levee of Little Salado Creek. Vegetation in this strip of land is characterized by dense cover of firethorn (*Pyracantha angustifolia*) (NL) and Russian olive (*Elaeagnus angustifolia*) (FAC) with no herbaceous understory. The Russian olive and firethorn were planted in parallel rows and may have been planted as part of the wildlife habitat creation initiated by the Boy Scouts the Navy, NRCS, and the Resource Conservation District. The landscaped vegetation is located in a low-lying landscape position between the toe slope of the levee and the road bed of Bell Road. This area is not dominated hydrophytes and lacks hydric soil indicators and evidence of recent wetland hydrology; therefore, it is not subject to USACE jurisdiction under Section 404 of the CWA. Data form 8 in Appendix A provides information about this landscaped area.

DEVELOPED/DISTURBED

The project site contains approximately 372 acres of developed and disturbed lands. Defunct Naval support facilities, including a control tower, administrative office sites, fire and rescue facilities, former hangar sites and underground fuel storage tanks, and an old school site were located on the east side of the project site between Bell Road and the runways. All structures associated with the Naval facilities have been razed leaving concrete and asphalt pads, paved roads, landscaping, and disturbed ground. Only the former air traffic control tower and former airfield lighting vaults remain. A site that formerly housed Navy ammunition bunkers and refuse disposal pits is located north of the runway intersection and another ammunition area is located on the banks of Little Salado Creek just north of Ike Crow Road. Other developed and disturbed areas on the project site include the runways, a former small arms firing range, and sites that housed soil and groundwater treatment facilities.

Areas categorized as developed/disturbed include areas covered by impervious surfaces, such as the runways and access roads and building foundations, and areas that were subjected to past intensive disturbances, including

complete removal of the native vegetation, soil disturbance, and topographic alteration. These lands either have not fully recovered from past disturbances or are still subjected to ongoing soil and vegetation disturbances and are currently characterized by bare soil or ruderal vegetation cover.

Vegetation around the former Naval support facilities consists of remnant lawn grass dominated by tall fescue (*Festuca arundinacea*) (NL), Kentucky bluegrass (*Poa pratensis*) (FAC), and Bermuda grass (*Cynodon dactylon*) (FACU); landscaped trees and shrubs, including golden wattle (*Acacia longifolia*) (NL), firethorn, European privet (*Ligustrum vulgare*) (UPL), and deodar cedar (*Cedrus deodara*) (NL); and ruderal herbaceous species. Ruderal vegetation found in developed/disturbed areas is dominated by weedy plants adapted to establish on disturbed bare ground. Characteristic species in the ruderal vegetation communities on site include common oat (*Avena sativa*) (UPL), ripgut brome (*Bromus diandrus*) (NL), rattail sixweeks fescue (*Festuca myuros*) (FACU), bur clover (*Medicago polymorpha*) (FACU), Italian thistle (*Carduus pycnocephalus*) (NL), and yellow star thistle.

The developed/disturbed and ruderal areas are considered non-jurisdictional under Section 404 of the CWA because they do not meet the three criteria for wetlands and are not located within the OHWM of a jurisdictional feature. Data forms 7 and 9 in Appendix A provide information on developed/disturbed areas. Sample point 7 is at a former firing range, and sample point 8 is on the levee bank of Little Salado Creek.

DITCHES

A total of 2.56 acres of ditches are present in the study area. There are nine ditches, or ditch fragments, totaling approximately 2.02 acres on the project site, and an additional 6 ditches totaling 0.54 acre in the off-site improvement areas. The ditches consist of agricultural ditches used to deliver irrigation water to crops and recapture irrigation tailwater, and ditches constructed along roadways and runways to convey stormwater runoff. These features flow periodically for short duration during storm events and crop irrigation. Vegetation in the ditches on the project site and off-site roadside ditches is characterized primarily by upland plant species including Johnsongrass (*Sorghum halepense*) (FACU), black mustard, bristly ox-tongue (*Helminthotheca echioides*) (FACU), yellow star thistle (*Centaurea solstitialis*) (NL), ripgut brome, and Russian thistle. Characteristic vegetation in the off-site irrigation ditches consists of a mix of wetland and upland species including barnyard grass, tall flatsedge, pigweed amaranth (*Amaranthus albus*) (FACU), and field bindweed (*Convolvulus arvensis*) (NL). One agricultural ditch extending from the south side of Marshall Road southward along the west side of the Delta-Mendota Canal had water in it at the time of the field delineation. All of the remaining ditches were completely dry at the time the delineation field surveys were conducted. The width of the OHWM of the ditches ranges from 2 feet to 14 feet and averages approximately 5 feet on the project site. The ditches in the off-site improvement areas are mostly larger, ranging from 3 to 26 feet in width and averaging 22 feet at the OHWM. The ditches were delineated as nonjurisdictional waters because they have only ephemeral or intermittent flow, are not relocated tributaries or excavated in tributaries, and do not drain wetlands. Data forms 10, 11, 12, 13, 14, 15, and 17 in Appendix A provide information about representative ditches in the study area.

JURISDICTIONAL DETERMINATION

As summarized in Table 2, the 1,647-acre study area contains a total of approximately 4.66 acres of potentially jurisdictional waters of the United States, including wetlands. These potentially jurisdictional waters of the United States consist of 3.60 acres of Little Salado Creek and 0.05 acre of excavated basins. Little Salado Creek and the excavated basins are RPWs. Wetlands in the study area consist of 1.01 acre of willow scrub wetland adjacent to Little Salado Creek. Little Salado Creek is connected to the San Joaquin River, a TNW, through a series of canals that are part of a storm drain system, and is therefore subject to USACE jurisdiction under Section 404 of the CWA. The excavated collection basins (BN1 and BN2) are contiguous with or connected to Little Salado Creek. The willow scrub wetland is adjacent to Little Salado Creek and is connected to the creek by a gated culvert through an earthen levee separating the creek from the basin containing the willow scrub wetland. Non-RPWs and

wetlands adjacent to non-navigable RPWs must have a significant influence on the downstream physical, chemical, and biological integrity of waters of the United States before they may be regulated under Section 404 of the CWA. The willow scrub wetland could have a significant effect on downstream waters due to its hydrological connectivity to Little Salado Creek. Therefore, these features are potentially subject to USACE regulation pursuant to Section 404 of the CWA.

Agriculture, saltbush scrub, sewer treatment basins, landscaped, and developed/disturbed lands lack one or more criteria that define wetlands, do not possess an OHWM, and are located above an OHWM. The roadside and agricultural ditches have only ephemeral or intermittent flow, are not relocated tributaries or excavated in tributaries, and do not drain wetlands. These habitats are generally not subject to regulation by the USACE under Section 404 of the CWA. This jurisdictional determination is preliminary and contingent on verification by USACE.

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APPENDIX A

Wetland Delineation Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crow's Landing City/County: Stanislaus Sampling Date: 11/26/13
Applicant/Owner: Stanislaus County State: CA Sampling Point: 1
Investigator(s): I. Beyer, Y. Valle Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): LRRC Lat: 37° 25' 32.49" N Long: 121° 06' 23.37" W Datum:
Soil Map Unit Name: Capay clay, 0 to 2% slopes, rarely flooded NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.) Precip 10% normal
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N 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
Wetland Hydrology Present? Yes ✓ No
Is the Sampled Area within a Wetland? Yes ✓ No
Photo 479, 92, 4802

Remarks: Modified/channelized Little Salado Creek, OHWM ≈ 20 feet
Wetland vegetation is within the OHWM of the canal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. Salix gooddingii	2	N	FACW
2.			
3.			
4.			
5.			
	2 = Total Cover		
Herb Stratum (Plot size:)			
1. Echinochloa crus-galli	45	Y	FACW
2. Cyperus eragrostis	5	N	FACW
3. Epilobium brachycarpum	5	N	NL
4. Helminthotheca echioides	10	N	NL
5. Rumex crispus	5	N	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: 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 ✓ No

Remarks:

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
							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): _____

assumed hydric

Hydric Soil Present? Yes ✓ No ___

Remarks: No soil pit – sample point is within OHWM of an intermittent canal (channelized Littlesolado creek)

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): 2

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: Crow's Landing City/County: Stanislaus Sampling Date: 11/26/13
Applicant/Owner: Stanislaus County State: CA Sampling Point: 2
Investigator(s): T. Beyer, Y. Valle Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%):
Subregion (LRR): LRRC Lat: 37°25'32.48" N Long: 121°06'08.98" W Datum:
Soil Map Unit Name: Capay clay, 0 to 2% slopes, rarely flooded 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N 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
Wetland Hydrology Present? Yes ✓ No
Is the Sampled Area within a Wetland? Yes ✓ No
Photos: 4803-4805

Remarks: Canal / channelized intermittent creek, vegetated within OHWM
Little Salado Creek

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: 30x30)			
1. Typha latifolia	20	Y	OBL
2. Persicaria punctatum	15	Y	OBL
3. Rumex crispus	5	N	FAC
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		
Woody Vine Stratum (Plot size:)			
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: 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No

Remarks: Above OHWM vegetation consists of Salsola tragus, Brassica nigra, Helianthus annuus, Epilobium brachycarpum – narrow strip of upland vegetation then the rest of the bank is maintained in a barren state (levee road)

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 2.5/2	90	5YR 5/8	10	C	PL	C	blocky, fragmented
8-20	10YR 3/2	75	10YR 5/6	25	C	M	CL	

[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: Point is within OHWM of Little Salado Creek

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: OHWM ≈ 30ft

Very deep soil cracks

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crow's Landing City/County: Stanislaus Sampling Date: 11/26/13
Applicant/Owner: Stanislaus County State: CA Sampling Point: 3
Investigator(s): T. Beyer, P. Valle Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): LRRC Lat: 37°25'36.91"N Long: 121°06'05.82"W Datum:
Soil Map Unit Name: Capay clay, 0 to 2% slopes, rarely flooded 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N 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 ✓
Wetland Hydrology Present? Yes No ✓
Is the Sampled Area within a Wetland? Yes No ✓

Remarks: excavated sewage treatment basin
Photos 4808-4812

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. Salix exigua	<1	N	FACW
2.			
3.			
4.			
5.			
	<1	= Total Cover	
Herb Stratum (Plot size: 20x20)			
1. Brassica nigra	20	Y	NL
2. Epilobium brachycarpum	15	Y	NL
3. Rumex crispus	10	N	FAC
4. Centaurea solstitialis	5	N	NL
5. Silybum marianum	3	N	NL
6. Helianthus annuus	2	N	FACU
7. Plantago lanceolata	5	N	FAC
8.			
	60	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 40 % 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: 2 (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 ✓

Remarks:

SOIL

Sampling Point: 3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	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 _____ No _____

Remarks: No soil pit - sample point is at the bottom of sewage basin that has no wetland hydrology and is dominated by upland vegetation.

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: Overflow basin, no OHWM and no wetland hydrology

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crow's Landing City/County: Stanislaus Sampling Date: 11/26/13
Applicant/Owner: Stanislaus County State: CA Sampling Point: 4
Investigator(s): T. Beyer, Y. Valle Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 2
Subregion (LRR): LRRC Lat: 37°25'40.36" N Long: 121°06'05.68" W Datum:
Soil Map Unit Name: Capay clay, 0 to 2% slopes, rarely flooded 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N 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: Photo #4816-4821 Created basin with willows on the basin floor; created habitat.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 40x40)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix gooddingii	15	Y	FACW
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 40x40)			
1. Salix exigua	35	Y	FACW
2. Salix gooddingii	10	Y	FACW
3.			
4.			
5.			
	45 = Total Cover		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 100 % 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No

Remarks: Ground covered with willow leaves and branches, no herb cover.

SOIL

Sampling Point: 4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	95	5YR 4/6	5	C	PL	CL	coarse, blocky soil
6-20	10YR 3/3	80	5YR 4/6	20	C	PL, M	CL	

[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:

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: Point is within an excavated basin adjacent to irrigation canal; connected by control gate.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crow's Landing City/County: Stanislaus Sampling Date: 11/26/13
Applicant/Owner: Stanislaus County State: CA Sampling Point: 5
Investigator(s): T. Beyer, K. Valle Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 2
Subregion (LRR): LRRC Lat: 37°25'38.75"N Long: 121°06'04.55"W Datum:
Soil Map Unit Name: Capay clay, 0 to 2% slopes, rarely flooded 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N 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 ✓
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Photo #4822-4825
Point is on top of bank beside basin containing willow scrub vegetation.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 20x20)			
1. Atriplex lentiformis	80	Y	FAC
2.			
3.			
4.			
5.			
	80 = Total Cover		
Herb Stratum (Plot size: 20x20)			
1. Silybum marianum	10	Y	NL
2. Melilotus indicus	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	15 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
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: 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	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 ✓

Remarks:

SOIL

Sampling Point: 5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	65	5YR 4/8	35	C	M	CL	blocky soil

[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: Concentrations are relict features with abrupt angular boundaries and extremely firm texture.

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: Crow's Landing City/County: Stanislaus Sampling Date: 11/26/13
Applicant/Owner: Stanislaus County State: CA Sampling Point: 6
Investigator(s): T. Beyer, Y. Valle Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): LRRC Lat: 37°24'55.16"N Long: 121°06'31.62"W Datum:
Soil Map Unit Name: Capay clay, 0 to 2% slopes, rarely flooded 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N 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: Photos 4826-4828
canal / channelized creek (Little Salado Creek)

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 10x10)			
1. Persicaria punctata	30	Y	OBL
2. Echinochloa crus-galli	25	Y	FACW
3. Sorghum halapense	15	N	FACU
4. Cyperus eragrostis	10	N	FACW
5. Epilobium brachycarpum	10	N	NL
6. Helminthotheca echioides	2	N	FACU
7. Silybum marianum	2	N	NL
8. Brassica nigra	1	N	NL
	95 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5 % 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No

Remarks:
Willows are present downstream of this point.

SOIL

Sampling Point: 6

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
							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): _____

Assumed hydric

Hydric Soil Present? Yes ✓ No ___

Remarks: No soil pit - point is within the OHWM of a channelized creek

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: Crow's Landing City/County: Stanislaus Sampling Date: 11/26/13
Applicant/Owner: Stanislaus County State: CA Sampling Point: 7
Investigator(s): T. Beyer, K. Valle Section, Township, Range:
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): LRRC Lat: 37°24'54.43"N Long: 121°06'53.95"W Datum:
Soil Map Unit Name: Capay clay, 0 to 2% slopes 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N 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: 4836-4838 Upland ruderal field within fenced area that was a former firing range.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 20x20)			
1. Avena sativa	25	Y	UPL
2. Bromus diandrus	15	Y	UL
3. Festuca myuros	25	Y	FACU
4. Amsinckia intermedia	10	N	NL
5. Medicago polymorpha	10	N	FACU
6. Hordeum murinum	5	N	FACU
7. Carduus pycnocephalus	2	N	NL
8. Convolvulus arvensis	1	N	NL
other 2%			
	95 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 7

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	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 _____ No _____

Remarks: No soil pit – no hydophytic vegetation or wetland hydrology and site was formerly used for a firing range and munitions could be present so may not be safe to dig.

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: Crow's Landing City/County: Stanislaus Sampling Date: 12/26/13
Applicant/Owner: Stanislaus County State: CA Sampling Point: 8
Investigator(s): T. Beyer, P. Valle Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 2
Subregion (LRR): LRRC Lat: Long: Datum:
Soil Map Unit Name: Capay clay, 0 to 2% slopes, rarely flooded 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N 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: sample point is between Little Salado Creek bank/levee and Bell Road in a created swale.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 25x50)	Absolute % Cover	Dominant Species?	Indicator Status
1. Elaeagnus angustifolia	60	Y	FAC
2.			
3.			
4.			
	60 = Total Cover		
Sapling/Shrub Stratum (Plot size: 25x50)			
1. Pyracantha angustifolia	25	NL	
2.			
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 100 % 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 ✓

Remarks: leaf litter and branches in herb layer

SOIL

Sampling Point: 8

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/5	100					C	

[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:

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: No hydrology indicators but point is in low landscape position between canal berm and road bed of bell road.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crow's Landing City/County: Stanislaus Sampling Date: 12/26/13
Applicant/Owner: Stanislaus County State: CA Sampling Point: 9
Investigator(s): T. Beyer, K. Valle Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 2
Subregion (LRR): LRRC Lat: Long: Datum:
Soil Map Unit Name: Capay clay, 0 to 2% slopes, rarely flooded 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N 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: Upland point on bank of channelized creek (Little Salado Creek)

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: 20x20)			
1. Brassica nigra	40	Y	NL
2. Sorghum halapense	30	Y	FACU
3. Silybum marianum	5	N	NL
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: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (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 ✓

Remarks: Vegetation is maintained; in the process of burning weeds along the creek

SOIL

Sampling Point: 9

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 4/4	98	5YR 4/6	2	C	M	SCL	silty 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)
- ___ 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: soil is in artificial creek berm and likely includes soil dredged from creek

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: bank (berm) of channelized creek; mollusc shells found in soil pit

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crow's Landing City/County: Stanislaus Sampling Date: 12/26/13
Applicant/Owner: Stanislaus County State: CA Sampling Point: 10
Investigator(s): T. Beyer, Y. Valle Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): LRRC Lat: Long: Datum:
Soil Map Unit Name: Capay clay, 0 to 2% slopes 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N 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 ✓
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Photos 4850-4854 Runoff ditch running parallel to runways along perimiter of agricultural field conveys stormwater runoff & agricultural tailwater.

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: ____)			
1. Sorghum halepense	40	Y	FACU
2. Brassica nigra	15	Y	NL
3. Salsola tragus	15	Y	FACU
4. Erigeron bonariensis	10	N	FACU
5. Bromus diandrus	5	N	NL
6. Melilotus indicus	5	N	FACU
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: 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 10

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	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 _____ No ✓

Remarks: No soil pit excavated; point is within a runoff/return ditch that does not support hydrophytic vegetation.

