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City of San Juan Capistrano
San Juan Creek at Rancho Mission Viejo Riding Park
Ordinary High Water Mark Delineation
Technical Report

April 2018

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Attorney-Client Privileged Document

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ACRONYMS AND ABBREVIATIONS

Amec Foster Wheeler	Amec Foster Wheeler, Environment and Infrastructure, Inc.
BBK	Best Best & Krieger, LLC
CFR	Code of Federal Regulations
cfs	cubic feet per second
CWA	Clean Water Act
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
GIS	Geographic Information System
NWI	National Wetlands Inventory
OBL	obligate
OHWM	ordinary high water mark
UPL	upland
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WOTUS	Waters of the United States

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1.0 INTRODUCTION

This report identifies the boundary of potentially jurisdictional waters along the eastern margin of San Juan Creek, adjacent to the Rancho Mission Viejo Riding Park (Riding Park) in San Juan Capistrano, Orange County, California. This report presents methods and results of a delineation conducted in April 2018, including identification of an Ordinary High Water Mark (OHWM) and wetlands on the project site. The U.S. Army Corps of Engineers (USACE), in combination with the Environmental Protection Agency, when necessary, reserves the ultimate authority in making the final jurisdictional determination of Waters of the United States (WOTUS) regulated under Section 404 of the Clean Water Act (CWA).

1.1 Project Location

The study area for the OHWM delineation includes the eastern portion of San Juan Creek adjacent to the Riding Park, from south of the Highway 74 bridge to a point within the channel approximately 1,800 feet southwest (Figure 1). The study site is located between approximately 33.5189° North, -117.6250° West; and 33.5145° North, -117.6283° West within the San Juan Capistrano U.S. Geological Survey (USGS) 7.5 minute quadrangle (Figure 2).

Land use to the east of San Juan Creek includes the Riding Park, which is an equestrian facility, and a park and residential community to the west. South of the project area lies the City of San Juan Capistrano where the Creek has been altered to control floods. North of the project area, San Juan Creek lies in a more natural state as it flows through Rancho Mission Viejo and the Santa Ana Mountains.

Regional Map
San Juan Creek at Rancho Mission Viejo Riding Park
City of San Juan Capistrano
Orange County, CA