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: Runoff ditch that conveys stormwater runoff and agricultural tailwater

OHWM = 6ft.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crow's Landing City/County: Stanislaus Sampling Date: 12/26/13
Applicant/Owner: Stanislaus County State: CA Sampling Point: 11
Investigator(s): T. Beyer, K. Valle Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1
Subregion (LRR): LRRC Lat: Long: Datum:
Soil Map Unit Name: Capay clay, 0 to 2% slopes, rarely flooded 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N 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 ✓
Wetland Hydrology Present? Yes No ✓
Is the Sampled Area within a Wetland? Yes No ✓

Remarks: Photos 4855-4857 Runoff ditch running parallel to paved road leading from support facilities to runway.

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:)			
1. Centaurea solstitialis	35	Y	NL
2. Helminthotheca echioides	25	Y	FACU
3. Sorghum halepense	20	Y	FACU
4. Brassica nigra	15	N	NL
5.			
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5 % 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No ✓

Remarks:

SOIL

Sampling Point: 11

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	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 _____ No ✓

Remarks:

No soil pit excavated, point is within OHWM of a runoff conveyance ditch that does not support hydrophytic vegetation.

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:

Runoff ditch that conveys storm water runoff from roads and facilities; constructed in uplands. Width of OHWM = 2 ft.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crows Landing City/County: Stanislaus Sampling Date: 10/18/16

Applicant/Owner: Stanislaus County State: CA Sampling Point: 12

Investigator(s): C. Battaglia Section, Township, Range:

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

Subregion (LRR): LRRC Lat: 37°24'21.89"N Long: 121°4'52.25"W Datum: NAD 83

Soil Map Unit Name: Capay clay, wet 0-2% slopes 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation N, Soil N, or Hydrology N 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: Small basin used to pump/fill with water; part of crop irrigation system (Ike Crow Rd – Hwy 33). Basin current dry so upland veg is colonizing.

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: _____)			
1. Echinochloa crus-galli	35	Y	FAC
2. Typha latifolia	20	Y	OBL
3. Convolvulus arvensis	20	Y	NL
4. Erigeron bonariensis	10	N	FACU
5. Cyperus eragrostis	5	N	FACW
6. Amaranthus albus	5	N	FACU
7. Leptochloa fascicularis	5	N	NL
8. Malva neglecta	<1	N	NL
	100 = Total Cover		
	50/20		
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: 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:

✓ 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:

SOIL

Sampling Point: 12

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	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 _____ No _____

Remarks: NO soil pit taken

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: man-made, created, irrigation basin; flow controlled by pumps and culvert and control gate that moves water to larger ditch to south, across Ike Crow Rd, which is also partially within project boundary. (OHWM = 23 feet)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crows Landing City/County: Stanislaus Sampling Date: 10/18/16

Applicant/Owner: Stanislaus County State: CA Sampling Point: 13

Investigator(s): C. Battaglia Section, Township, Range:

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

Subregion (LRR): LRRC Lat: 37°26'7.02"N Long: 121°6'8.13"W Datum: NAD83

Soil Map Unit Name: Zacharias clay loam, 0-2% slopes NWI classification: None – ditch on south side of Rd is PUBFx but outside PA

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

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

Are Vegetation N, Soil N, or Hydrology N 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: Small basin NW corner of Marshall Rd & Hwy 33; used to hold / distribute irrigation water to field crops, part of irrigation ditch

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: ____)			
1. Echinochloa crus-galli	30	Y	FAC
2. Amaranthus albus	20	Y	FACU
3. Cyperus eragrostis	5	N	FACW
4. Rumex crispus	5	N	FAC
5.			
6.			
7.			
8.			
	60 = Total Cover (30/12)		
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: 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 ✓

Remarks:

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)	%	Redox Features Color (moist)	%	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 _____ No _____

Remarks: No soil pit taken, as ag/irrigation basin is clearly derived

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: man-made created irrigation basin; flow controlled by pumps and control gate that moves water to larger ditch to south, across Marshall Rd, which is outside project boundary. Deep soil cracks present. (OHWM = 20 feet)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crow's Landing City/County: Stanislaus Sampling Date: 10/18/16

Applicant/Owner: Stanislaus county State: CA Sampling Point: 14

Investigator(s): C. Battaglia Section, Township, Range:

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

Subregion (LRR): LRRC Lat: 37°26'7.82"N Long: 121°8'2.08"W Datum: NAD 83

Soil Map Unit Name: Elsalado loam, 0-2% slopes 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N 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: Irrigation canal used to distribute water to field crops (Marshall Rd, east of Ward Ave), parallel to Delta-Mendota Canal.

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. Salix goodingii	2	N	FACW
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ____)			
1. Echinochloa crus-galli	60	Y	FAC
2. Xanthium strumarium	10	N	FAC
3. Amaranthus albus	5	N	FACU
4. Cyperus eragrostis	5	N	FACW
5.			
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: ____)	10/16		
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:

✓ 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:

SOIL

Sampling Point: 14

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	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 _____ No _____

Remarks: No soil pit taken as clearly defined irrigation canal with wetland vegetation & hydrology; upland beyond ditch is ag fields or roads

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: Large ditch/canal parallel to Mendota Canal. Water appears to be pumped into ditch to south, across Marshall Rd., which is currently full of water, and moved into this ditch periodically via control gate. Deep soil cracks present.

(OHWM = 16 feet)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crow's Landing City/County: Stanislaus Sampling Date: 10/18/16

Applicant/Owner: Stanislaus County State: CA Sampling Point: 15

Investigator(s): C. Battaglia Section, Township, Range:

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

Subregion (LRR): LRRC Lat: 37°23'48.44"N Long: 121°8'18.93"W Datum:

Soil Map Unit Name: NWI classification: None

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

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

Are Vegetation N, Soil N, or Hydrology N 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: Roadside ditch dominated by upland vegetation and lacking indicators of hydrology; appears to convey runoff only in large rain events.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
	___ = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	___ = Total Cover		
Herb Stratum (Plot size: ___)			
1. Bromus diandrus	40	Y	NL
2. Conium maculatum	35	Y	FAC
3. Brassica nigra	10	Y	NL
4. Asclepias fascicularis	4	N	FAC
5. Grindelia camporum	3	N	FACW
6. Carduus pycnocephalus	2	N	NL
7. Rumex crispus	1	N	FAC
8.			
	95 = Total Cover		47.5/19
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	___ = Total Cover		

% Bare Ground in Herb Stratum 5 % 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 ___	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 ✓

Remarks:

SOIL

Sampling Point: 15

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	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 _____ No _____

Remarks: man-made ditch clearly defined channel along edge of Interstate 5 southbound on-ramp. Ditch is dominated by upland vegetation and lacks HYD 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 _____ No ✓

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

Remarks: man-made ditch parallel to Interstate 5 conveys storm runoff from upper watershed. An intermitten stream terminates upslope of Fink Road Landfill, but runoff from culverts and roadways makes it way into this ditch. NO HYD indicators, so OHWM based on ~~width of ditch~~ ($\bar{x} = 8'$)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crow's Landing City/County: Stanislaus Sampling Date: 10/18/16

Applicant/Owner: Stanislaus County State: _____ Sampling Point: 16

Investigator(s): C. Battaglia Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 1-2

Subregion (LRR): LRRC Lat: 37°23'50.20"N Long: 121°8'23.08"W Datum: NAD83

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

Are Vegetation N, Soil N, or Hydrology N 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: Roadside ditch dominated by upland vegetation and lacking indicators of hydrology; appears to convey storm runoff only during large flashy rain events. This ditch is likely realignment of historic Little Salado Creek

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: _____)			
1. Bromus diandrus	70	Y	NL
2. Brassica nigra	10	N	NL
3. Salsola tragus	10	N	FACU
4. Grindelia camporum	10	N	FACW
5.			
6.			
7.			
8.			
	100 = Total Cover		50/20
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: 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 ✓

Remarks:

SOIL

Sampling Point: 16

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	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 _____ No _____

Remarks: Man-made ditch paralleling Fink Rd. Ditch is dominated by upland veg and lacks HYD 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 _____ No ✓

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

Remarks: Roadside (Fink Rd.) ditch that conveys water under I-5 and the CA Aqueduct. Originates upslope in watershed in areas of agriculture. Located in area of historic Little Salado Ck. channel, but creek terminates upstream in agriculture fields. NO HYD indicators, so OHWM based on avg. width of ditch (OHWM = 5')

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Crow's Landing City/County: Stanislaus Sampling Date: 11/18/16

Applicant/Owner: Stanislaus County State: CA Sampling Point: 17

Investigator(s): C. Battaglia Section, Township, Range:

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

Subregion (LRR): LRRC Lat: 37°24'21.14"N Long: 121°5'27.21"W Datum: NAD83

(2) Soil Map Unit Name: ~~Capay clay, loamy substrate, 0-2 percent slopes~~ / Zacharias clay loam 0-2% slopes 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 N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N 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: Shallow ag ditch draining off tomato fields (Ike Crow Rd, east of Bell Rd) Lots of soil disturbance from ag operations combined with irrigation create the conditions present

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Echinochloa crus-galli	40	Y	FAC
2. Cyperus eragrostis	5	N	FACW
3. Leptochloa fasciculuris	5	N	NL
4. Erigeron bonariensis	<1	N	FACU
5.			
6.			
7.			
8.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

25/10

% Bare Ground in Herb Stratum 50 % 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 ✓ No ____

Remarks:

SOIL

Sampling Point: 17

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	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 _____ No _____

Remarks: No soil pit taken as clearly defined irrigation ditch with wetland vegetation & hydrology; upland outside of ditch is roadside and tomato ag/tomato field.

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): _____

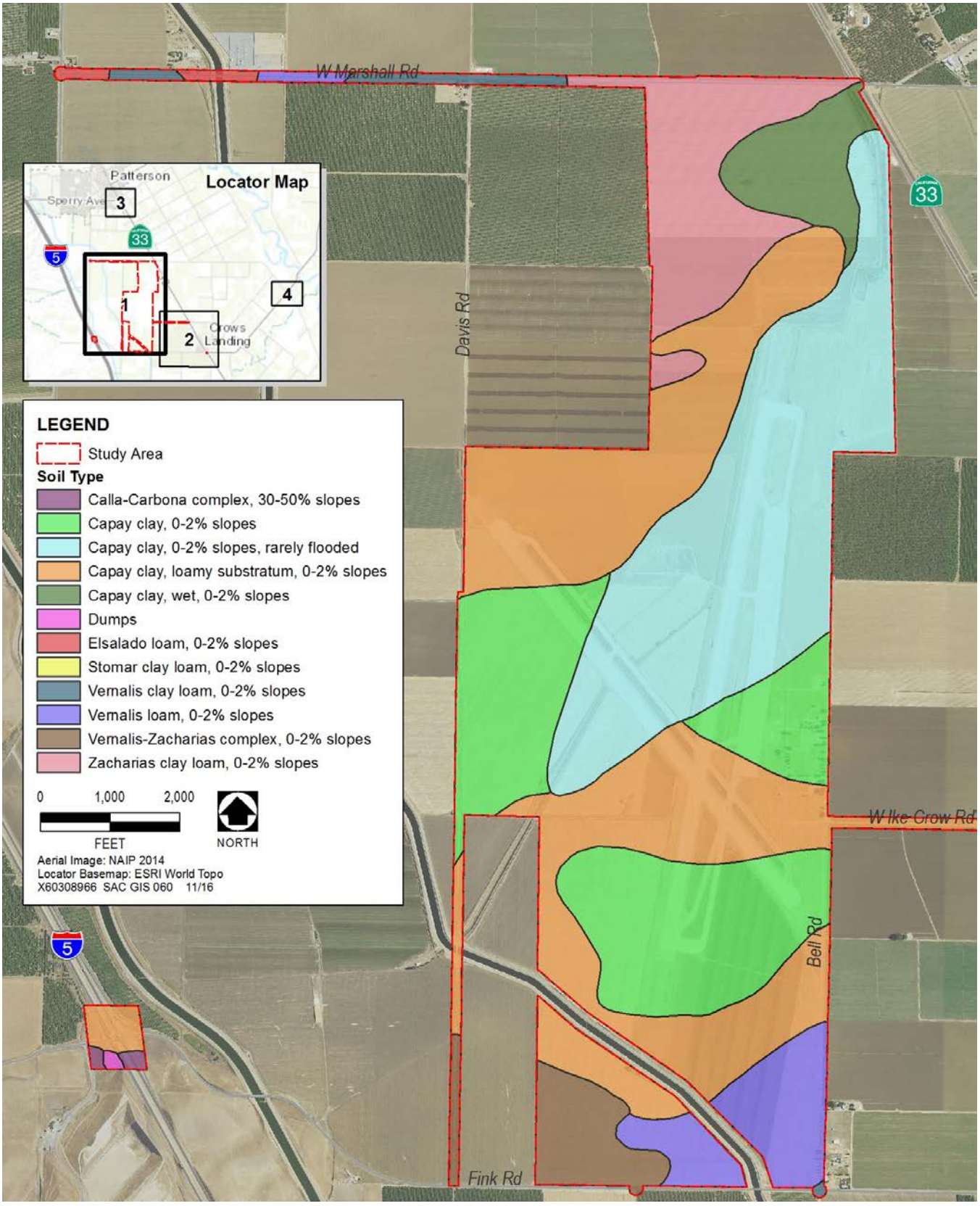
Wetland Hydrology Present? Yes ✓ No _____

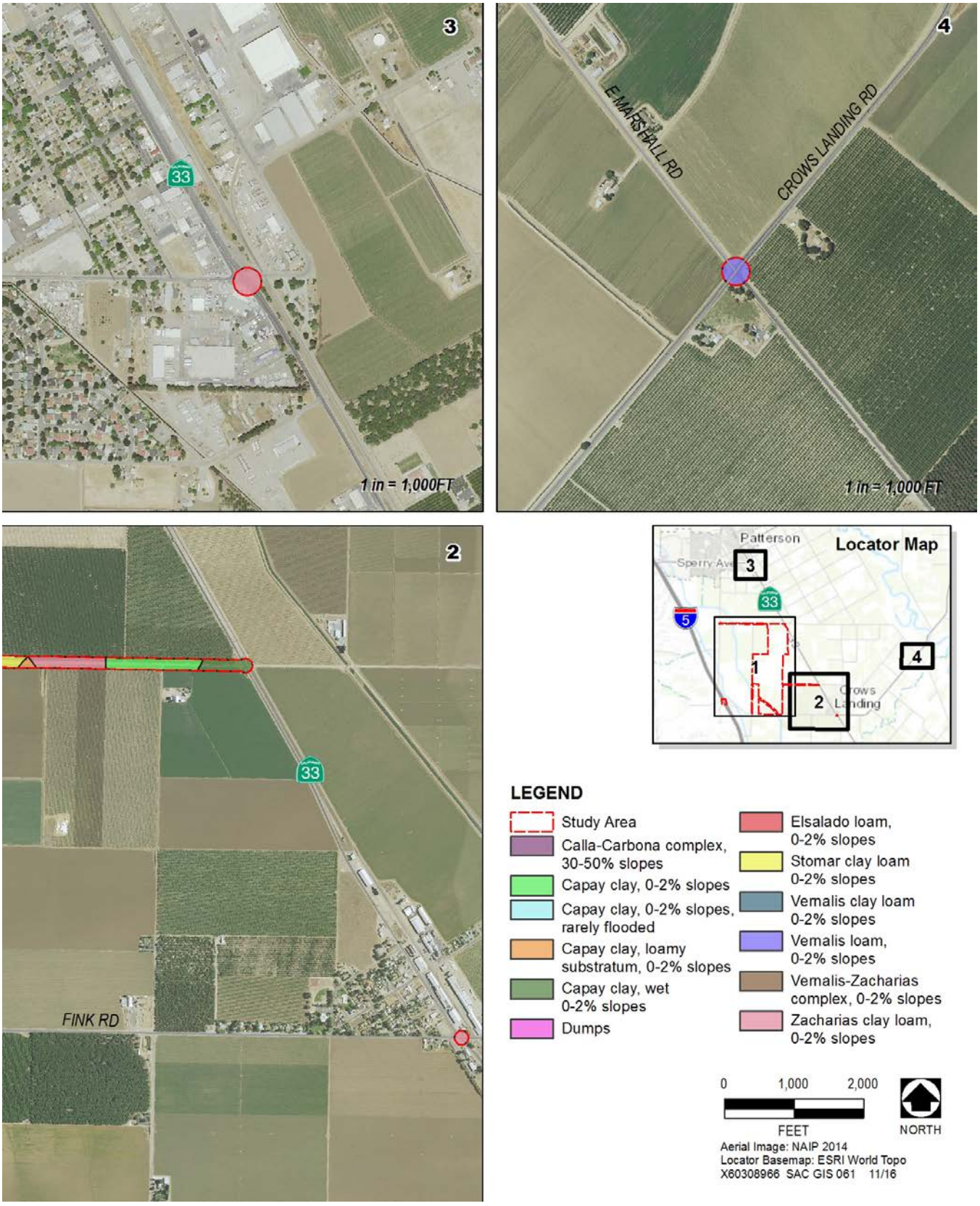
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Deep soil cracks & fine/sandy sediment accumulated in ditch from consistent runoff from ag/tomato field combined with disturbance of soils due to digging ditches and watering during growing season. (OHWM = 10 feet)