FIGURE 1

Figure 1. Regional Map

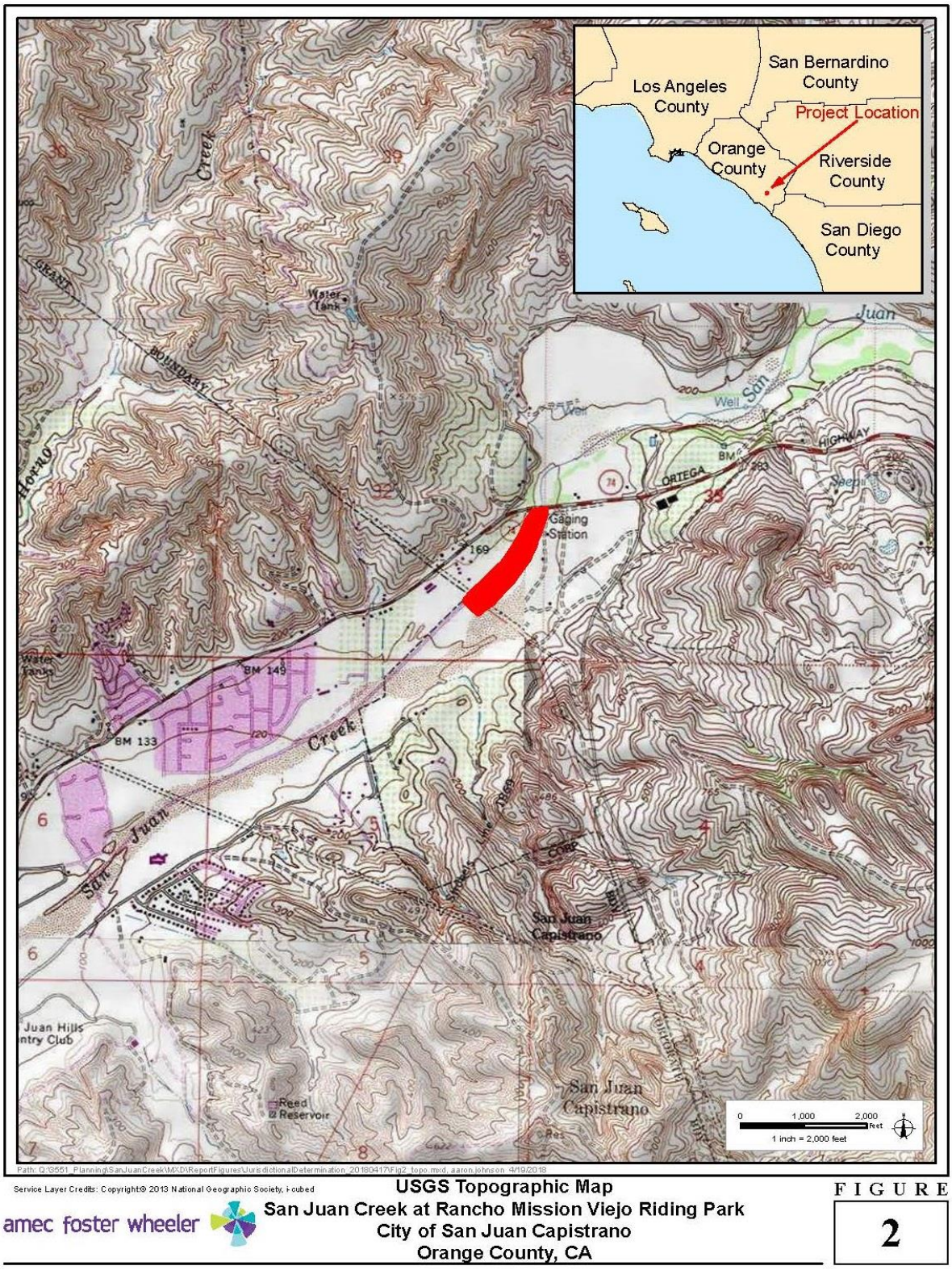

Figure 2. USGS Topographic Map

2.0 ENVIRONMENTAL SETTING

2.1 Existing Conditions

The study area is located immediately downstream of the Highway 74 bridge that crosses San Juan Creek, is approximately 2.3 miles northeast of the Interstate 5 bridge, and only includes the southeastern portion of San Juan Creek adjacent to the Riding Park.

2.2 Hydrology

San Juan Creek originates in the Santa Ana Mountains to the east and drains the Aliso-San Onofre watershed (Hydrologic Unit Code 18070301) of approximately 109 square miles (USGS, 2018).

San Juan Creek is a perennial waterway with a braided stream channel that passes through the project area. Water flow is determined largely by episodic stormwater discharge events in the winter and spring months.

Stormwater discharge generally occurs during the rainy season, primarily October through April. The annual mean rainfall for the area is 10.26 inches based on data from 1928 to 2017, gauged at Laguna Beach (COOP 044647), approximately 9 miles northwest of the project area (Western Regional Climate Center, 2018).

The channel of San Juan Creek is restricted at the Highway 74 bridge to approximately 180 feet in width from top of bank to top of bank. The channel in southern end of the project area is approximately 300 feet wide from bank to bank. Water flows through the study area and travels southwest, approximately 5.2 miles before discharging into the Pacific Ocean.

Peak streamflow data was assessed using USGS gauge station 11046530 on San Juan Creek at La Novia Street Bridge in San Juan Capistrano, approximately 1.4 miles southwest (downstream) of the project site (USGS, 2018). Annual peak streamflow records were reported from 1986 to 2016 at this gauge station, ranging from 19 cubic feet per second (cfs) (recorded in 2013) to 28,500 cfs (recorded in 2005).

2.3 Vegetation

Vegetation communities in the channel transition from wetland [primarily watercress (*Nastertium officinale*), cattail (*Typha latifolia*), and yellow monkey flower (*Mimulus guttatus*)] within the Low-Flow Channels; to early and mid-stage riparian communities [willow (*Salix* sp.), mulefat (*Baccharis salicifolia*), and the invasive species Arundo (*Arundo donax*)] in the Active Floodplain; to late stage (mature) riparian [willow, Arundo, and poison oak (*Toxicodendron diversilobum*)] in the Low Terrace (Baldwin, 2012).

2.4 Soils

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service online Web Soil Survey (Soil Survey Staff, 2018) was consulted to evaluate the soil types mapped within the study area. The study area includes Riverwash and Corralitos loamy sand, both listed on the Hydric soils list for California (USDA, 2018).

2.5 National Wetlands Inventory

The United States Fish and Wildlife Service (USFWS) has developed a series of maps known as the National Wetlands Inventory (NWI) to show wetlands and deepwater habitat with descriptions based on the Cowardin Classification System (Cowardin et. al., 1979). This geospatial information is used for management, research, policy development, education, and planning activities. However, they are not used to determine regulatory authority. Federally regulated wetlands are determined using the "three parameter" method approved by the USACE, which is further described in Section 4.3 below.

NWI wetlands mapped in the project area are shown in Figure 3 (USFWS, 2018) and include:

- R3UBF – Riverine, Upper Perennial, Unconsolidated Bottom, Semi-permanently Flooded
- R3USC – Riverine, Upper Perennial, Unconsolidated Bottom, Seasonally Flooded
- PFOA - Palustrine, Forested, Temporarily Flooded
- PSS/USA - Palustrine, Scrub-Shrub/Unconsolidated Shore, Temporarily Flooded
- PSS/USC - Palustrine, Scrub-Shrub/Unconsolidated Shore, Seasonally Flooded

Figure 3. National Wetlands Inventory

3.0 REGULATORY FRAMEWORK

The USACE regulates the discharge of dredged or fill material in WOTUS pursuant to Section 404 of the CWA. The USACE delineates non-wetland waters in the Arid West Region by identifying the OHWM in perennial, ephemeral, and intermittent channels (Lichvar and McCooley, 2008). The OHWM is defined in 33 CFR 328.3(e) as:

> "…that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impresses on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

Identification of the OHWM involves assessments of stream geomorphology and vegetation response to the dominant stream discharge. Effective discharge events capable of moving the greatest proportion of sediment over time establish the OHWM. In the Arid West region, which is the region of the project site, these ordinary high flows are low- to moderate-discharge events (Lichvar and McCooley, 2008). Low to moderate effective discharges are characterized as occurring roughly every 5–10 years to an inundation extent that correlates with the limit of the active floodplain (Lichvar and McCooley, 2008).

The three distinctive hydrogeomorphic surfaces in many ephemeral and intermittent channels are the Low-Flow Channel, the Active Floodplain, and the Low Terrace, as shown below. Figure 4 illustrates an example of a representative cross section identifying the hydrogeomorphic floodplain units in intermittent and ephemeral channels (Lichvar and McColley, 2008 and Curtis and Lichvar, 2010).

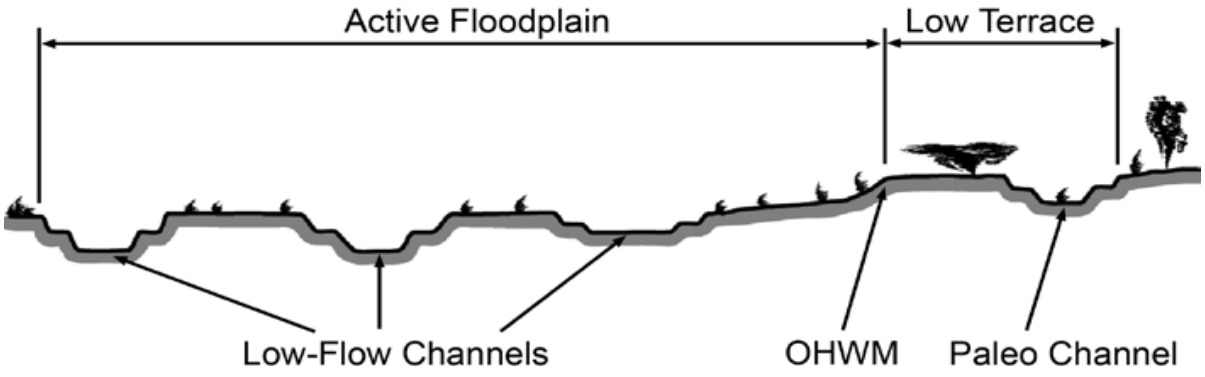

Figure 4. Example of a Representative Cross-Section in Intermittent and Ephemeral Channels

Additionally, the USACE asserts jurisdiction over wetlands adjacent to WOTUS, which may include wetlands that are adjacent to, but outside of the OHWM limits in arid streams, should they occur. Wetlands are defined at 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

4.0 METHODS

A delineation of the OHWM within San Juan Creek adjacent to the Riding Park was conducted in April 2018. Prior to conducting delineation fieldwork, the following literature and materials were reviewed:

- Aerial photographs of the project site (DigitalGlobe, 2016);
- USGS topographic maps (Figure 2) to determine mapped water features;
- USDA soil mapping data;
- USFWS NWI maps (Figure 3) to identify areas mapped as wetland features;
- Topographic maps produced by LiDAR based on aerial survey flown in September 2017 (City of San Juan Capistrano, 2017);
- Review of peak streamflow discharge for 2-, 5-, 10-, and 25-year events (USGS, 2018);
- Review of 10-year flood stage mapped using LiDAR topographic data (City of San Juan Capistrano, 2017); and
- Previous delineations of San Juan Creek (USACE, 2005 and Rancho Mission Viejo Company, 2003).

Field surveys of the project site were conducted by Amec Foster Wheeler delineator and regulatory specialist Nick Ricono on April 4, 2018 and April 13, 2018. Weather conditions during delineation fieldwork were conducive for surveying with clear skies and mild temperatures. Field survey datasheets can be seen in Appendix A.

Despite stormwater controls and infrastructure development within the project area, the section of San Juan Creek adjacent to the Riding Park has established a long-term and relatively stable overall condition based on hydrology, soil, and vegetation characteristics.

4.1 Hydrology

USGS gauge station 11046530 on San Juan Creek at La Novia Street Bridge in San Juan Capistrano, approximately 1.4 miles southwest (downstream) of the project area, was used to assess historical hydrology (USGS, 2018). Annual peak flood frequency analysis was conducted using HEC-SSP software to determine 2-, 5-, 10-, and 25-year stream discharge events (City of San Juan Capistrano, 2017). Results include the following:

2-Year = 490 cfs
5-Year = 2,900 cfs
10-Year = 6,700 cfs
25-Year = 15,800 cfs
50-Year = 26,800 cfs
100-Year = 42,300 cfs

Peak streamflow data were represented from 1986 to 2016 (USGS, 2018). The most recent peak flow discharge exceeding the 5-year event, based on recorded data, was a flow of 17,600 cfs measured on December 22, 2010 (USGS, 2018).