APPENDIX B

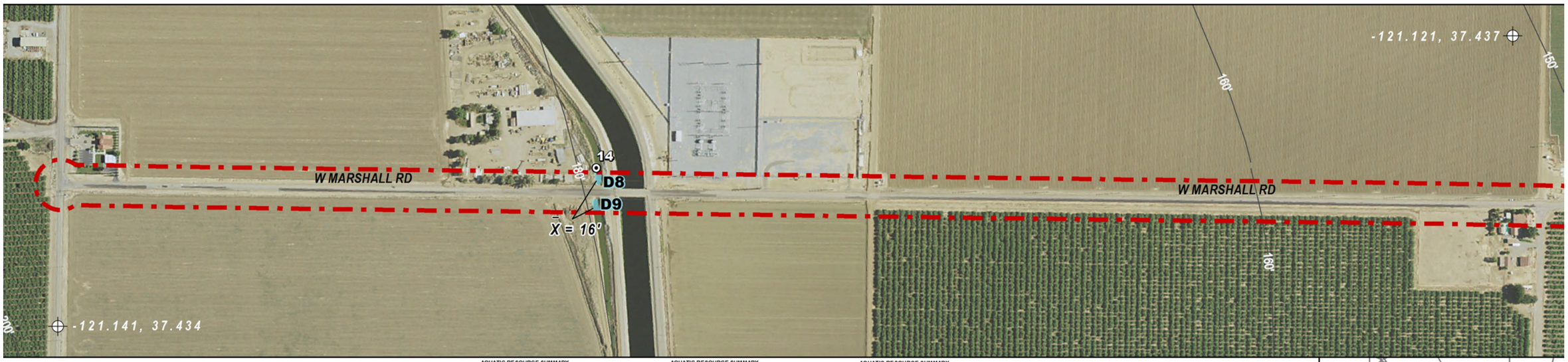
Soils Map


W Marshall Rd
Davis Rd
W Ike Crow Rd
Bell Rd
Fink Rd
33
5
Locator Map
Patterson
Sperry Ave
Crows Landing
1
2
3
4
LEGEND
Study Area
Soil Type
Calla-Carbona complex, 30-50% slopes
Capay clay, 0-2% slopes
Capay clay, 0-2% slopes, rarely flooded
Capay clay, loamy substratum, 0-2% slopes
Capay clay, wet, 0-2% slopes
Dumps
Elsalado loam, 0-2% slopes
Stomar clay loam, 0-2% slopes
Vernalis clay loam, 0-2% slopes
Vernalis loam, 0-2% slopes
Vernalis-Zacharias complex, 0-2% slopes
Zacharias clay loam, 0-2% slopes
0
1,000
2,000
FEET
NORTH
Aerial Image: NAIP 2014
Locator Basemap: ESRI World Topo
X60308966 SAC GIS 060 11/16


3
33
1 in = 1,000FT
4
E MARSHALL RD
CROWS LANDING RD
1 in = 1,000 FT
2
33
FINK RD
Locator Map
Patterson
Sperry Ave
3
33
5
1
4
2
Crows Landing
LEGEND
Study Area
Calla-Carbona complex, 30-50% slopes
Capay clay, 0-2% slopes
Capay clay, 0-2% slopes, rarely flooded
Capay clay, loamy substratum, 0-2% slopes
Capay clay, wet 0-2% slopes
Dumps
Elsalado loam, 0-2% slopes
Stomar clay loam 0-2% slopes
Vernalis clay loam 0-2% slopes
Vernalis loam, 0-2% slopes
Vernalis-Zacharias complex, 0-2% slopes
Zacharias clay loam, 0-2% slopes
0
1,000
2,000
FEET
NORTH
Aerial Image: NAIP 2014
Locator Basemap: ESRI World Topo
X60308966 SAC GIS 061 11/16

APPENDIX C

Wetland Delineation Map



LEGEND

- Sample Points
- Study Area *(1641.36 ac)*
- Basin (BN) *(0.05 ac)*
- Ditch (D) *(2.56 ac)*
- Little Salado Creek (LSC) *(3.6 ac)*
- Willow Scrub (WS) *(1.01 ac)*

0 200 400
FEET
1 inch = 400 feet
NORTH

November 29, 2016

Aerial Image: NAIP 2014
Locator Map: ESRI World Topo
X 60308966 SAC GIS 065 11/16

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
BN1	NA	-121.11300	38.76741	0.04	NA
BN2	NA	-121.11300	38.76762	0.00	NA
D1	R4SB5	-121.10100	37.43260	0.18	799.71
D2	R4SB7	-121.10700	37.42532	0.01	104.99
D3	R4SB5	-121.10700	37.42496	0.01	90.60
D4A	R4SB5	-121.10500	37.42184	0.41	2955.07
D4B	R4SB5	-121.10500	37.41573	0.23	1648.76
D4C	R4SB5	-121.10500	37.41240	0.03	754.87
D4D	R4SB5	-121.10500	37.41055	0.04	517.31
D4E	R4SB5	-121.10500	37.40936	0.02	252.19
D4F	R4SB5	-121.10500	37.40843	0.02	371.39
D4G	R4SB5	-121.10600	37.40714	0.05	657.82

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
D5	R4SB5	-121.11000	37.41207	0.65	2327.54
D6	R4SB7	-121.10700	37.40331	0.34	4306.24
D7	R4SB5	-121.10700	37.42562	0.03	125.50
D8	R4SB5	-121.13400	37.43552	0.03	52.19
D9	R4SB5	-121.13400	37.43521	0.03	57.23
D10	R4SB5	-121.10200	37.43534	0.04	61.38
D11	R4SB5	-121.09100	37.40587	0.11	250.90
D12	R4SB5	-121.08100	37.40609	0.03	55.94
D13	R4SB5	-121.08100	37.40572	0.03	67.93
D14	R4SB5	-121.13800	37.39675	0.13	394.65
D15	R4SB5	-121.13800	37.39827	0.14	370.97

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
LSC1	R4SB5	-121.10200	37.43044	1.29	4495.31
LSC2	R4SB7	-121.10800	37.41860	0.99	5368.41
LSC3	R4SB7	-121.11600	37.40881	0.98	2147.35
LSC4	R4SB5	-121.12100	37.40156	0.01	32.11
LSC5	R4SB7	-121.13800	37.39775	0.13	210.51
LSC6	R4SB7	-121.13900	37.39738	0.20	212.49
WSC1	NA	-121.10100	37.42770	1.01	NA
Total				**7.21**	**124.29**

Source: Cowardin 1979, AECOM 2016

DIRECTIONS:
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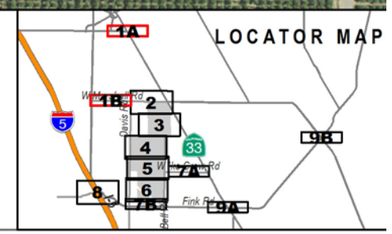
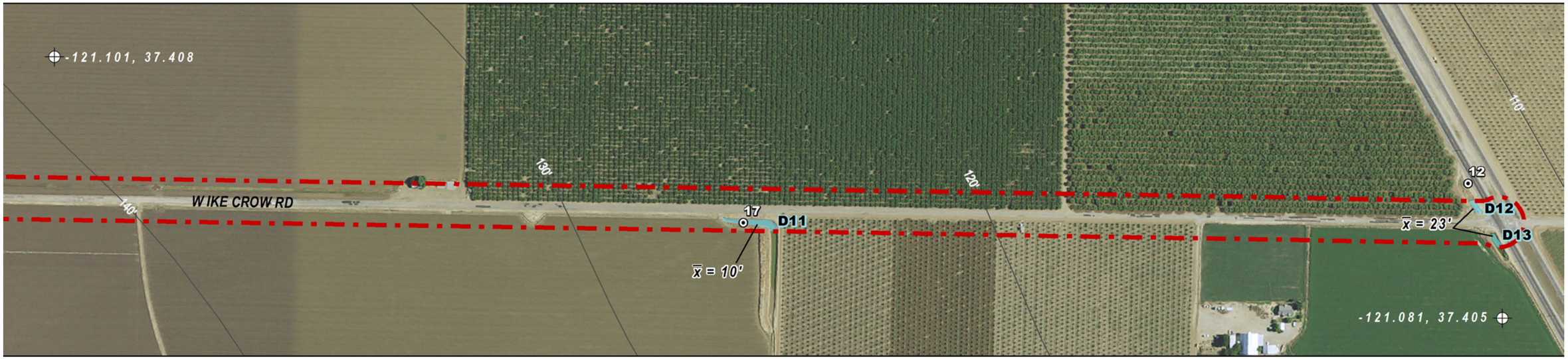
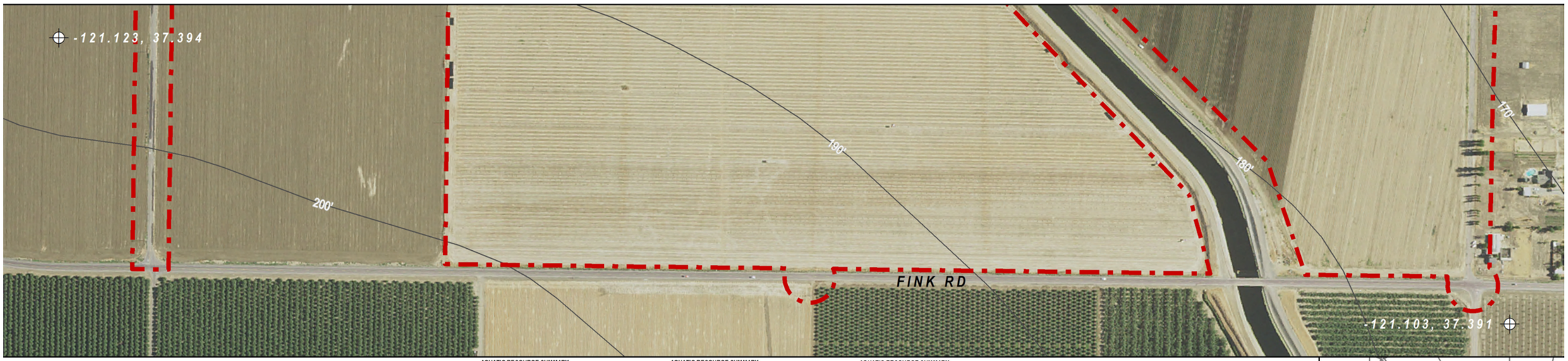
Turn left on Bell Road.

DELINEATED BY:
T. Beyerl and P.Brillante on November 25 and December 26, 2013; and October 18, 2016.

LOCATOR MAP







LEGEND

- Sample Points
- Study Area *(1641.36 ac)*
- Basin (BN) *(0.05 ac)*
- Ditch (D) *(2.56 ac)*
- Little Salado Creek (LSC) *(3.6 ac)*
- Willow Scrub (WS) *(1.01 ac)*

0 200 400

FEET

1 inch = 400 feet

NORTH

November 29, 2016

Aerial Image: NAIP 2014
Locator Map: ESRI World Topo
X 60308966 SAC GIS 066 11/16

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
BN1	NA	-121.11300	38.76741	0.04	NA
BN2	NA	-121.11300	38.76762	0.00	NA
D1	R4SB5	-121.10100	37.43260	0.18	799.71
D2	R4SB7	-121.10700	37.42532	0.01	104.99
D3	R4SB5	-121.10700	37.42496	0.01	90.60
D4A	R4SB5	-121.10500	37.42184	0.41	2955.07
D4B	R4SB5	-121.10500	37.41573	0.23	1648.76
D4C	R4SB5	-121.10500	37.41240	0.03	754.87
D4D	R4SB5	-121.10500	37.41055	0.04	517.31
D4E	R4SB5	-121.10500	37.40936	0.02	252.19
D4F	R4SB5	-121.10500	37.40843	0.02	371.39
D4G	R4SB5	-121.10600	37.40714	0.05	657.82

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
D5	R4SB5	-121.11000	37.41207	0.65	2327.54
D6	R4SB7	-121.10700	37.40331	0.34	4306.24
D7	R4SB5	-121.10700	37.42562	0.03	125.50
D8	R4SB5	-121.13400	37.43552	0.03	52.19
D9	R4SB5	-121.13400	37.43521	0.03	57.23
D10	R4SB5	-121.10200	37.43534	0.04	61.38
D11	R4SB5	-121.09100	37.40587	0.11	250.00
D12	R4SB5	-121.08100	37.40609	0.03	55.94
D13	R4SB5	-121.08100	37.40572	0.03	67.93
D14	R4SB5	-121.13800	37.39675	0.13	394.65
D15	R4SB5	-121.13800	37.39827	0.14	370.97

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
LSC1	R4SB5	-121.10200	37.43044	1.29	4495.31
LSC2	R4SB7	-121.10800	37.41860	0.99	5368.41
LSC3	R4SB7	-121.11600	37.40881	0.98	2147.35
LSC4	R4SB5	-121.12100	37.40156	0.01	32.11
LSC5	R4SB7	-121.13800	37.39775	0.13	210.51
LSC6	R4SB7	-121.13900	37.39738	0.20	212.49
WSC1	NA	-121.10100	37.42770	1.01	NA
Total				**7.21**	**124.29**

Source: Cowardin 1979, AECOM 2016

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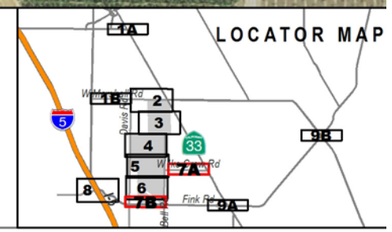
Turn left on Bell Road.

DELINEATED BY:

T. Beyerl and P.Brillante on November 25 and December 26, 2013; and October 18, 2016.



LEGEND

- Sample Points
- Study Area *(1641.36 ac)*
- Basin (BN) *(0.05 ac)*
- Ditch (D) *(2.56 ac)*
- Little Salado Creek (LSC) *(3.6 ac)*
- Willow Scrub (WS) *(1.01 ac)*

0 200 400
FEET
NORTH

1 inch = 400 feet

November 30, 2016

Aerial Image: NAIP 2014
Locator Map: ESRI World Topo
X 60308966 SAC GIS 067 11/16

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
BN1	NA	-121.11300	38.76741	0.04	NA
BN2	NA	-121.11300	38.76762	0.00	NA
D1	R4SB5	-121.10100	37.43260	0.18	799.71
D2	R4SB7	-121.10700	37.42532	0.01	104.99
D3	R4SB5	-121.10700	37.42496	0.01	90.60
D4A	R4SB5	-121.10500	37.42184	0.41	2955.07
D4B	R4SB5	-121.10500	37.41573	0.23	1648.76
D4C	R4SB5	-121.10500	37.41240	0.03	754.87
D4D	R4SB5	-121.10500	37.41055	0.04	517.31
D4E	R4SB5	-121.10500	37.40936	0.02	252.19
D4F	R4SB5	-121.10500	37.40843	0.02	371.39
D4G	R4SB5	-121.10600	37.40714	0.05	657.82

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
D5	R4SB5	-121.11000	37.41207	0.65	2327.54
D6	R4SB7	-121.10700	37.40331	0.34	4306.24
D7	R4SB5	-121.10700	37.42562	0.03	125.50
D8	R4SB5	-121.13400	37.43552	0.03	52.19
D9	R4SB5	-121.13400	37.43521	0.03	57.23
D10	R4SB5	-121.10200	37.43534	0.04	61.38
D11	R4SB5	-121.09100	37.40587	0.11	250.00
D12	R4SB5	-121.08100	37.40609	0.03	55.94
D13	R4SB5	-121.08100	37.40572	0.03	67.93
D14	R4SB5	-121.13800	37.39675	0.13	394.65
D15	R4SB5	-121.13800	37.39827	0.14	370.97

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
LSC1	R4SB5	-121.10200	37.43044	1.29	4495.31
LSC2	R4SB7	-121.10800	37.41860	0.99	5368.41
LSC3	R4SB7	-121.11600	37.40881	0.98	2147.35
LSC4	R4SB5	-121.12100	37.40156	0.01	32.11
LSC5	R4SB7	-121.13800	37.39775	0.13	210.51
LSC6	R4SB7	-121.13900	37.39738	0.20	212.49
WSC1	NA	-121.10100	37.42770	1.01	NA
Total				**7.21**	**124.29**

Source: Cowardin 1979, AECOM 2016

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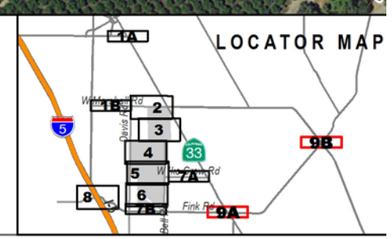