The 10-year flood stage (6,700 cfs) was modeled using topographic contour data obtained by LiDAR aerial survey flown in September 2017 and mapped on aerial photographs (City of San Juan Capistrano, 2017).

4.2 OHWM Determination

Field survey methods to determine the OHWM were conducted as established by Lichvar and McCooley (2008) and Curtis and Lichvar (2010), and included the following:

1. Channel and floodplain within the project site were observed in person to develop a general understanding of the overall site characteristics, including geomorphology and vegetation.

2. Cross sections were selected that best reflected the overall characteristics of the site (eight total).

3. At each cross section, hydrogeomorphic floodplain units were identified, recorded, and described on datasheets including Low-Flow Channels, Active Floodplain, and Low Terrace unit types. Indicators were identified in each floodplain unit including sediment texture, vegetation characteristics, and hydrogeomorphic indicators of stream discharge. Indicators noted were observed below, at, and above the OHWM boundary.

4. The transition line between the active floodplain and the low terrace was identified based on indicators, and the OHWM boundary was identified. GPS points were recorded along each transect for each floodplain unit and for the identified OHWM.

4.3 Wetland Determination

Since Federal jurisdiction may extend beyond OHWM where adjacent wetlands are present, wetland information was collected within the Low-Flow Channel, Active Floodplain, and Low Terrace units along Transect 1. Wetland information was based on the *Wetlands Delineation Manual* (USACE, 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2008). Information was recorded at sampling points to determine if an area fulfilled the wetland criteria parameters.

Three criteria must be fulfilled to classify an area as a wetland under the jurisdiction of the USACE:

1. Predominance of hydrophytic vegetation (with greater than 5% cover);

2. The presence of hydric soils; and

3. The presence of wetland hydrology.

Details of these criteria are described below:

- **Hydrophytic Vegetation.** The hydrophytic vegetation criterion is satisfied at a location if greater than 50% of all the dominant species present within the vegetation unit have a wetland indicator status of obligate (OBL), facultative wetland (FACW), or facultative (FAC) (USACE, 2008). An OBL indicator status refers to plants that almost always are a hydrophyte, rarely found in uplands. A FACW indicator status refers to plants that usually are a hydrophyte but are occasionally found in uplands. A FAC indicator status refers to plants that commonly occur as either a hydrophyte or non-hydrophyte. Other wetland indicator statuses include facultative upland (FACU), which includes plants that occasionally are a hydrophyte but usually occur in uplands, upland (UPL) which refers to plants that rarely are a hydrophyte and are almost always in uplands, and plants that are not listed (NL) for plants that do not occur on the National Wetlands Plant List. The wetland indicator status used for this report follows the National Wetland Plant List, Arid West Region (USACE, 2017).
- **Hydric Soils**. The hydric soil criterion is satisfied at a location if soils in the area can be inferred or observed to have a high groundwater table, if there is evidence of prolonged soil saturation, or if there are any indicators suggesting a long-term reducing environment in the upper 18 inches of the soil profile. Reducing conditions are most easily assessed using soil color. Soil colors were evaluated using the Munsell Soil Color Charts (Gretag/Macbeth, 2000).
- **Wetland Hydrology.** The wetland hydrology criterion is satisfied at a location based upon conclusions inferred from field observations that indicate an area has a high probability of being inundated or saturated (flooded, ponded, or tidally influenced) long enough during the growing season to develop anaerobic conditions in the surface soil environment, especially the root zone (USACE, 1987 and USACE, 2008).

Wetland information was recorded on wetland data sheets (Appendix B) inside the Low-Flow Channel, Active Floodplain, and Low Terrace units along Transect 1. Vegetation information was collected and soil pits were dug to identify hydrology and soil characteristics.

4.4 Mapping

OHWM and wetland determination data collection points were recorded using a Trimble GeoXH and Geo XT global positioning system. Upon completion of fieldwork, collected data were incorporated into a Geographic Information System (GIS), along with basemap data.

The GIS data collected in the field was overlaid onto a recent aerial photograph (DigitalGlobe, 2016). Additional points along the OHWM boundary were identified by aerial photo interpretation of vegetation and soil characteristics, and were field-verified during the April 13, 2018 site visit. Site photos taken during fieldwork efforts are in Appendix C.

5.0 RESULTS

The OHWM delineation was conducted using methods describe by Lichvar and McCooley (2008) and Curtis and Lichvar (2010). Additional information was collected to assess the presence of wetlands within and outside of the OHWM limits using USACE approved methods (USACE, 1987 and USACE, 2008). The USACE, in combination with the Environmental Protection Agency, when necessary, reserves the ultimate authority in making the final jurisdictional determination of WOTUS.

5.1 OHWM Determination

Information was collected along eight transects for the identification of Low-Flow Channels, Active Floodplain, Low Terrace, and the point of OHWM. Point locations of the OHWM identified in the field along each transect are shown on Figure 5 (T-1 through T-8). Additional OHWM points identified by aerial photo interpretation and field verified on April 13, 2018 are shown on Figure 5, as well as the approximate boundary of the OHWM based on the April 2018 delineation.

Low-Flow Channels were identified based on topographic changes, vegetation communities, and coarse sand material. Steep banks of 1 to 4 feet (depending upon the channel location) rise out of the Low-Flow Channel to the adjacent Active Floodplain. The Active Floodplain was identified by coarse sand material and early to mid-successional stage vegetation communities (50 to 80% cover), dominated by mulefat and young willow saplings, intermixed with stands of Arundo. The transition to the Low Terrace unit included an elevation change along a sandy bench, vegetation transition to 100% cover dominated by mature willow and poison oak with large stands of Arundo. Soil indicators changed from the coarse sand material in the Active Floodplain to a silty sand mixed with a surface layer of leaf litter and decomposing vegetation in the Low Terrace.

The OHWM was identified by change in average sediment texture (coarse sand to sandy silt with a surface layer of decomposing vegetation), change in vegetation species, successional stage, and cover; and a break in slope identified by an elevated bench of coarse sandy material. The approximate OHWM boundary identified on Figure 5 is based on the site conditions observed in April 2018.

5.2 Wetland Determination

Wetland characteristics were identified inside the Low-Flow Channel, Active Floodplain, and Low Terrace units along Transect 1. Wetlands were identified within the Low-Flow Channel with flowing water, 100% cover of hydrophytic vegetation, and hydric soils. No wetland conditions were found in the Active Floodplain as sandy soils did not indicate hydric soil conditions. Additionally, no wetland conditions were found in the Low Terrace based on lack of hydric soils.

Similar soil, vegetation, and hydrologic conditions were found along each transect within the study area. Wetlands are restricted to the Low-Flow Channels and no adjacent wetlands were identified outside of the OHWM.