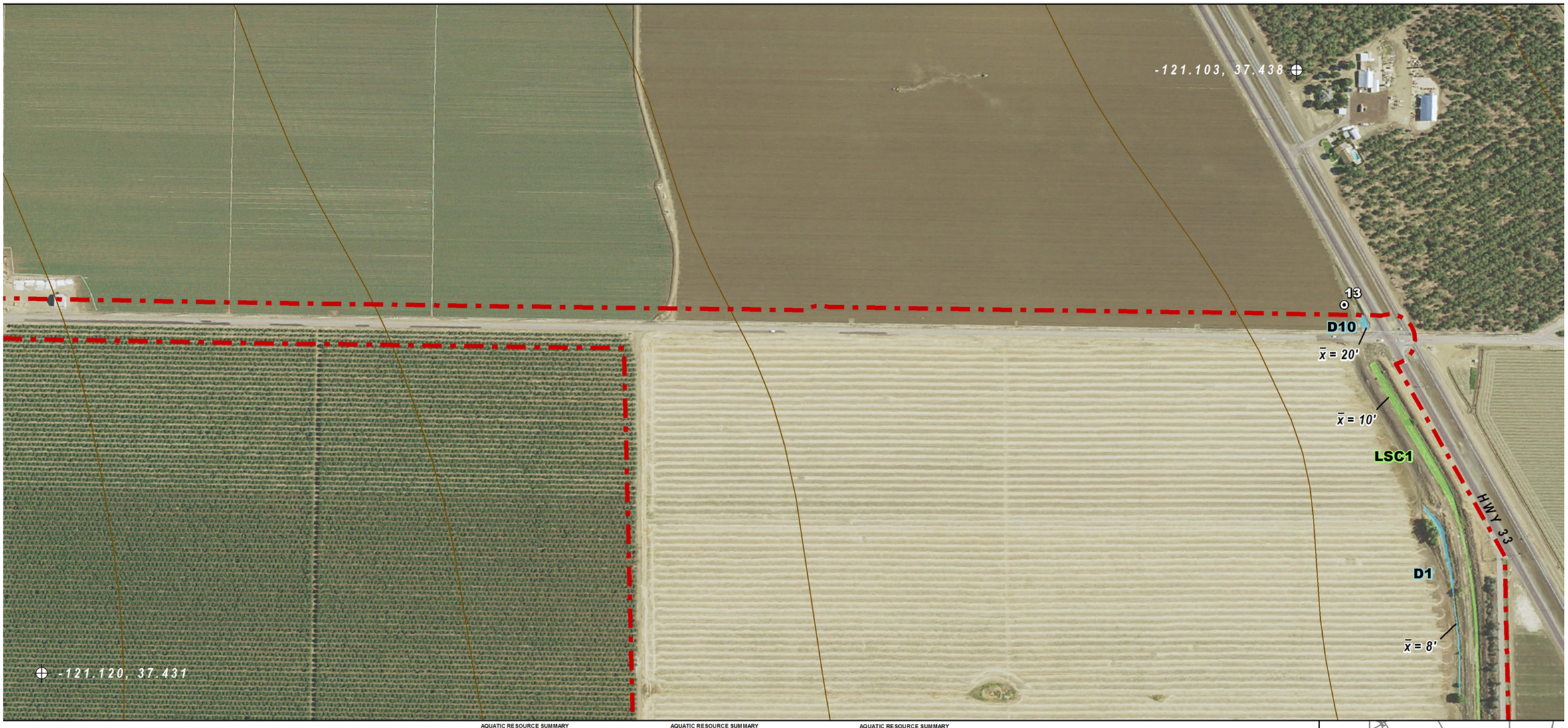

LEGEND

- Sample Points
- Study Area *(1641.36 ac)*
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- Ditch (D) *(2.56 ac)*
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- Willow Scrub (WS) *(1.01 ac)*

0 200 400
FEET
NORTH

1 inch = 400 feet

November 29, 2016

Aerial Image: NAIP 2014
Locator Map: ESRI World Topo
X 60308966 SAC GIS 068 11/16

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
BN1	NA	-121.11300	38.76741	0.04	NA
BN2	NA	-121.11300	38.76762	0.00	NA
D1	R4SB5	-121.10100	37.43260	0.18	799.71
D2	R4SB7	-121.10700	37.42532	0.01	104.99
D3	R4SB5	-121.10700	37.42496	0.01	90.60
D4A	R4SB5	-121.10500	37.42184	0.41	2955.07
D4B	R4SB5	-121.10500	37.41573	0.23	1648.76
D4C	R4SB5	-121.10500	37.41240	0.03	754.87
D4D	R4SB5	-121.10500	37.41055	0.04	517.31
D4E	R4SB5	-121.10500	37.40936	0.02	252.19
D4F	R4SB5	-121.10500	37.40843	0.02	371.39
D4G	R4SB5	-121.10600	37.40714	0.05	657.82

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
D5	R4SB5	-121.11000	37.41207	0.65	2327.54
D6	R4SB7	-121.10700	37.40331	0.34	4306.24
D7	R4SB5	-121.10700	37.42562	0.03	125.50
D8	R4SB5	-121.13400	37.43552	0.03	52.19
D9	R4SB5	-121.13400	37.43521	0.03	57.23
D10	R4SB5	-121.10200	37.43534	0.04	61.38
D11	R4SB5	-121.09100	37.40587	0.11	250.00
D12	R4SB5	-121.08100	37.40609	0.03	55.94
D13	R4SB5	-121.08100	37.40572	0.03	67.93
D14	R4SB5	-121.13800	37.39675	0.13	394.65
D15	R4SB5	-121.13800	37.39827	0.14	370.97

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
LSC1	R4SB5	-121.10200	37.43044	1.29	4495.31
LSC2	R4SB7	-121.10800	37.41860	0.99	5368.41
LSC3	R4SB7	-121.11600	37.40881	0.98	2147.35
LSC4	R4SB5	-121.12100	37.40156	0.01	32.11
LSC5	R4SB7	-121.13800	37.39775	0.13	210.51
LSC6	R4SB7	-121.13900	37.39738	0.20	212.49
WSC1	NA	-121.10100	37.42770	1.01	NA
Total				**7.21**	**124.29**

Source: Cowardin 1979, AECOM 2016

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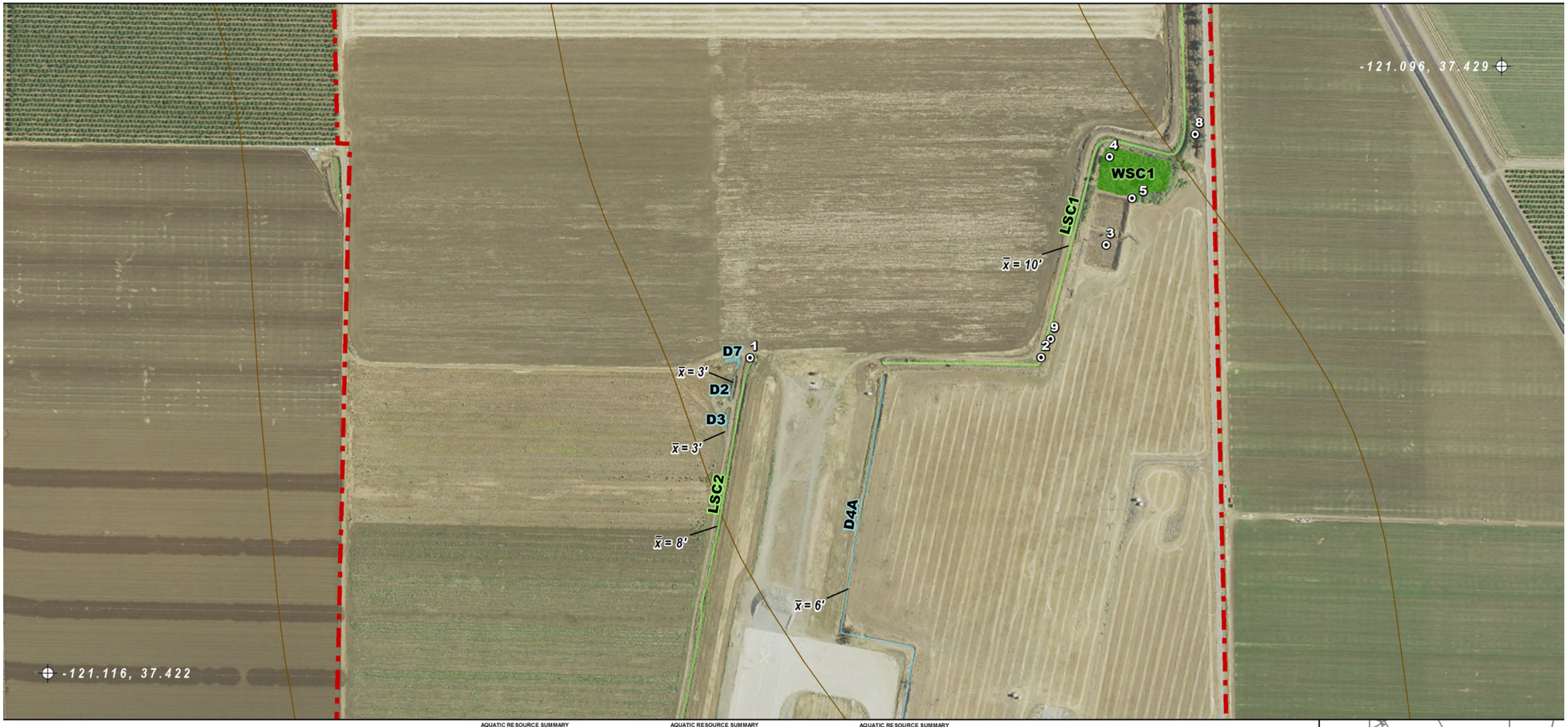
LOCATOR MAP



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0 200 400
FEET
1 inch = 400 feet

NORTH

November 29, 2016

Aerial Image: NAIP 2014
Locator Map: ESRI World Topo
X 60308966 SAC GIS 069 11/16

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
BN1	NA	-121.11300	38.76741	0.04	NA
BN2	NA	-121.11300	38.76762	0.00	NA
D1	R4SB5	-121.10100	37.43260	0.18	799.71
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WSC1	NA	-121.10100	37.42770	1.01	NA
Total				**7.21**	**124.29**

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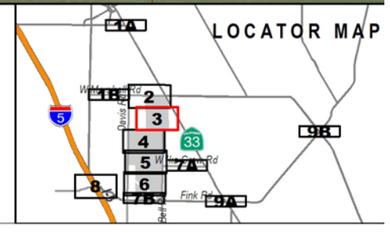

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0 200 400
FEET
1 inch = 400 feet

NORTH

November 29, 2016

Aerial Image: NAIP 2014
Locator Map: ESRI World Topo
X 60308966 SAC GIS 070 11/16

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
BN1	NA	-121.11300	38.76741	0.04	NA
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D15	R4SB5	-121.13800	37.39827	0.14	370.97

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
LSC1	R4SB5	-121.10200	37.43044	1.29	4495.31
LSC2	R4SB7	-121.10800	37.41860	0.99	5368.41
LSC3	R4SB7	-121.11600	37.40881	0.98	2147.35
LSC4	R4SB5	-121.12100	37.40156	0.01	32.11
LSC5	R4SB7	-121.13800	37.39775	0.13	210.51
LSC6	R4SB7	-121.13900	37.39738	0.20	212.49
WSC1	NA	-121.10100	37.42770	1.01	NA
Total				**7.21**	**124.29**

Source: Cowardin 1979, AECOM 2016

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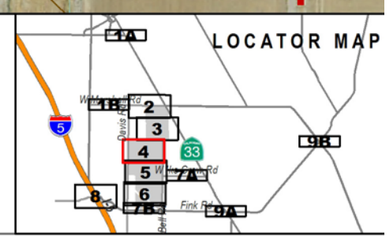
Turn left on Bell Road.

DELINEATED BY:
T. Beyerl and P.Brillante on November 25 and December 26, 2013; and October 18, 2016.



LEGEND

- Sample Points
- Study Area *(1641.36 ac)*
- Basin (BN) *(0.05 ac)*
- Ditch (D) *(2.56 ac)*
- Little Salado Creek (LSC) *(3.6 ac)*
- Willow Scrub (WS) *(1.01 ac)*

0 200 400
FEET
1 inch = 400 feet

NORTH

November 29, 2016

Aerial Image: NAIP 2014
Locator Map: ESRI World Topo
X 60308966 SAC GIS 071 11/16

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
BN1	NA	-121.11300	38.76741	0.04	NA
BN2	NA	-121.11300	38.76762	0.00	NA
D1	R4SB5	-121.10100	37.43260	0.18	799.71
D2	R4SB7	-121.10700	37.42532	0.01	104.99
D3	R4SB5	-121.10700	37.42496	0.01	90.60
D4A	R4SB5	-121.10500	37.42184	0.41	2955.07
D4B	R4SB5	-121.10500	37.41573	0.23	1648.76
D4C	R4SB5	-121.10500	37.41240	0.03	754.87
D4D	R4SB5	-121.10500	37.41055	0.04	517.31
D4E	R4SB5	-121.10500	37.40936	0.02	252.19
D4F	R4SB5	-121.10500	37.40843	0.02	371.39
D4G	R4SB5	-121.10600	37.40714	0.05	657.82

AQUATIC RESOURCE SUMMARY

Aquatic Resources Name	Cowardin Code	Location (long/lat)		Acres	Linear Feet (of channel)
D5	R4SB5	-121.11000	37.41207	0.65	2327.54
D6	R4SB7	-121.10700	37.40331	0.34	4306.24
D7	R4SB5	-121.10700	37.42562	0.03	125.50
D8	R4SB5	-121.13400	37.43552	0.03	52.19
D9	R4SB5	-121.13400	37.43521	0.03	57.23
D10	R4SB5	-121.10200	37.43534	0.04	61.38
D11	R4SB5	-121.09100	37.40587	0.11	250.00
D12	R4SB5	-121.08100	37.40609	0.03	55.94
D13	R4SB5	-121.08100	37.40572	0.03	67.93
D14	R4SB5	-121.13800	37.39675	0.13	394.65
D15	R4SB5	-121.13800	37.39827	0.14	370.97

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LSC5	R4SB7	-121.13800	37.39775	0.13	210.51
LSC6	R4SB7	-121.13900	37.39738	0.20	212.49
WSC1	NA	-121.10100	37.42770	1.01	NA
Total				**7.21**	**124.29**

Source: Cowardin 1979, AECOM 2016

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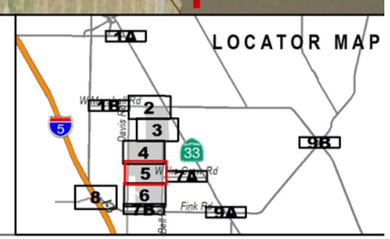
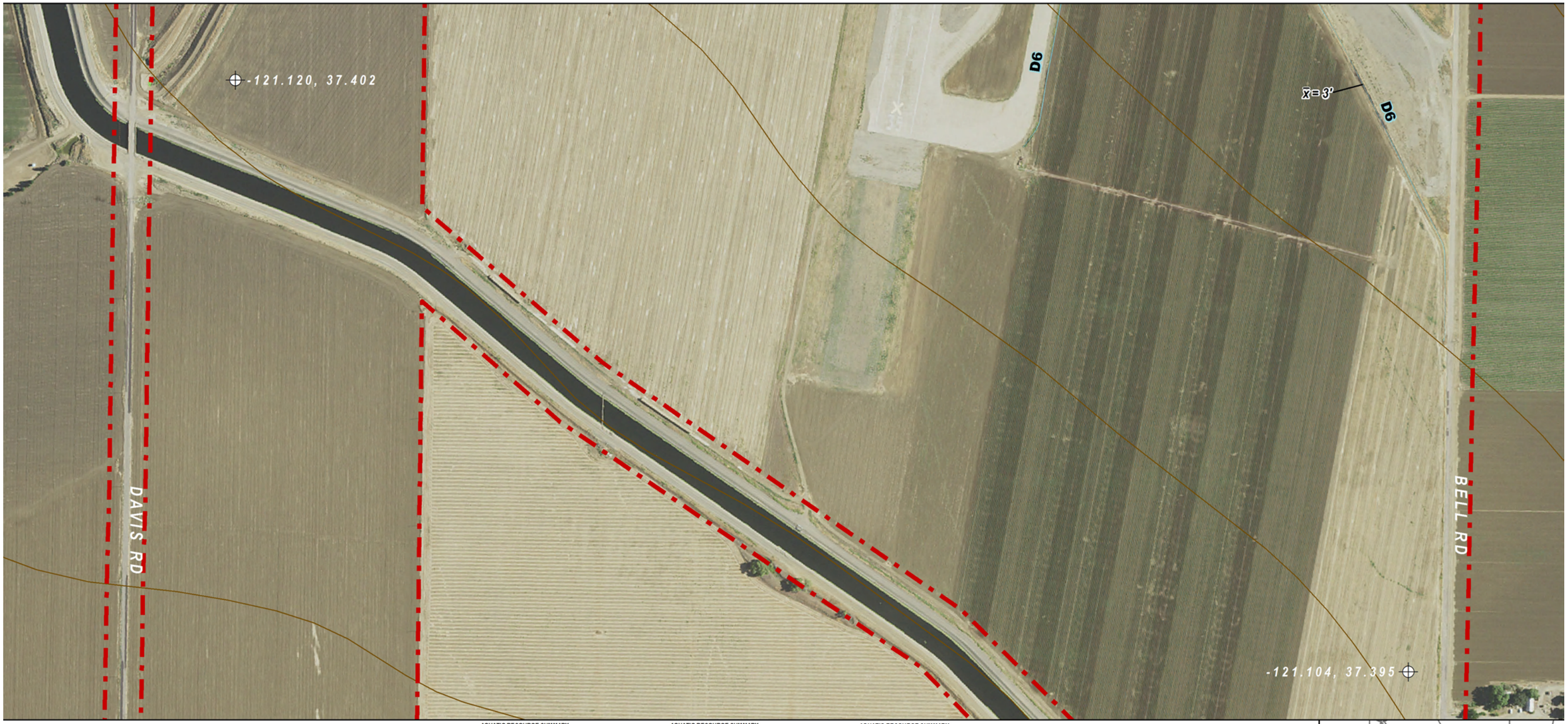
LOCATOR MAP





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0 200 400

FEET

NORTH

1 inch = 400 feet

November 29, 2016

Aerial Image: NAIP 2014
Locator Map: ESRI World Topo
X 60308966 SAC GIS 072 11/16

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D4F	R4SB5	-121.10500	37.40843	0.02	371.39
D4G	R4SB5	-121.10600	37.40714	0.05	657.82

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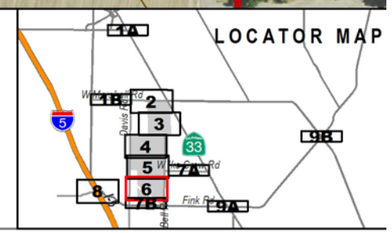

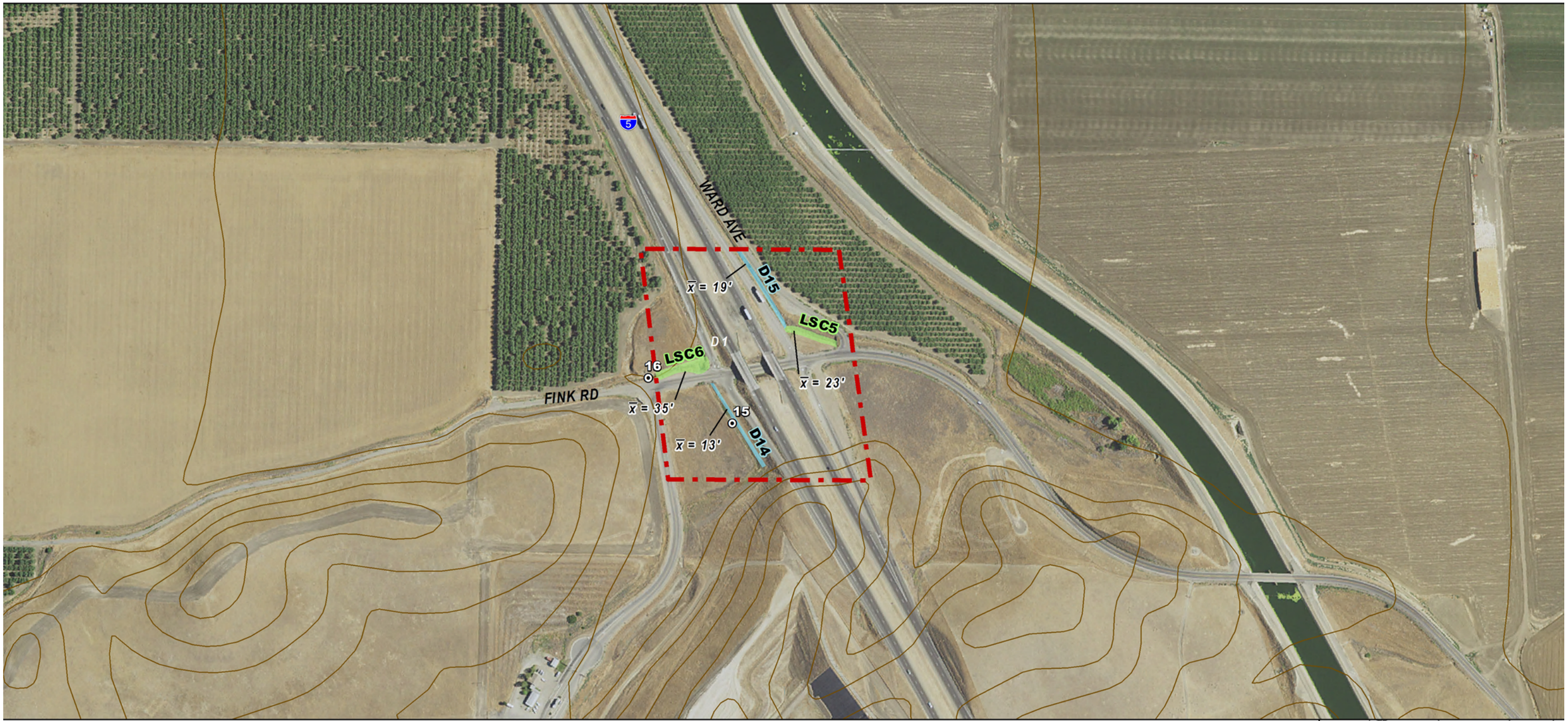

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0 200 400
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NORTH

November 29, 2016

Aerial Image: NAIP 2014
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X 60308966 SAC GIS 073 11/16

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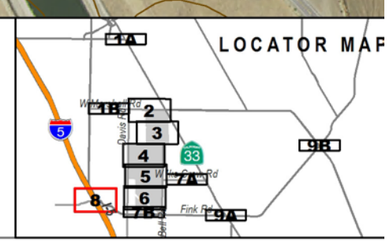

APPENDIX D

Representative Photographs

Little Salado Creek at Sample Point 2 contains a patch of cattails within the channel.

View of Little Salado Creek upstream of Sample Point 2 showing the levee bank, ruderal vegetation, and adjacent agricultural fields.

Appendix D **Representative Photographs**

Little Salado Creek at Sample Point 6.

Small basin (BN1) excavated within the channel of Little Salado Creek.

Little Salado Creek is culverted under the runway.

Typical ditch found beside the runways on the project site; Sample Point 10.

Narrow runoff ditch running beside a road leading from the former Naval support facilities to the main runway; Sample Point 11.

The understory of the willow scrub wetland is covered by heavy leaf litter and woody debris; Sample Point 4.

Wetland soil in the willow scrub wetland habitat is characterized by a redox dark surface. This soil has a very dark grayish brown (10 YR 3/2) top layer 6 inches thick with 5 percent prominent redox concentrations occurring as soft masses and pore linings.

Characteristic upland soils on the project site are dark brown (10 YR 3/3) with relict redox concentrations that are extremely firm and have abrupt boundaries. This soil is from Sample Point 5 in the saltbush scrub habitat.

Sewer treatment basin with ruderal upland vegetation at Sample Point 3.

Developed/disturbed areas include the levees on either side of Little Salado Creek and this former Navy munitions facility (top right).

Disturbed soil mounds with ruderal vegetation and an old paved road at the site of a former Naval munitions facility.

Ruderal vegetation at Sample Point 7, the site of a former firing range.

Realigned channel of Little Salado Creek (LSC4) along Fink Road east side of I-5.

Realigned channel of Little Salado Creek (LSC5) along Fink Road west side of I-5.

Vegetated agricultural ditch (D11) at intersection of Ike Crow Road and Highway 33 (sample point 12).

Agricultural ditch (D9) at intersection of Marshall Road and Highway 33 (sample point 3).

Agricultural ditch (D8) crossing Marshall Road parallel to Delta-Mendota Canal (sample point 4).

Roadside ditch (Dx) along southbound ramp onto I-5.

APPENDIX E

Plant Species Observed on the Project Site

Appendix E: Plant Species Observed on the Crows Landing Redevelopment Project Site.		
Scientific Name	**Common Name**	**Indicator Status[1]**
Acacia longifolia	Golden wattle	NL
Amaranthus albus	Pigweed amaranth	FACU
Amsinckia intermedia	Common fiddleneck	NL
Asclepias fascicularis	Narrow-leaf milkweed	FAC
Atriplex lentiformis	Big saltbush	FAC
Avena sativa	Common oat	UPL
Bidens frondosa	Devil's beggartick	FACW
Brassica nigra	Black mustard	NL
Bromus diandrus	Ripgut brome	NL
Bromus hordeaceus	Soft chess	FACU
Bromus madritensis	Red brome	UPL
Carduus pycnocephalus	Italian thistle	NL
Cedrus deodara	Deodar cedar	NL
Centaurea solstitialis	Yellow star thistle	NL
Conium maculatum	Poison hemlock	FAC
Convolvulus arvensis	Field bindweed	NL
Cynodon dactylon	Bermuda grass	FACU
Cyperus eragrostis	Tall flatsedge	FACW
Distichlis spicata	Saltgrass	FAC
Echinochloa crus-galli	Barnyard grass	FAC
Elaeagnus angustifolia	Russian olive	FAC
Epilobium brachycarpum	Annual fireweed	FAC
Epilobium ciliatum	Fringed Willowherb	FACW
Erigeron bonariensis	Asthmaweed	FACU
Erodium cicutarium	Redstem filaree	NL
Festuca arundinacea	Tall fescue	FACU
Festuca myuros	Rattail sixweeks fescue	FACU
Festuca perennis	Italian ryegrass	NL
Grindelia camporum	Common gumplant	FACW
Helianthus annuus	Common sunflower	FACU
Helminthotheca echioides	Bristly ox-tongue	FACU
Hordeum murinum	Wall barley	FACU
Juniperus sp.	Juniper	NL
Ligustrum vulgare	European privet	UPL
Leptochloa fusca ssp. *fascicularis*	Bearded sprangletop	NL
Malva neglecta	Common mallow	NL
Medicago sativa	Alfalfa	UPL
Medicago polymorpha	Bur clover	FACU
Melilotus indicus	Yellow sweetclover	FACU
Morus alba	White mulberry	FACU
Persicaria punctata	Dotted smartweed	OBL

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Scientific Name	**Common Name**	**Indicator Status[1]**
Photinia sp.	Photinia	NL
Plantago lanceolata	English Plantain	FAC
Poa pratensis	Kentucky bluegrass	FAC
Populus fremontii ssp. fremontii	Fremont cottonwood	NL
Pyracantha anfustifolia	Firethorn	NL
Rosa cultivar	Domestic rose	NL
Rubus armeniacus	Himalayan blackberry	FACU
Rumex crispus	Curly dock	FAC
Rumex pulcher	Fiddle dock	FAC
Salix exigua	Narrow-leaf willow	FACW
Salix gooddingii	Goodding's black willow	FACW
Salsola tragus	Russian thistle	FACU
Sorghum halepense	Johnsongrass	FACU
Silybum marianum	Blessed milk thistle	NL
Typha latifolia	Broad-leaved cattail	OBL
Vicia villosa	Hairy vetch	NL
Xanthium strumarium	Rough cocklebur	FAC

[1] OBL= obligate wetland; FACW=facultative wetland; FAC=facultative; FACU=facultative upland; UPL= upland; NL=not listed.
Sources: species observed: AECOM 2013 and 2016; indicator status: Lichvar and Kartesz 2016

APPENDIX F

Aquatic Resource Excel Sheet

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude
LSC1	CALIFORNIA	R4SB5	RIVERINE	Linear	4495.31	FOOT	RPW	37.43044000	-121.10200000
LSC2	CALIFORNIA	R4SB7	RIVERINE	Linear	5368.41	FOOT	RPW	37.41860000	-121.10800000
LSC3	CALIFORNIA	R4SB7	RIVERINE	Linear	2147.35	FOOT	RPW	37.40881000	-121.11600000
LSC4	CALIFORNIA	R4SB5	RIVERINE	Linear	32.11	FOOT	RPW	37.40156000	-121.12100000
LSC5	CALIFORNIA	R4SB7	RIVERINE	Linear	210.51	FOOT	RPW	37.39775000	-121.13800000
LSC6	CALIFORNIA	R4SB7	RIVERINE	Linear	212.49	FOOT	RPW	37.39738000	-121.13900000
D1	CALIFORNIA	R6	RIVERINE	Linear	799.71	FOOT	NRPW	37.43260000	-121.10100000
D2	CALIFORNIA	R6	RIVERINE	Linear	104.99	FOOT	NRPW	37.42532000	-121.10700000
D3	CALIFORNIA	R6	RIVERINE	Linear	90.6	FOOT	NRPW	37.42496000	-121.10700000
D4A	CALIFORNIA	R6	RIVERINE	Linear	2955.07	FOOT	NRPW	37.42184000	-121.10500000
D4B	CALIFORNIA	R6	RIVERINE	Linear	1648.76	FOOT	NRPW	37.41573000	-121.10500000
D4C	CALIFORNIA	R6	RIVERINE	Linear	754.87	FOOT	NRPW	37.41240000	-121.10500000
D4D	CALIFORNIA	R6	RIVERINE	Linear	517.31	FOOT	NRPW	37.41055000	-121.10500000
D4E	CALIFORNIA	R6	RIVERINE	Linear	252.19	FOOT	NRPW	37.40936000	-121.10500000
D4F	CALIFORNIA	R6	RIVERINE	Linear	371.39	FOOT	NRPW	37.40843000	-121.10500000
D4G	CALIFORNIA	R6	RIVERINE	Linear	657.82	FOOT	NRPW	37.40714000	-121.10600000
D5	CALIFORNIA	R6	RIVERINE	Linear	2327.54	FOOT	NRPW	37.41207000	-121.11000000
D6	CALIFORNIA	R6	RIVERINE	Linear	4306.24	FOOT	NRPW	37.40331000	-121.10700000
D7	CALIFORNIA	R6	RIVERINE	Linear	125.5	FOOT	NRPW	37.42562000	-121.10700000
D8	CALIFORNIA	R4SB5	RIVERINE	Linear	52.19	FOOT	NRPW	37.43552000	-121.13400000
D9	CALIFORNIA	R4SB5	RIVERINE	Linear	57.23	FOOT	NRPW	37.43551000	-121.13400000
D10	CALIFORNIA	R4SB7	RIVERINE	Linear	61.38	FOOT	NRPW	37.43534000	-121.10200000
D11	CALIFORNIA	R4SB7	RIVERINE	Linear	250	FOOT	NRPW	37.40587000	-121.09100000
D12	CALIFORNIA	R4SB7	RIVERINE	Linear	55.94	FOOT	NRPW	37.40609000	-121.08100000
D13	CALIFORNIA	R4SB7	RIVERINE	Linear	67.93	FOOT	NRPW	37.40572000	-121.10500000
D14	CALIFORNIA	R6	RIVERINE	Linear	394.65	FOOT	NRPW	37.39674538	-121.1384959
D15	CALIFORNIA	R6	RIVERINE	Linear	370.97	FOOT	NRPW	37.39826606	-121.1381987
BN1	CALIFORNIA		DEPRESS	Area	0.02	ACRE	IMPNDMNT	37.41249816	-121.1128184
BN2	CALIFORNIA		DEPRESS	Area	0.03	ACRE	IMPNDMNT	37.41236116	-121.1125613
WS1	CALIFORNIA	PSS1	DEPRESS	Area	1.01	ACRE	RPWWN	37.42769900	-121.10127100

Notes for Aquatic Resource Excel Sheet

Waters_Type	Description
DELINEATE	Delineation Only - PJD or No JD Required
IMPNDMNT	Impoundments
ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
NRPW	Non-RPWs that flow directly or indirectly into TNWs
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
RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
TNW	TNWs, including territorial seas
TNWRPW	Tributary consisting of both RPWs and non-RPWs
TNWW	Wetlands adjacent to TNWs
UPLAND	Uplands

HGM_Code	Name	Description
DEPRESS	Depressional	Depressional is characterized by a water source consisting of return flow from groundwater and interflow with primarily vertical hydrodynamics.
ESTUARINEF	Estuarine Fringed	The water source of the estuarine fringe consists of overbank flow from estuaries, with bidirectional and horizontal hydrodynamics being dominant.
LACUSTRINF	Lacustrine Fringe	A Lacustrine fringe has a dominant water source of lake overbank flow, and the dominant hydrodynamics are bidirectional and horizontal.
MINSOILFLT	Mineral Soil Flats	Mineral soil flats have a water source of precipitation, and vertical hydrodynamics are dominant.
ORGSOILFLT	Organic Soil Flats	Organic soil flats have precipitation as the water source, and its dominant hydrodynamic is vertical.
RIVERINE	Riverine	Riverine is characterized by a water source of overbank flow from a channel, and hydrodynamics which are predominantly unidirectional and horizontal.
SLOPE	Slope	The Slope wetland class is characterized by a water source of return flow from groundwater, with principally unidirectional and horizontal hydrodynamics.