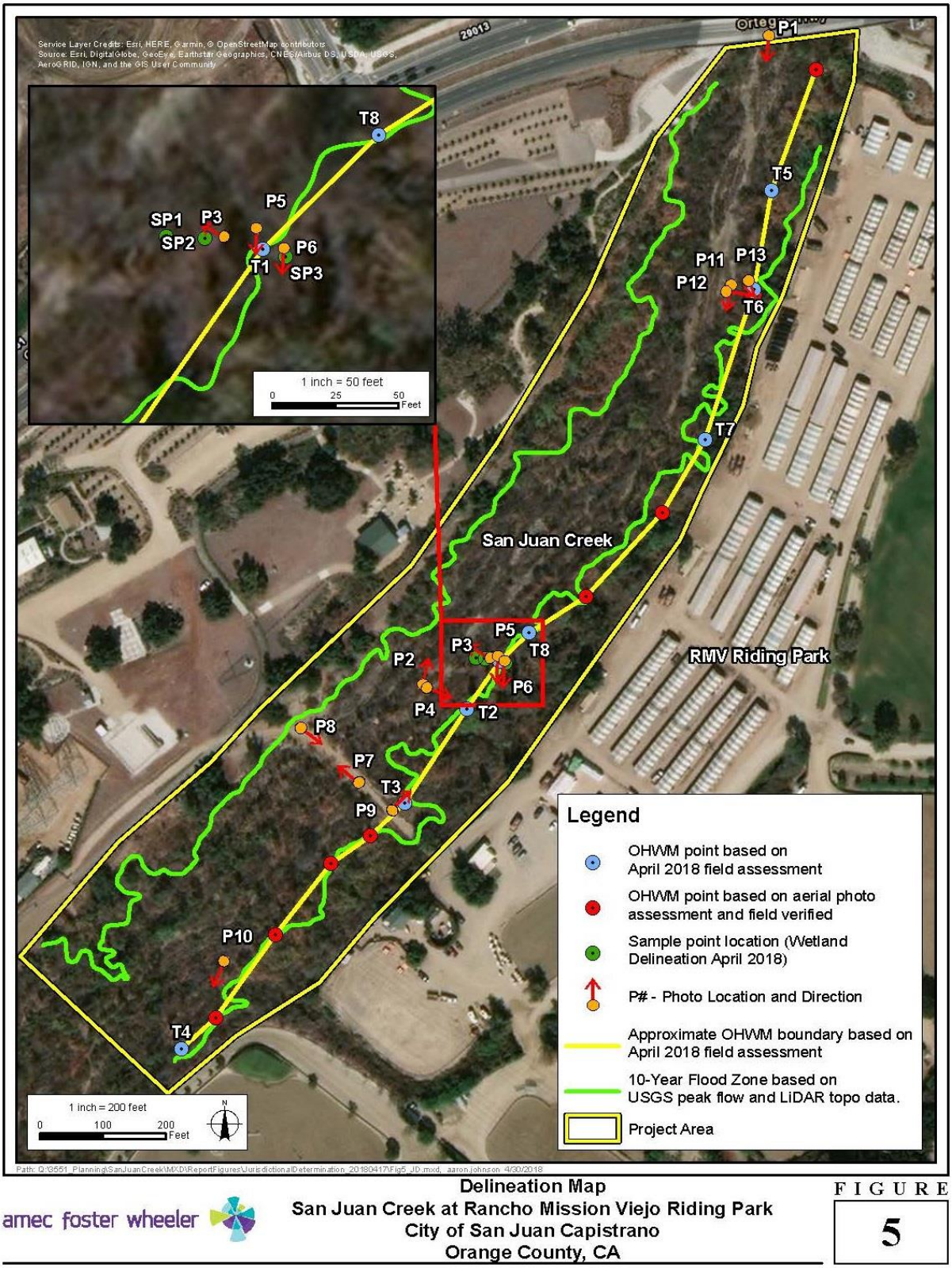

Figure 5. Delineation Map

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APPENDIX A

ORDINARY HIGH WATER MARK DATASHEET

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: RMV Riding Park OHWM
Project Number:
Stream: San Juan Creek
Investigator(s): Nick Ricono

Date: 4/4/18 **Time:** 1000
Town: San Juan Cap **State:** CA
Photo begin file#: **Photo end file#:**

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: San Juan creek Southbk H74 Bridge

Projection: NAD 83 **Datum:**
Coordinates: State Plane zone 6 (feet)

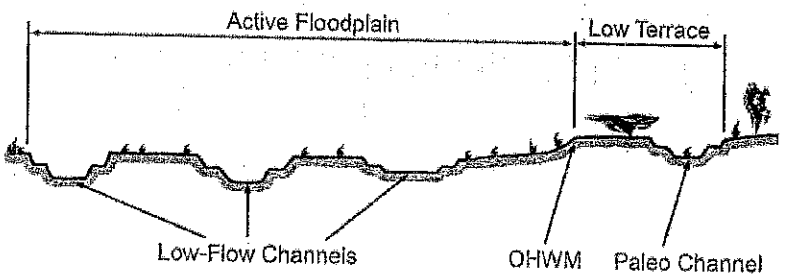
Potential anthropogenic influences on the channel system:
Channel has been modified historically for storm water (flooding) controls i.e. restricted channel reach, armoring stream banks
Farm road constructed across channel with culverts, damaged in 2017 storm.

Brief site description: Braided stream channel w/ perennial flow in low-flow channel. LFC #s 1 to 3 as the stream flows south from restriction at H 74 bridge, steep banks provide 100 year flood restriction.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2016
- [X] Topographic maps
- [ ] Geologic maps
- [X] Vegetation maps
- [X] Soils maps
- [X] Rainfall/precipitation maps
- [X] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [X] Other studies
- [X] Stream gage data
  Gage number:
  Period of record:
  - [X] History of recent effective discharges
  - [X] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [X] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

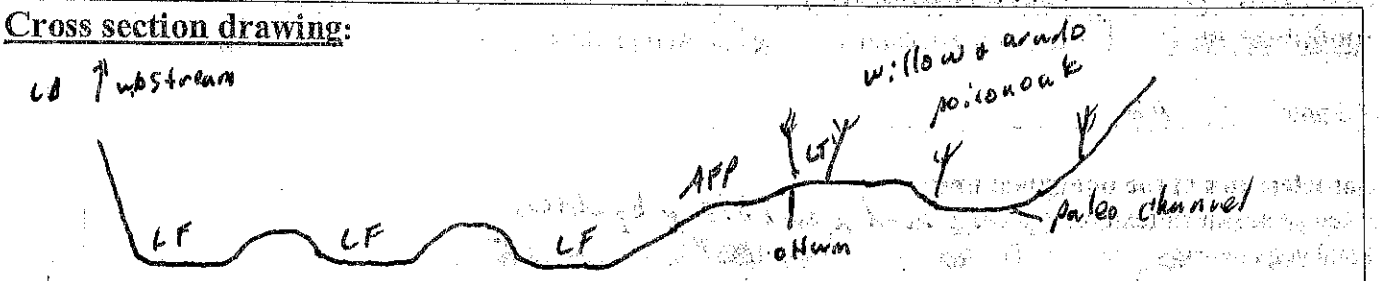


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

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

Project ID: RMV **Cross section ID:** T1 **Date:** 4/4/18 **Time:** 10:35

Cross section drawing:



OHWM

GPS point: T1-OHWM

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments: Elevated bank of sand material. Drift + deposits trapped at lower elevations. Veg transition from 40% cover in AFP to 100% cover in LT. Successional stage shift to mature willow + Arundo stands. Sandy soil to silty soil w/ leaf litter + decomposing veg layer.