Notes for Aquatic Resource Excel Sheet

Cowardin_Code	Category	Description	Name
E	Estuarine	Estuarine - Consists of deepwater tidal habitats and adjacent tidal wetlands that are usually semienclosesd by land but have open, partly obstructed, or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Offshore areas with typical estuarine plants and animals, such as red mangroves and eastern oysters, are also included in the Estuarine System.	E-ESTUARINE
E1	Estuarine	Subtidal, Estuarine	E1-ESTUARINE, SUBTIDAL
E1AB	Estuarine	Aquatic Bed, Estuarine	E1AB-ESTUARINE, SUBTIDAL, AQUATIC BED
E1AB1	Estuarine	Algal, Aquatic Bed, Subtidal, Estuarine	E1AB1-ESTUARINE, SUBTIDAL, AQUATIC BED, ALGAL
E1AB3	Estuarine	Rooted Vascular, Aquatic Bed, Subtidal, Estuarine	E1AB3-ESTUARINE, SUBTIDAL, AQUA BED, ROOT VASC
E1AB4	Estuarine	Floating Vascular, Aquatic Bed, Subtidal, Estuarine	E1AB4-ESTUARINE, SUBTIDAL, AQUA BED, FLOT VASC
E1AB5	Estuarine	Unknown Submergent, Aquatic Bed, Subtidal, Estuarine	E1AB5-ESTUARINE, SUBTIDAL, AQUA BED, UNK SUB
E1AB6	Estuarine	Unknown Surface, Aquatic Bed, Subtidal, Estuarine	E1AB6-ESTUARINE, SUBTIDAL, AQUA BED, UNK SUR
E1OW	Estuarine	Open Water, Subtidal, Estuarine (used on older maps)	E1OW-ESTUARINE, SUBTIDAL, OPEN WATER
E1RB	Estuarine	Rock Bottom, Subtidal, Estuarine	E1RB-ESTUARINE, SUBTIDAL, ROCK BOTTOM
E1RB1	Estuarine	Bedrock, Rock Bottom, Subtidal, Estuarine	E1RB1-ESTUARINE, SUBTIDAL, ROCK BOTTOM, BEDROK
E1RB2	Estuarine	Rubble, Rock Bottom, Subtidal, Estuarine	E1RB2-ESTUARINE, SUBTIDAL, ROCK BOTTOM, RUBBLE
E1RF	Estuarine	Reef, Subtidal, Estuarine	E1RF-ESTUARINE, SUBTIDAL, REEF
E1RF2	Estuarine	Mollusc, Reef, Subtidal, Estuarine	E1RF2-ESTUARINE, SUBTIDAL, REEF, MOLLUSC
E1RF3	Estuarine	Worm, Reef, Subtidal, Estuarine	E1RF3-ESTUARINE, SUBTIDAL, REEF, WORM
E1UB	Estuarine	Unconsolidated Bottom, Subtidal, Estuarine	E1UB-ESTUARINE, SUBTIDAL UNCONSOLIDATED BOTTM
E1UB1	Estuarine	Cobble-Gravel, Unconsolidated Bottom, Subtidal, Estuarine	E1UB1-ESTUARINE, SUBTIDAL, UNCONSOL BOTOM, COB
E1UB2	Estuarine	Sand, Unconsolidated Bottom, Subtidal, Estuarine	E1UB2-ESTUARINE, SUBTIDAL, UNCONSOL BOT, SAND
E1UB3	Estuarine	Mud, Unconsolidated Bottom, Subtidal, Estuarine	E1UB3-ESTUARINE, SUBTIDAL, UNCONSOL BOT, MUD
E1UB4	Estuarine	Organic, Unconsolidated Bottom, Subtidal, Estuarine	E1UB4-ESTUARINE, SUBTIDAL, UNCONSOL BOT, ORG
E2	Estuarine	Intertidal, Estuarine	E2-ESTUARINE, INTERTIDAL
E2AB	Estuarine	Aquatic Bed, Intertidal, Estuarine	E2AB-ESTUARINE, INTERTIDAL, AQUATIC BED
E2AB1	Estuarine	Algal, Aquatic, Bed, Intertidal, Estuarine	E2AB1-ESTUARINE, INTERTIDAL, AQUA BED, ALGAL
E2AB3	Estuarine	Rooted Vascular, Aquatic Bed, Intertidal, Estuarine	E2AB3-ESTUARINE, INTERTIDAL, AQUA BED, ROOT VA
E2AB4	Estuarine	Floating Vascular, Aquatic Bed, Intertidal, Estuarine	E2AB4-ESTUARINE, INTERTIDAL, AQUABED, FLOAT VA
E2AB5	Estuarine	Unknown Submergent, Aquatic Bed, Intertidal, Estuarine	E2AB5-ESTUARINE, INTERTIDAL, AQUABED, UNK SUB
E2AB6	Estuarine	Unknown Surface, Aquatic Bed, Intertidal, Estuarine	E2AB6-ESTUARINE, INTERTIDAL, AQUABED, UNK SUR
E2EM	Estuarine	Emergent, Intertidal, Estuarine	E2EM-ESTUARINE, INTERTIDAL, EMERGENT
E2EM1	Estuarine	Persistent, Emergent, Intertidal, Estuarine	E2EM1-ESTUARINE, INTERTIDAL, EMERGENT, PERSIST
E2EM2	Estuarine	Nonpersistent, Emergent, Intertidal, Estuarine	E2EM2-ESTUARINE, INTERTIDAL, EMERGENT, NONPERS
E2FO	Estuarine	Forested, Intertidal, Estuarine	E2FO-ESTUARINE, INTERTIDAL, FORESTED
E2FO1	Estuarine	Broad-Leaved Deciduous, Forested, Intertidal, Estuarine	E2FO1-ESTUARINE, INTERTIDAL, FORESTED, BLD
E2FO2	Estuarine	Needle-Leaved Deciduous, Forested, Intertidal, Estuarine	E2FO2-ESTUARINE, INTERTIDAL, FORESTED, NLD
E2FO3	Estuarine	Broad-Leaved Evergreen, Forested, Intertidal, Estuarine	E2FO3-ESTUARINE, INTERTIDAL, FORESTED, BLE
E2FO4	Estuarine	Needle-Leaved Evergreen, Forested, Intertidal, Estuarine	E2FO4-ESTUARINE, INTERTIDAL, FORESTED, NLE
E2FO5	Estuarine	Dead, Forested, Intertidal, Estuarine	E2FO5-ESTUARINE, INTERTIDAL, FORESTED, DEAD
E2FO6	Estuarine	Indeterminate Deciduous, Forested, Intertidal, Estuarine	E2FO6-ESTUARINE, INTERTIDAL, FORESTED, IND
E2FO7	Estuarine	Indeterminate Evergreen, Forested, Intertidal, Estuarine	E2FO7-ESTUARINE, INTERTIDAL, FORESTED, INE
E2RF	Estuarine	Reef, Intertidal, Estuarine	E2RF-ESTUARINE, INTERTIDAL, REEF
E2RF2	Estuarine	Mollusc, Reef, Intertidal, Estuarine	E2RF2-ESTUARINE, INTERTIDAL, REEF, MOLLUSC
E2RF3	Estuarine	Worm, Reef, Intertidal, Estuarine	E2RF3-ESTUARINE, INTERTIDAL, REEF, WORM
E2RS	Estuarine	Rocky Shore, Intertidal, Estuarine	E2RS-ESTUARINE, INTERTIDAL, ROCKY SHORE
E2RS1	Estuarine	Bedrock, Rocky Shore, Intertidal, Estuarine	E2RS1-ESTUARINE, INTERTIDAL, ROCK SHR, BEDROK
E2RS2	Estuarine	Rubble, Rocky Shore, Intertidal, Estuarine	E2RS2-ESTUARINE, INTERTIDAL, ROCK SHR, RUBBLE
E2SB	Estuarine	Stream Bed, Intertidal, Estuarine	E2SB-ESTUARINE, INTERTIDAL, STREAM BED
E2SB3	Estuarine	Cobble-Gravel, Stream Bed, Intertidal, Estuarine	E2SB3-ESTUARINE, INTERTIDAL, STREAM BED, COBBL
E2SB4	Estuarine	Sand, Stream Bed, Intertidal, Estuarine	E2SB4-ESTUARINE, INTERTIDAL, STREAM BED, SAND
E2SB5	Estuarine	Mud, Stream Bed, Intertidal, Estuarine	E2SB5-ESTUARINE, INTERTIDAL, STREAM BED, MUD
E2SB6	Estuarine	Organic, Stream Bed, Intertidal, Estuarine	E2SB6-ESTUARINE, INTERTIDAL, STREAM BED, ORGAN
E2SS	Estuarine	Scrub-Shrub, Intertidal, Estuarine	E2SS-ESTUARINE, INTERTIDAL, SCRUB-SHRUB
E2SS1	Estuarine	Broad-Leaved Deciduous, Scrub-Shrub, Intertidal, Estuarine	E2SS1-ESTUARINE, INTERTIDAL, SCRUB-SHRUB, BLD
E2SS2	Estuarine	Needle-Leaved Deciduous, Scrub-Shrub, Intertidal, Estuarine	E2SS2-ESTUARINE, INTERTIDAL, SCRUB-SHRUB, NLD
E2SS3	Estuarine	Broad-Leaved Evergreen, Scrub-Shrub, Intertidal, Estuarine	E2SS3-ESTUARINE, INTERTIDAL, SCRUB-SHRUB, BLE
E2SS4	Estuarine	Needle-Leaved Evergreen, Scrub-Shrub, Intertidal, Estuarine	E2SS4-ESTUARINE, INTERTIDAL, SCRUB-SHRUB, NLE
E2SS5	Estuarine	Dead, Scrub-Shrub, Intertidal, Estuarine	E2SS5-ESTUARINE, INTERTIDAL, SCRUB-SHRUB, DEAD

E2SS6	Estuarine	Indeterminate Deciduous, Scrub-Shrub, Intertidal, Estuarine	E2SS6-ESTUARINE, INTERTIDAL, SCRUB-SHRUB, IND
E2SS7	Estuarine	Indeterminate Evergreen, Scrub-Shrub, Intertidal, Estuarine	E2SS7-ESTUARINE, INTERTIDAL, SCRUB-SHRUB, INE
E2US	Estuarine	Unconsolidated Shore, Intertidal, Estuarine	E2US-ESTUARINE, INTERTIDAL, UNCONSOL SHORE
E2US1	Estuarine	Cobble, Unconsolidated Shore, Intertidal, Estuarine	E2US1-ESTUARINE, INTERTIDAL, UNCONSOL SHR, COB
E2US2	Estuarine	Sand, Unconsolidated Shore, Intertidal, Estuarine	E2US2-ESTUARINE, INTERTIDAL, UNCONSOL SHR, SAN
E2US3	Estuarine	Mud, Unconsolidated Shore, Intertidal, Estuarine	E2US3-ESTUARINE, INTERTIDAL, UNCONSOL BOT, MUD
E2US4	Estuarine	Organic, Unconsolidated Shore, Intertidal, Estuarine	E2US4-ESTUARINE, INTERTIDAL, UNCONSOL SHR, ORG
L	Lacustrine	Lacustrine - Includes wetlands and deepwater habitats with all of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage; and (3) total area exceeds 8 ha (20 acres). Similar wetland and deepwater habitats totaling less than 8 ha are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 2 m (6.6 feet) at low water. Lacustrine waters may be tidal or nontidal, but ocean-derived salinity is always less than 0.5%.	L-LACUSTRINE
L1	Lacustrine	Lacustrine - Includes wetlands and deepwater habitats with all of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage; and (3) total area exceeds 8 ha (20 acres). Similar wetland and deepwater habitats totaling less than 8 ha are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 2 m (6.6 feet) at low water. Lacustrine waters may be tidal or nontidal, but ocean-derived salinity is always less than 0.5%.	L1-LACUSTRINE, LIMNETIC
L1AB	Lacustrine	Aquatic Bed, Limnetic, Lacustrine	L1AB-LACUSTRINE, LIMNETIC, AQUA BED
L1AB1	Lacustrine	Algal, Aquatic Bed, Limnetic, Lacustrne	L1AB1-LACUSTRINE, LIMNETIC, AQUA BED, ALGAL
L1AB2	Lacustrine	Aquatic Moss, Aquatic Bed, Limnetic, Lacustrine	L1AB2-LACUSTRINE, LIMNETIC, AQUA BED, AQUA MOS
L1AB3	Lacustrine	Rooted Vascular, Aquatic Bed, Limnetic, Lacustrine	L1AB3-LACUSTRINE, LIMNETIC, AQUA BED, ROOT VAS
L1AB4	Lacustrine	Floating Vascular, Aquatic Bed, Limnetic, Lacustrine	L1AB4-LACUSTRINE, LIMNETIC, AQUA BED, FLOT VAS
L1AB5	Lacustrine	Unknown Submergent, Aquatic Bed, Limnetic, Lacustrine	L1AB5-LACUSTRINE, LIMNETIC, AQUA BED, UNK SUB
L1AB6	Lacustrine	Unknown Surface, Aquatic Bed, Limnetic, Lacustrine	L1AB6-LACUSTRINE, LIMNETIC, AQUA BED, UNK SURF
L1OW	Lacustrine	Open Water/Unknown Bottom, Limnetic, Lacustrine (used on older maps)	L1OW-LACUSTRINE, LIMNETIC, OPEN WATER/UNK BOT
L1RB	Lacustrine	Rock Bottom, Limnetic, Lacustrine	L1RB-LACUSTRINE, LIMNETIC, ROCK BOTTOM
L1RB1	Lacustrine	Bedrock, Rock Bottom, Limnetic, Lacustrine	L1RB1-LACUSTRINE, LIMNETIC, ROCK BOT, BEDROCK
L1RB2	Lacustrine	Rubble, Rock Bottom, Limnetic, Lacustrine	L1RB2-LACUSTRINE, LIMNETIC, ROCK BOT, RUBBLE
L1UB	Lacustrine	Unconsolidated Bottom, Limnetic, Lacustrine	L1UB-LACUSTRINE, LIMNETIC, UNCONSOL BOTTOM
L1UB1	Lacustrine	Cobble-Gravel, Unconsolidated Bottom, Limnetic, Lacustrine	L1UB1-LACUSTRINE, LIMNETIC, UNCONSOL BOT, COGGLE
L1UB2	Lacustrine	Sand, Unconsolidated Bottom, Limnetic, Lacustrine	L1UB2-LACUSTRINE, LIMNETIC, UNCONSOL BOT, SAND
L1UB3	Lacustrine	Mud, Unconsolidated Bottom, Limnetic, Lacustrine	L1UB3-LACUSTRINE, LIMNETIC, UNCONSOL BOT, MUD
L1UB4	Lacustrine	Organic, Unconsolidated Bottom, Limnetic, Lacustrine	L1UB4-LACUSTRINE, LIMNETIC, UNCONSOL BOT, ORGANI
L2	Lacustrine	Littoral, Lacustrine	L2-LACUSTRINE, LITTORAL
L2AB	Lacustrine	Aquatic Bed, Littoral, Lacustrine	L2AB-LACUSTRINE, LITTORAL, AQUA BED
L2AB1	Lacustrine	Algal, Aquatic Bed, Littoral, Lacustrine	L2AB1-LACUSTRINE, LITTORAL, AQUA BED, ALGAL
L2AB2	Lacustrine	Aquatic Moss, Aquatic Bed, Littoral, Lacustrine	L2AB2-LACUSTRINE, LITTORAL, AQUA BED, AQUA MOS
L2AB3	Lacustrine	Rooted Vascular, Aquatic Bed, Littoral, Lacustrine	L2AB3-LACUSTRINE, LITTORAL, AQUA BED, ROOT VAS
L2AB4	Lacustrine	Floating Vascular, Aquatic Bed, Littoral, Lacustrine	L2AB4-LACUSTRINE, LITTORAL, AQUA BED, FLOT VAS
L2AB5	Lacustrine	Unknown Submergent, Aquatic Bed, Littoral, Lacustrine	L2AB5-LACUSTRINE, LITTORAL, AQUA BED, UNK SUB
L2AB6	Lacustrine	Unknown Surface, Aquatic Bed, Littoral, Lacustrine	L2AB6-LACUSTRINE, LITTORAL, AQUA BED, UNK SURF
L2EM	Lacustrine	Emergent, Littoral, Lacustrine	L2EM-LACUSTRINE, LITTORAL, EMERGENT
L2EM2	Lacustrine	Nonpersistent, Emergent, Littoral, Lacustrine	L2EM2-LACUSTRINE, LITTORAL, EMERGENT, NONPERS
L2OW	Lacustrine	Open Water/Unknown Bottom, Littoral, Lacustrine	L2OW-LACUSTRINE, LITTORAL, OPEN WATER
L2RB	Lacustrine	Rock Bottom, Littoral, Lacustrine	L2RB-LACUSTRINE, LITTORAL, ROCK BOTTOM
L2RB1	Lacustrine	Bedrock, Rock Bottom, Littoral, Lacustrine	L2RB1-LACUSTRINE, LITTORAL, ROCK BOT, BEDROCK
L2RB2	Lacustrine	Rubble, Rock Bottom, Littoral, Lacustrine	L2RB2-LACUSTRINE, LITTORAL, ROCK BOT, RUBBLE
L2RS	Lacustrine	Rocky Shore, Littoral, Lacustrine	L2RS-LACUSTRINE, LITTORAL, ROCKY SHORE
L2RS1	Lacustrine	Bedrock, Rocky Shore, Littoral, Lacustrine	L2RS1-LACUSTRINE, LITTORAL, ROCKY SHR, BEDROCK
L2RS2	Lacustrine	Rubble, Rocky Shore, Littoral, Lacustrine	L2RS2-LACUSTRINE, LITTORAL, ROCKY SHR, RUBBLE
L2UB	Lacustrine	Unconsolidated Bottom, Littoral, Lacustrine	L2UB-LACUSTRINE, LITTORAL, UNCONSOL BOT
L2UB1	Lacustrine	Cobble-Gravel, Unconsolidated Bottom, Littoral, Lacustrine	L2UB1-LACUSTRINE, LITTORAL, UNCONSOL BOT, COBBLE
L2UB2	Lacustrine	Sand, Unconsolidated Bottom, Littoral, Lacustrine	L2UB2-LACUSTRINE, LITTORAL, UNCONSOL BOT, SAND
L2UB3	Lacustrine	Mud, Unconsolidated Bottom, Littoral, Lacustrine	L2UB3-LACUSTRINE, LITTORAL, UNCONSOL BOT, MUD
L2UB4	Lacustrine	Organic, Unconsolidated Bottom, Littoral, Lacustrine	L2UB4-LACUSTRINE, LITTORAL, UNCONSOL BOT, ORGAN
L2US	Lacustrine	Unconsolidated Shore, Littoral, Lacustrine	L2US-LACUSTRINE, LITTORAL, UNCONSOL SHORE
L2US1	Lacustrine	Cobble-Gravel, Unconsolidated Shore, Littoral, Lacustrine	L2US1-LACUSTRINE, LITTORAL, UNCONSOL SHR, COBBLE
L2US2	Lacustrine	Sand, Unconsolidated Shore, Littoral, Lacustrine	L2US2-LACUSTRINE, LITTORAL, UNCONSOL SHR, SAND
L2US3	Lacustrine	Mud, Unconsolidated Shore, Littoral, Lacustrine	L2US3-LACUSTRINE, LITTORAL, UNCONSOL SHR, MUD

L2US4	Lacustrine	Organic, Unconsolidated Shore, Littoral, Lacustrine	L2US4-LACUSTRINE, LITTORAL, UNCONSOL SHR, ORGAN
L2US5	Lacustrine	Vegetated, Unconsolidated Shore, Littoral, Lacustrine	L2US5-LACUSTRINE, LITTORAL, UNCONSOL SHR, VEGET
M	Marine	Marine - Consists of the open ocean overlying the continental shelf and its associated high-energy coastline. Marine habitats are exposed to the waves and currents of the open ocean and the water regimes are determined primarily by the ebb and flow of oceanic tides. Salinities exceed 30% with little or no dilution except outside the mouths of estuaries. Shallow coastal indentations or bays without appreciable freshwater inflow, and coasts with exposed rocky islands that provide the mainland with little or no shelter from wind and waves, are also considered part of the Marine System because they generally support typical marine biota.	M-MARINE
M1	Marine	Subtidal Marine	M1-MARINE, SUBTIDAL
M1AB	Marine	Aquatic Bed, Subtidal, Marine	M1AB-MARINE, SUBTIDAL, AQUATIC BED
M1AB1	Marine	Algal, Aquatic Bed, Subtidal, Marine	M1AB1-MARINE, SUBTIDAL, AQUATIC BED, ALGAL
M1AB3	Marine	Rooted Vascular, Aquatic Bed, Subtidal, Marine	M1AB3-MARINE, SUBTIDAL, AQUATIC BED, ROOT VASC
M1AB5	Marine	Unknown Submergent, Aquatic Bed, Subtidal, Marine	M1AB5-MARINE, SUBTIDAL, AQUATIC BED, UNK SUB
M1OW	Marine	Open Water, Subtidal, Marine (Used on older maps)	M1OW-MARINE, SUBTIDAL, OPEN WATER
M1RB	Marine	Rock Bottom Subtidal Marine	M1RB-MARINE, SUBTIDAL, ROCK BOTTOM
M1RB1	Marine	Bedrock, Rock Bottom, Subtidal, Marine	M1RB1-MARINE, SUBTIDAL, ROCK BOTTOM, BEDROCK
M1RB2	Marine	Rubble, Rock Bottom, Subdtidal, Marine	M1RB2-MARINE, SUBTIDAL, ROCK BOTTOM, RUBBLE
M1RF	Marine	Nonpersistent, Emergent, Lower Perennial, Riverine	M1RF-MARINE, SUBTIDAL, REEF
M1RF1	Marine	Coral, Reef, Subtidal, Marine	M1RF1-MARINE, SUBTIDAL, REEF, CORAL
M1RF3	Marine	Worm, Reef, Subtidal, Marine	M1RF3-MARINE, SUBTIDAL, REEF, WORM
M1UB	Marine	Unconsolidated Bottom, Subtidal, Marine	M1UB-MARINE, SUBTIDAL, UNCONSOLIDATED BOTTOM
M1UB1	Marine	Cobble-Gravel, Unconsolidated, Subtidal, Marine	M1UB1-MARINE, SUBTIDAL, UNCONSOL BOTTOM, COBBL
M1UB2	Marine	Sand, Unconsolidated Bottom, Subtidal, Marine	M1UB2-MARINE, SUBTIDAL, UNCONSOL BOTTOM, SAND
M1UB3	Marine	Mud, Unconsolidated Bottom, Subtidal, Marine	M1UB3-MARINE, SUBTIDAL, UNCONSOL BOTTOM, MUD
M1UB4	Marine	Organic, Unconsolidated Bottom, Subtidal, Marine	M1UB4-MARINE, SUBTIDAL, UNCONSOL BOTTOM, ORGAN
M2	Marine	Intertidal, Marine	M2-MARINE, INTERTIDAL
M2AB	Marine	Aquatic Bed, Intertidal, Marine	M2AB-MARINE, INTERTIDAL, AQUATIC BED
M2AB1	Marine	Algal, Aquatic Bed, Intertidal, Marine	M2AB1-MARINE, INTERTIDAL, AQUATIC BED, ALGAL
M2AB3	Marine	Rooted Vascular, Aquatic Bed, Intertidal, Marine	M2AB3-MARINE, INTERTIDAL, AQUAT BED, ROOT VASC
M2AB5	Marine	Unknown Submergent, Aquatic Bed, Intertidal, Marine	M2AB5-MARINE, INTERTIDAL, AQUATIC BED, UNK SUB
M2RF	Marine	Reef, Intertidal, Marine	M2RF-MARINE, INTERTIDAL, REEF
M2RF1	Marine	Coral, Reef, Intertidal, Marine	M2RF1-MARINE, INTERTIDAL, REEF, CORAL
M2RF3	Marine	Worm, Reef, Intertidal, Marine	M2RF3-MARINE, INTERTIDAL, REEF, WORM
M2RS	Marine	Rocky Shore, Intertidal, Marine	M2RS-MARINE, INTERTIDAL, ROCKY SHORE
M2RS1	Marine	Bedrock, Rocky Shore, Intertidal, Marine	M2RS1-MARINE, INTERTIDAL, ROCKY SHORE, BEDROCK
M2RS2	Marine	Rubble, Rocky Shore, Intertidal, Marine	M2RS2-MARINE, INTERTIDAL, ROCKY SHORE, RUBBLE
M2US	Marine	Unconsolidated Shore, Intertidal, Marine	M2US-MARINE, INTERTIDAL, UNCONSOLIDATED SHORE
M2US1	Marine	Cobble-Gravel, Unconsolidated Shore, Intertidal, Marine	M2US1-MARINE, INTERTIDAL, UNCONSOL SHORE, COBB
M2US2	Marine	Sand, Unconsolidated Shore, Intertidal, Marine	M2US2-MARINE, INTERTIDAL, UNCONSOL SHORE, SAND
M2US3	Marine	Mud, Unconsolidated Shore, Intertidal, Marine	M2US3-MARINE, INTERTIDAL, UNCONSOL SHORE, MUD
M2US4	Marine	Organic, Unconsolidated Shore, Intertidal, Marine	M2US4-MARINE, INTERTIDAL, UNCONSOL SHORE, ORG
P	Palustrine	Palustrine - Includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5%. It also includes wetlands lacking such vegetation, but with all of the following characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 m at low water; and (4) salinity due to ocean-derived salts less than 0.5%.	P-PALUSTRINE
PAB	Palustrine	Aquatic Bed, Palustrine	PAB-PALUSTRINE, AQUA BED
PAB1	Palustrine	Algal, Aquatic Bed, Palustrine	PAB1-PALUSTRINE, AQUA BED, ALGAL
PAB2	Palustrine	Aquatic Moss, Aquatic Bed, Palustrine	PAB2-PALUSTRINE, AQUA BED, AQUATIC MOSS
PAB3	Palustrine	Rooted Vascular, Aquatic Bed, Palustrine	PAB3-PALUSTRINE, AQUA BED, ROOTED VASC
PAB4	Palustrine	Floating Vascular, Aquatic Bed, Palustrine	PAB4-PALUSTRINE, AQUA BED, FLOAT VASC
PAB5	Palustrine	Unknown Submergent, Aquatic Bed, Palustrine	PAB5-PALUSTRINE, AQUA BED, UNK SUB
PAB6	Palustrine	Unknown Surface, Aquatic Bed, Palustrine	PAB6-PALUSTRINE, AQUA BED, UNK SURF
PEM	Palustrine	Emergent, Palustrine	PEM-PALUSTRINE, EMERGENT
PEM1	Palustrine	Persistent, Emergent, Palustrine	PEM1-PALUSTRINE, EMERGENT, PERSISTENT
PEM2	Palustrine	Nonpersistent, Emergent, Palustrine	PEM2-PALUSTRINE, EMERGENT, NONPERSISTENT
PFO	Palustrine	Forested, Palustrine	PFO-PALUSTRINE, FORESTED
PFO1	Palustrine	Broad-Leaved Deciduous, Forested, Palustrine	PFO1-PALUSTRINE, FORESTED, BLD
PFO2	Palustrine	Needle-Leaved Deciduous, Forested, Palustrine	PFO2-PALUSTRINE, FORESTED, NLE
PFO3	Palustrine	Broad-Leaved Evergreen, Forested, Palustrine	PFO3-PALUSTRINE, FORESTED, BLE
PFO4	Palustrine	Needle-Leaved Evergreen, Forested, Palustrine	PFO4-PALUSTRINE, FORESTED, NLE

PFO5	Palustrine	Dead, Forested, Palustrine	PFO5-PALUSTRINE, FORESTED, DEAD
PFO6	Palustrine	Indeterminate Deciduous, Forested, Palustrine	PFO6-PALUSTRINE, FORESTED, INDET DEC
PFO7	Palustrine	Indeterminate Evergreen, Forested, Palustrine	PFO7-PALUSTRINE, FORESTED, INDETER EVER
PML	Palustrine	Moss-Lichens, Palustrine	PML-PALUSTRINE, MOSS-LICHENS
PML1	Palustrine	Moss, Moss-Lichens, Palustrine	PML1-PALUSTRINE, MOSS-LICHENS, MOSS
PML2	Palustrine	Lichen, Moss-Lichen, Palustrine	PML2-PALUSTRINE, MOSS-LICHEN, LICHEN
POW	Palustrine	POW-PALUSTRINE, OPEN WATER	POW-PALUSTRINE, OPEN WATER
PRB	Palustrine	Rock Bottom, Palustrine	PRB-PALUSTRINE, ROCK BOTTOM
PRB1	Palustrine	Bedrock, Rock Bottom, Palustrine	PRB1-PALUSTRINE, ROCK BOTTOM, BEDROCK
PRB2	Palustrine	Rubble, Rock Bottom, Palustrine	PRB2-PALUSTRINE, ROCK BOTTOM, RUBBLE
PSS	Palustrine	Scrub-Shrub, Palustrine	PSS-PALUSTRINE, SCRUB-SHRUB
PSS1	Palustrine	Broad-Leaved Deciduous, Scrub-Shrub, Palustrine	PSS1-PALUSTRINE, SCRUB-SHRUM, BLD
PSS2	Palustrine	Needle-Leaved Deciduous, Scrub-Shrub, Palustrine	PSS2-PALUSTRINE, SCRUB-SHRUB, NLD
PSS3	Palustrine	Broad-Leaved Evergreen, Scrub-Shrub, Palustrine	PSS3-PALUSTRINE, SCRUB-SHRUB, BLE
PSS4	Palustrine	Needle-Leaved Evergreen, Scrub-Shrub, Palustrine	PSS4-PALUSTRINE, SCRUB-SHRUB, NLE
PSS5	Palustrine	Dead, Scrub-Shrub	PSS5-PALUSTRINE, SCRUB-SHRUB, DEAD
PSS6	Palustrine	Indeterminate Deciduous, Scrub-Shrub, Palustrine	PSS6-PALUSTRINE, SCRUB-SHRUB, INDET DEC
PSS7	Palustrine	Indeterminate Evergreen, Scrub-Shrub, Palustrine	PSS7-PALUSTRINE, SCRUB-SHRUB, INDET EVER
PUB	Palustrine	Unconsolidated Bottom, Palustrine	PUB-PALUSTRINE, UNCONSOL BOT
PUB1	Palustrine	Cobble-Gravel, Unconsolidated Bottom, Palustrine	PUB1-PALUSTRINE, UNCONSOL BOT, COBBLE
PUB2	Palustrine	Sand, Unconsolidated Bottom, Palustrine	PUB2-PALUSTRINE, UNCONSOL BOT, SAND
PUB3	Palustrine	Mud, Unconsolidated Bottom, Palustrine	PUB3-PALUSTRINE, UNCONSOL BOT, MUD
PUB4	Palustrine	Organic, Unconsolidated Bottom, Palustrine	PUB4-PALUSTRINE, UNCONSOL BOT, ORGANIC
RP	Riparian	Riparian - Plant communities contiguous to and affected by surface and subsurface hydrologic features of perennial or intermittent lotic and lentic water bodies (rivers, streams, lakes, or drainage ways). Riparian areas have one or both of the following characteristics: 1) distinctively different vegetative species than adjacent areas, and 2) species similar to adjacent areas but exhibiting more vigorous or robust growth forms. Riparian areas are usually transitional between wetland and upland.	RP-RIPARIAN
RP1	Riparian	Lotic, Riparian	RP1-RIPARIAN, LOTIC
RP1EM	Riparian	Emergent, Lotic, Riparian	RP1EM-RIPARIAN, LOTIC, EMERGENT
RP1FO	Riparian	Forested, Lotic, Riparian	RP1FO-RIPARIAN, LOTIC, FORESTED
RP1FO6	Riparian	Decidous, Forested, Lotic, Riparian	RP1FO6-RIPARIAN, LOTIC, FORESTED, DECIDOUS
RP1FO7	Riparian	Evergreen, Forested, Lotic, Riparian	RP1FO7-RIPARIAN, LOTIC, FORESTED, EVERGREEN
RP1FO8	Riparian	Mixed, Forested, Lotic, Riparian	RP1FO8-RIPARIAN, LOTIC, FORESTED, MIXED
RP1SS	Riparian	Scrub-Shrub, Lotic, Riparian	RP1SS-RIPARIAN, LOTIC, SCRUB-SHRUB
RP1SS6	Riparian	Decidous, Scrub-Shrub, Lotic, Riparian	RP1SS6-RIPARIAN, LOTIC, SCRUB-SHRUB, DECIDOUS
RP1SS7	Riparian	Evergreen, Scrub-Shrub, Lotic, Riparian	RP1SS7-RIPARIAN, LOTIC, SCRUB-SHRUB, EVERGREEN
RP1SS8	Riparian	Mixed, Scrub-Shrub, Lotic, Riparian	RP1SS8-RIPARIAN, LOTIC, SCRUB-SHRUB, MIXED
RP2	Riparian	Lentic, Riparian	RP2-RIPARIAN, LENTIC
RP2EM	Riparian	Emergent, Lentic, Riparian	RP2EM-RIPARIAN, LENTIC, EMERGENT
RP2FO	Riparian	Forested, Lentic. Riparian	RP2FO-RIPARIAN, LENTIC, FORESTED
RP2FO6	Riparian	Decidous, Forested, Lentic, Riparian	RP2FO6-RIPARIAN, LENTIC. FORESTED, DECIDOUS
RP2FO7	Riparian	Evergreen, Forested, Lentic, Riparian	RP2FO7-RIPARIAN, LENTIC, FORESTED, EVERGREEN
RP2FO8	Riparian	Mixed, Forested, Lentic, Riparian	RP2FO8-RIPARIAN, LENTIC, FORESTED, MIXED
RP2SS	Riparian	Scrub-Shrub, Lentic, Riparian	RP2SS-RIPARIAN, LENTIC, SCRUB-SHRUB
RP2SS6	Riparian	Decidous, Scrub-Shrub, Lentic, Riparian	RP2SS6-RIPARIAN, LENTIC, SCRUB-SHRUB, DECIDOUS
RP2SS7	Riparian	Evergreen, Scrub-Shrub, Lentic, Riparian	RP2SS7-RIPARIAN, LENTIC, SCRUB-SHRUB, EVERGREEN
RP2SS8	Riparian	Mixed, Scrub-Shrub, Lentic, Riparian	RP2SS8-RIPARIAN, LENTIC, SCRUB-SHRUB, MIXED
R	Riverine	Riverine - Includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts in excess of 0.5%.	R-RIVERINE
R1	Riverine	Tidal, Riverine	R1-RIVERINE, TIDAL
R1AB	Riverine	Aquatic Bed, Tidal, Riverine	R1AB-RIVERINE, TIDAL, AQUATIC BED
R1AB1	Riverine	Algal, Aquatic Bed, Tidal, Riverine	R1AB1-RIVERINE,TIDAL, AQUATIC BED, ALGAL
R1AB2	Riverine	Aquatic Moss, Aquatic Bed, Tidal, Riverine	R1AB2-RIVERINE, TIDAL, AQUA BED, MOSS
R1AB3	Riverine	Rooted Vascular, Aquatic Bed, Tidal, Riverine	R1AB3-RIVERINE, TIDAL, AQUA BED, ROOTED VASC
R1AB4	Riverine	Floating Vascular, Aquatic Bed, Tidal, Riverine	R1AB4-RIVERINE, TIDAL, AQUA BED, FLOATING VASC
R1AB5	Riverine	Unknown Submergent, Aquatic Bed, Tidal, Riverine	R1AB5-RIVERINE, TIDAL, AQUA BED, UNK SUBMERGEN
R1AB6	Riverine	Unknown Surface, Aquatic Bed, Tidal, Riverine	R1AB6-RIVERINE, TIDAL, AQUA BED, UNK SURFACE
R1EM	Riverine	Emergent, Tidal, Riverine	R1EM-RIVERINE, TIDAL, EMERGENT
R1EM2	Riverine	Nonpersistent, Emergent, Tidal, Riverine	R1EM2-RIVERINE, TIDAL, EMERGENT, NONPERSISTENT

R1RB	Riverine	Rock Bottom, Tidal, Riverine	R1RB-RIVERINE, TIDAL, ROCK BOTTOM
R1RB1	Riverine	Bedrock, Rock Bottom, Tidal, Riverine	R1RB1-RIVERINE, TIDAL, ROCK BOTTOM, BEDROCK
R1RB2	Riverine	Rubble, Rock Bottom, Tidal, Riverine	R1RB2-RIVERINE, TIDAL, ROCK BOTTOM, RUBBLE
R1RS	Riverine	Rocky Shore, Tidal, Riverine	R1RS-RIVERINE, TIDAL, ROCKY SHORE
R1RS1	Riverine	Bedrock, Rocky Shore, Tidal, Riverine	R1RS1-RIVERINE, TIDAL, ROCKY SHORE, BEDROCK
R1RS2	Riverine	Rubble, Rocky Shore, Tidal, Riverine	R1RS2-RIVERINE, TIDAL, ROCKY SHORE, RUBBLE
R1SB	Riverine	Streambed, Tidal, Riverine	R1SB-RIVERINE, TIDAL, STREAMBED
R1SB1	Riverine	Bedrock. Streambed, Tidal, Riverine	R1SB1-RIVERINE, TIDAL, STREAMBED, BEDROCK
R1SB2	Riverine	Rubble, Streambed, Ridal, Riverine	R1SB2-RIVERINE, TIDAL, STREAMBED, RUBBLE
R1SB3	Riverine	Cobble-Gravel, Streambed, Tidal, Riverine	R1SB3-RIVERINE, TIDAL, STREAMBED, COBBLE
R1SB4	Riverine	Sand, Streambed, Tidal, Riverine	R1SB4-RIVERINE, TIDAL, STREAMBED, SAND
R1SB5	Riverine	Mud, Streambed, Tidal, Riverine	R1SB5-RIVERINE, TIDAL, STREAMBED, MUD
R1SB6	Riverine	Organic, Streambed, Tidal, Riverine	R1SB6-RIVERINE, TIDAL, STREAMBED, ORGANIC
R1SB7	Riverine	Vegetated, Streambed, Tidal, Riverine	R1SB7-RIVERINE, TIDAL, STREAMBED, VEGETATED
R1UB	Riverine	Unconsolidated Bottom, Tidal, Riverine	R1UB-RIVERINE, TIDAL, UNCONSOLIDATED BOTTOM
R1UB1	Riverine	Cobble-Gravel, Unconsolidated Bottom, Tidal, Riverine	R1UB1-RIVERINE, TIDAL, UNCONSOL BOTTOM, COBBLE
R1UB2	Riverine	Sand, Unconsolidated Bottom, Tidal, Riverine	R1UB2-RIVERINE, TIDAL, UNCONSOL BOTTOM, SAND
R1UB3	Riverine	Mud, Unconsolidated Bottom, Tidal, Riverine	R1UB3-RIVERINE, TIDAL, UNCONSOL BOTTOM, MUD
R1UB4	Riverine	Organic, Unconsolidated Bottom, Tidal, Riverine	R1UB4-RIVERINE, TIDAL, UNCONSOL BOTTOM, ORGAN
R1US	Riverine	Unconsolidated Shore, Tidal, Riverine	R1US-RIVERINE, TIDAL, UNCONSOL SHORE
R1US1	Riverine	Cobble-Gravel, Unconsolidated Shore, Tidal, Riverine	R1US1-RIVERINE, TIDAL, UNCONSOL SHORE, COBBLE
R1US2	Riverine	Sand, Unconsolidated Shore, Tidal, Riverine	R1US2-RIVERINE, TIDAL, UNCONSOL SHORE, SAND
R1US3	Riverine	Mud, Unconsolidated Shore, Tidal, Riverine	R1US3-RIVERINE, TIDAL, UNCONSOL SHORE, MUD
R1US4	Riverine	Organic, Unconsolidated Shore, Tidal, Riverine	R1US4-RIVERINE, TIDAL, UNCONSOL SHORE, ORGANIC
R1US5	Riverine	Vegetated, Unconsolidated Shore, Tidal, Riverine	R1US5-RIVERINE, TIDAL, UNCONSOL SHORE, VEGETAT
R2	Riverine	Lower Perennial, Riverine	R2-RIVERINE, LOWER PERENNIAL
R2AB	Riverine	Aquatic Bed, Lower Tidal, Riverine	R2AB-RIVERINE, LOWER PEREN, AQUA BED
R2AB1	Riverine	Algal, Aquatic Bed, Lower Tidal, Riverine	R2AB1-RIVERINE, LOWER PEREN, AQUA BED, ALGAL
R2AB2	Riverine	Aquatic Moss, Aquatic Bed, Lower Tidal, Riverine	R2AB2-RIVERINE, LOWER PEREN, AQUA BED, AQ MOSS
R2AB3	Riverine	Rooted Vascular, Aquatic Bed, Lower Tidal, Riverine	R2AB3-RIVERINE, LOWER PEREN, AQUA BED, ROOT VASC
R2AB4	Riverine	Floating Vascular, Aquatic Bed, Lower Tidal, Riverine	R2AB4-RIVERINE, LOWER PEREN, AQUA BED, FLOAT VAS
R2AB5	Riverine	Unknown Submergent, Aquatic Bed, Lower Tidal, Riverine	R2AB5-RIVERINE, LOWER PEREN, AQUA BED, UNK SUB
R2AB6	Riverine	Unknown Surface, Aquatic Bed, Lower Tidal, Riverine	R2AB6-RIVERINE, LOWER PEREN, AQUA BED, UNK SURF
R2EM	Riverine	Emergent, Lower Tidal, Riverine	R2EM-RIVERINE, LOWER PEREN, EMERGENT
R2EM2	Riverine	Nonpersistent, Emergent, Lower Tidal, Riverine	R2EM2-RIVERINE, LOWER PEREN, EMERGENT, NONPERS
R2RB	Riverine	Rock Bottom, Lower Perennial, Riverine	R2RB-RIVERINE, LOWER PEREN, ROCK BOTTOM
R2RB1	Riverine	Bedrock, Rock Bottom, Lower Perennial, Riverine	R2RB1-RIVERINE, LOWER PEREN, ROCK BOT, BEDROCK
R2RB2	Riverine	Rubble, Rock Bottom, Lower Perennial, Riverine	R2RB2-RIVERINE, LOWER PEREN, TOCK BOT, RUBBLE
R2RS	Riverine	Rocky Shore, Lower Tidal, Riverine	R2RS-RIVERINE, LOWER PEREN, ROCKY SHORE
R2RS1	Riverine	Bedrock, Rocky Shore, Lower Tidal, Riverine	R2RS1-RIVERINE, LOWER PEREN, ROCKY SHORE, BEDRK
R2RS2	Riverine	Rubble, Rocky Shore, Lower Tidal, Riverine	R2RS2-RIVERINE, LOWER PEREN, ROCKY SHORE, RUBBL
R2UB	Riverine	Unconcolidated Bottom, Lower Perennial, Riverine	R2UB-RIVERINE, LOWER PEREN, UNCONSOL BOT
R2UB1	Riverine	Cobble-Gravel, Unconsolidated Bottom, Lower Perennial, Riverine	R2UB1-RIVERINE, LOWER PEREN, UNCONSOL BOT, COB
R2UB2	Riverine	Sand, Unconsolidated Bottom, Lower Perennial, Riverine	R2UB2-RIVERINE, LOWER PEREN, UNCONSOL BOT, SAN
R2UB3	Riverine	Mud, Unconsolidated Bottom, Lower Perennial, Riverine	R2UB3-RIVERINE, LOWER PEREN, UNCONSOL BOT, MUD
R2UB4	Riverine	Organic, Unconsolidated Bottom, Lower Perennial, Riverine	R2UB4-RIVERINE, LOWER PEREN, UNCONSOL BOT, ORG
R2US	Riverine	Unconsolidated Shore, Lower Tidal, Riverine	R2US-RIVERINE, LOWER PEREN, UNCONSOL SHORE
R2US1	Riverine	Cobble-Gravel, Unconsolidated Shore, Lower Tidal, Riverine	R2US1-RIVERINE, LOWER PEREN, UNCONSOL SHR, COB
R2US2	Riverine	Sand, Unconsolidated Shore, Lower Tidal, Riverine	R2US2-RIVERINE, LOWER PEREN, UNCONSOL SHR, SAN
R2US3	Riverine	Rooted Vascular, Unconsolidaated Shore, Lower Tidal, Riverine	R2US3-RIVERINE, LOWER PEREN, UNCONSOL SHR, RV
R2US4	Riverine	Floating Vascular, Unconsolidated Shore, Lower Tidal, Riverine	R2US4-RIVERINE, LOWER PEREN, UNCONSOL SHR, FV
R2US5	Riverine	Unknown Submergent, Unconsolidated Shore, Lower Tidal, Riverine	R2US5-RIVERINE, LOWER PEREN, UNCONSOL SHR, UN SUB
R2US6	Riverine	Unknown Surface, Unknown Surface, Lower Tidal, Riverine	R2US6-RIVERINE, LOWER PEREN, UNCONSOL SHR, UNK SUR
R3	Riverine	Upper Perennial, Riverine	R3-RIVERINE, UPPER PERENNIAL
R3AB	Riverine	Aquatic Bed, Upper Perennial, Riverine	R3AB-RIVERINE, UPPER PEREN, AQUA BED
R3AB1	Riverine	Algal, Aquatic Bed, Upper Perennial, Riverine	R3AB1-RIVERINE, UPPER PEREN, AQUA BED, ALGAL
R3AB2	Riverine	Aquatic Moss, Aquatic Bed, Upper Perennial, Riverine	R3AB2-RIVERINE, UPPER PEREN, AQUA BED, AQUA MOSS
R3AB3	Riverine	Rooted Vascular, Aquatic Bed, Upper Perennial, Riverine	R3AB3-RIVERINE, UPPER PEREN, AQUA BED, ROOT VAS
R3AB4	Riverine	Floating Vascular, Aquatic Bed, Upper Perennial, Riverine	R3AB4-RIVERINE, UPPER PEREN, AQUA BED, FLOAT VAS

R3AB5	Riverine	Unknown Submergent, Aquatic Bed, Upper Perennial, Riverine	R3AB5-RIVERINE, UPPER PEREN, AQUA BED, UNK SUB
R3AB6	Riverine	Unknown Surface, Aquatic Bed, Upper Perennial, Riverine	R3AB6-RIVERINE, UPPER PEREN, AQUA BED, UNK SURF
R3RB	Riverine	Rock Bottom, Upper Perennial, Riverine	R3RB-RIVERINE, UPPER PEREN, ROCK BOTTOM
R3RB1	Riverine	Bedrock, Rock Bottom, Upper Perennial, Riverine	R3RB1-RIVERINE, UPPER PEREN, ROCK BOT, BEDROCK
R3RB2	Riverine	Rubble, Rock Bottom, Upper Perennial, Riverine	R3RB2-RIVERINE, UPPER PEREN, ROCK BOT, RUBBLE
R3RS	Riverine	Rocky Shore, Upper Perennial, Riverine	R3RS-RIVERINE, UPPER PEREN, ROCKY SHORE
R3RS1	Riverine	Bedrock, Rocky Shore, Upper Perennial, Riverine	R3RS1-RIVERINE, UPPER PEREN, ROCKY SHR, BEDROCK
R3RS2	Riverine	Rubble, Rocky Shore, Upper Perennial, Riverine	R3RS2-RIVERINE, UPPER PEREN, ROCKY SHR, RUBBLE
R3UB	Riverine	Unconsolidated Bottom, Upper Perennial, Riverine	R3UB-RIVERINE, UPPER PEREN, UNCONSOL BOT
R3UB1	Riverine	Cobble-Gravel, Unconsolidated Bottom, Upper Perennial, Riverine	R3UB1-RIVERINE, UPPER PEREN, UNCONSOL BOT, COBBLE
R3UB2	Riverine	Sand, Unconsolidated Bottom, Upper Perennial, Riverine	R3UB2-RIVERINE, UPPER PEREN, UNCONSOL BOT, SAND
R3UB3	Riverine	Mud, Unconsolidated Bottom, Upper Perennial, Riverine	R3UB3-RIVERINE, UPPER PEREN, UNCONSOL BOT, MUD
R3UB4	Riverine	Organic, Unconsolidated Bottom, Upper Perennial, Riverine	R3UB4-RIVERINE, UPPER PEREN, UNCONSOL BOT, ORGAN
R3US	Riverine	Unconsolidated Shore, Upper Perennial, Riverine	R3US-RIVERINE, UPPER PEREN, UNCONSOL SHR
R3US1	Riverine	Cobble-Gravel, Unconsolidated Shore, Upper Perennial, Riverine	R3US1-RIVERINE, UPPER PEREN, UNCONSOL SHR, COBBLE
R3US2	Riverine	Sand, Unconsolidated Shore, Upper Perennial, Riverine	R3US2-RIVERINE, UPPER PEREN, UNCONSOL SHR, SAND
R3US3	Riverine	Mud, Unconsolidated Shore, Upper Perennial, Riverine	R3US3-RIVERINE, UPPER PEREN, UNCONSOL SHR, MUD
R3US4	Riverine	Organic, Unconsolidated Shore, Upper Perennial, Riverine	R3US4-RIVERINE, UPPER PEREN, UNCONSOL SHR, ORGANIC
R3US5	Riverine	Vegetated, Unconsolidated Shore, Upper Perennial, Riverine	R3US5-RIVERINE, UPPER PEREN, UNCONSOL SHR, VEGETATED
R4	Riverine	Intermittent, Riverine	R4-RIVERINE, INTERMIT
R4SB	Riverine	Streambed, Intermittent, Riverine	R4SB-RIVERINE, INTERMIT, STREAMBED
R4SB1	Riverine	Bedrock, Streambed, Intermittent, Riverine	R4SB1-RIVERINE, INTERMIT, STREAMBED, BEDROCK
R4SB2	Riverine	Rubble, Streambed, Intermittent, Riverine	R4SB2-RIVERINE, INTERMIT, STREAMBED, RUBBLE
R4SB3	Riverine	Cobble-Gravel, Streambed, Intermittent, Riverine	R4SB3-RIVERINE, INTERMIT, STREAMBED, COBBLE
R4SB4	Riverine	Sand, Streambed, Intermittent, Riverine	R4SB4-RIVERINE, INTERMIT, STREAMBED, SAND
R4SB5	Riverine	Mud, Streambed, Intermittent, Riverine	R4SB5-RIVERINE, INTERMIT, STREAMBED, MUD
R4SB6	Riverine	Organic, Streambed, Intermittent, Riverine	R4SB6-RIVERINE, INTERMIT, STREAMBED, ORGANIC
R4SB7	Riverine	Vegetated, Streambed, Intermittent, Riverine	R4SB7-RIVERINE, INTERMIT, STREAMBED, VEGETATED
R5	Riverine	Unknown Perennial, Riverine	R5-RIVERINE, UNKNOWN PERENNIAL
R5AB	Riverine	Aquatic Bed, Unknown Perennial, Riverine	R5AB-RIVERINE, UNK PEREN, AQUA BED
R5AB1	Riverine	Algal, Aquatic Bed, Unknown Perennial, Riverine	R5AB1-RIVERINE, UNK PEREN, AQUA BED, ALGAL
R5AB2	Riverine	Aquatic Moss, Aquatic Bed, Unknown Perennial, Riverine	R5AB2-RIVERINE, UNK PEREN, AQUA BED, AQUA MOSS
R5AB3	Riverine	Rooted Vascular, Aquatic Bed, Unknown Perennial, Riverine	R5AB3-RIVERINE, UNK PEREN, AQUA BED, ROOT VASC
R5AB4	Riverine	Floating Vascular, Aquatic Bed, Unknown Perennial, Riverine	R5AB4-RIVERINE, UNK PEREN, AQUA BED, FLOAT VASC
R5AB5	Riverine	Unknown Submergent, Aquatic Bed, Unknown Perennial, Riverine	R5AB5-RIVERINE, UNK PEREN, AQUA BED, UNK SUB
R5AB6	Riverine	Unknown Surface, Aquatic Bed, Unknown Perennial, Riverine	R5AB6-RIVERINE, UNK PEREN, AQUA BED, UNK SURF
R5RB	Riverine	Rock Bottom, Unknown Perennial, Riverine	R5RB-RIVERINE, UNK PEREN, ROCK BOTTOM
R5RB1	Riverine	Bedrock, Rock Bottom Unknown Perennial, Riverine	R5RB1-RIVERINE, UNK PEREN, ROCK BOTTOM, BEDROCK
R5RB2	Riverine	Rubble, Rock Bottom, Unknown Perennial, Riverine	R5RB2-RIVERINE, UNK PEREN, ROCK BOTTOM, RUBBLE
R5RS	Riverine	Rocky Shore, Unknown Perennial, Riverine	R5RS-RIVERINE, UNK PEREN, ROCKY SHORE
R5RS1	Riverine	Bedrock, Rocky Shore, Unknown Perennial, Riverine	R5RS1-RIVERINE, UNK PEREN, ROCKY SHORE, BEDROCK
R5RS2	Riverine	Rubble, Rocky Shore, Unknown Perennial, Riverine	R5RS2-RIVERINE, UNK PEREN, ROCKY SHORE, RUBBLE
R5UB	Riverine	Unconsolidated Bottom, Unknown Perennial, Riverine	R5UB-RIVERINE, UNK PEREN, UNCONSOLIDATED BOTTOM
R5UB1	Riverine	Cobble-Gravel, Unconsolidated Bottom, Unknown Perennial, Riverine	R5UB1-RIVERINE, UNK PEREN, UNCONSOL BOT, COBBLE
R5UB2	Riverine	Sand, Unconsolidated Bottom, Unknown Perennial, Riverine	R5UB2-RIVERINE, UNK PEREN, UNCONSOT BOT, SAND
R5UB3	Riverine	Mud, Unconsolidated Bottom, Unknown Perennial, Riverine	R5UB3-RIVERINE, UNK PEREN, UNCONSOL BOT, MUD
R5UB4	Riverine	Organic, Unconsolidated Bottom, Unknow Perennial, Riverine	R5UB4-RIVERINE, UNK PEREN, UNCONSOL BOT, ORGANIC
R5US	Riverine	Unconsolidated Shore, Unknown Perennial, Riverine	R5US-RIVERINE, UNK PEREN, UNCONCOL SHORE
R5US1	Riverine	Cobble-Gravel, Unconsolidated Shore, Riverine	R5US1-RIVERINE, UNK PEREN, UNCONSOL SHR, COBBLE
R5US2	Riverine	Sand, Unconsolidated Shore, Unknown Perennial, Riverine	R5US2-RIVERINE, UNK PEREN, UNCONSOL SHR, SAND
R5US3	Riverine	Mud, Unconsolidated Shore, Unknown Perennial, Riverine	R5US3-RIVERINE, UNK PEREN, UNCONSOL SHR, MUD
R5US4	Riverine	Organic, Unconsolidated Shore, Unknown Perennial, Riverine	R5US4-RIVERINE, UNK PEREN, UNCONSOL SHR, ORGANIC
R5US5	Riverine	Vegetated, Unconsolidated Shore, Unknown Perennial, Riverine	R5US5-RIVERINE, UNK PEREN, UNCONSOL SHR, VEGETATED
R6	Riverine	A wetland, spring, stream, river, pond or lake that only exists for a short period	R6 - RIVERINE, EPHEMERAL
U	Uplands	Upland - Not a wetland or deepwater habitat of the United States as described by Cowardin.	U-UPLANDS