Floodplain unit:

- [ ] Low-Flow Channel
- [ ] Active Floodplain
- [x] Low Terrace

GPS point: T1 P1

Characteristics of the floodplain unit:

Average sediment texture: Fine silty sand w/ veg leaf litter

Total veg cover: 100 % Tree: 80 % Shrub: 60 % Herb: 100 %

Community successional stage: willow Arundo Poison oak

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [x] Late (herbaceous, shrubs, mature trees)

Indicators:

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

Comments: silty soil w/ leaf litter + decomposing veg layer. Heavily vegetated w/ mature willow + Arundo stands. 90% poison oak in understory.

Project ID: RMV **Cross section ID:** T1 **Date:** 4/4/18 **Time:**

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

GPS point: T1 P2

Characteristics of the floodplain unit:

Average sediment texture: Coarse Sand & cobble & boulders

Total veg cover: 40 % Tree: 40 % Shrub: 40 % Herb: 35 %

Community successional stage: willow, amb, Mule Fat

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

Indicators:

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

Comments: Coarse sand w/ cobble & boulders
Sparse vegetation (40%) w/ early to mid successional stage
Mule fat dominated w/ tree tobacco & Artemisia douglasiana

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

GPS point: T1 P3

Characteristics of the floodplain unit:

Average sediment texture: Fine silty Sand

Total veg cover: 100 % Tree: 0 % Shrub: 60 % Herb: 100 %

Community successional stage:

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

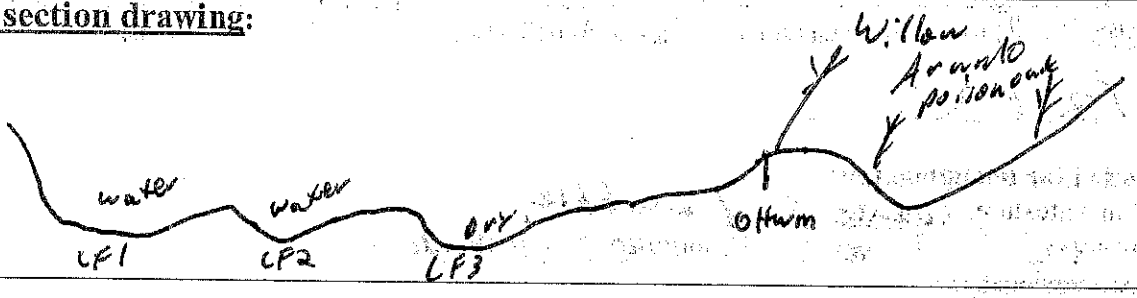
Indicators:

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

Comments: Dense herb layer of Juncus, Mimulus, Cyperus,
Shrub layer of S. salicifolia, Tamarix, Salix, Arundo

Project ID: RMV **Cross section ID:** T2 **Date:** 4/14/18 **Time:** 11:00

Cross section drawing:



OHWM

GPS point: T2 OHWM

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments: Elevated bank of sandy material
uneven cover of mature vegetation (willows Arundo)
transition from sandy soil to silty sand w veg layer

Floodplain unit:

- [ ] Low-Flow Channel
- [ ] Active Floodplain
- [x] Low Terrace

GPS point: T2 P1

Characteristics of the floodplain unit:

Average sediment texture: silty sand w/ veg layer
Total veg cover: 80 % Tree: 80% Shrub: 60 % Herb: 90 % poison oak
Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [x] Late (herbaceous, shrubs, mature trees)

Indicators:

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

Comments: silty sand with layer of decomposing veg
Heavily vegetated mature willow & Arundo

Project ID: AMV **Cross section ID:** T2 **Date:** 4/4/18 **Time:**

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

GPS point: T2 P2

Characteristics of the floodplain unit:

Average sediment texture: Coarse Sand & cobble

Total veg cover: 40 % Tree: 40 % Shrub: 40 % Herb: 30 %

Community successional stage:

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

Indicators:

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

Comments: Cobble-Coarse Sand Bench w Mulefat dom shrub layer early to mid Successional stage

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

GPS point: T2 P3

Characteristics of the floodplain unit:

Average sediment texture: Fine Silty Sand

Total veg cover: 20 % Tree: 0 % Shrub: 0 % Herb: 20% Mulefat

Community successional stage:

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

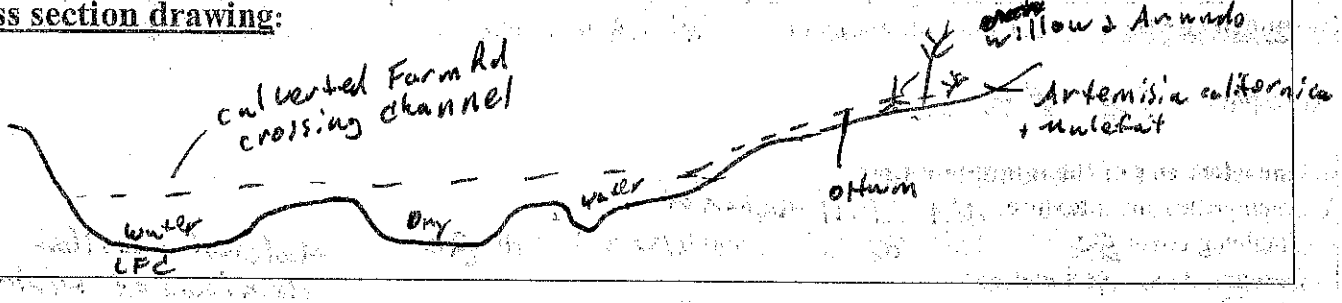
Indicators:

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

Comments: Early stage Mulefat sprouting through moist soil

Project ID: **Cross section ID:** T3 **Date:** 4/4/18 **Time:** 12:00

Cross section drawing:



OHWM

GPS point: T3 OHWM

Indicators:

- [ ] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments: Channel has been altered by placement of a culverted road w/ concrete & riprap addition. OHWM was determined by change in veg species transitioning to Artemesia californica upland community. General trend upstream and downstream transition to mature willow & Arundo community.

Floodplain unit:

- [ ] Low-Flow Channel
- [ ] Active Floodplain
- [x] Low Terrace

GPS point: T3 P3

Characteristics of the floodplain unit:

Average sediment texture: NA- Artificial fill for Rd construction

Total veg cover: 90 % Tree: 40 % Shrub: 60 % Herb: 90 % NVG

Community successional stage: willow → Mulefat & Art. Cal.

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [x] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [ ] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [x] Other: Veg community
- [ ] Other: _____
- [ ] Other: _____

Comments: low terrace included mature willow shrub community w/ Mulefat & cal sagebrush community. upstream & downstream visual of surface relief & veg stage transition was used to assess more natural conditions

Project ID: RMV **Cross section ID:** T3 **Date:** 4/4/18 **Time:**

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

GPS point: T3 P2

Characteristics of the floodplain unit:

Average sediment texture: NA Fill material

Total veg cover: 80 % Tree: 40 % Shrub: 80 % Herb: 30 % Mature willow dominated w/ Annuals

Community successional stage:

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

Indicators:

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

Comments: Active Flood Plain determined adjacent to culverted road crossing w/ flowing water.

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

GPS point: T3 P1

Characteristics of the floodplain unit:

Average sediment texture: Silty sand

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

Community successional stage:

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

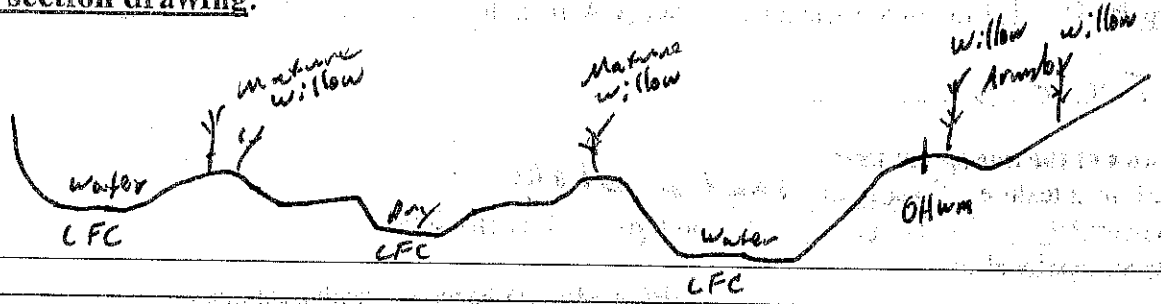
Indicators:

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

Comments: Culverted low flow channel w/ flowing water. Wetland vegetation.

Project ID: **Cross section ID:** T 4 **Date:** 4/4/18 **Time:** 13:20

Cross section drawing:



OHWM

GPS point: T4 OHWM

Indicators:

- [ ] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments: Sandy soil transition to silty sand w/ decomp veg layer. Steep bank against right side of channel. Veg transition from mulefat to mature willow + poison oak, & Arundo

Floodplain unit:

- [ ] Low-Flow Channel
- [ ] Active Floodplain
- [x] Low Terrace

GPS point: T4 P1

Characteristics of the floodplain unit:

Average sediment texture: Silty sand

Total veg cover: 10 % Tree: 80 % Shrub: 90 % Herb: 10 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [x] Late (herbaceous, shrubs, mature trees)

Indicators:

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

Comments: Steep bank to LFC nearby. Mature willow, poison oak, Mulefat against bank, & Arundo.

Project ID: AMV **Cross section ID:** T4 **Date:** 4/4/18 **Time:**

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

GPS point: T4 P2

Characteristics of the floodplain unit:

Average sediment texture: coarse sand & cobble

Total veg cover: 70 % Tree: 0 % Shrub: 10 % Herb: 70 %

Community successional stage:

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

Indicators:

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

Comments: debris stacked up along steep sloping banks; willow shags & mule fat dominant.

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

GPS point: T4P3

Characteristics of the floodplain unit:

Average sediment texture: silty sand

Total veg cover: 80 % Tree: 0 % Shrub: 20 % Herb: 80 %

Community successional stage:

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

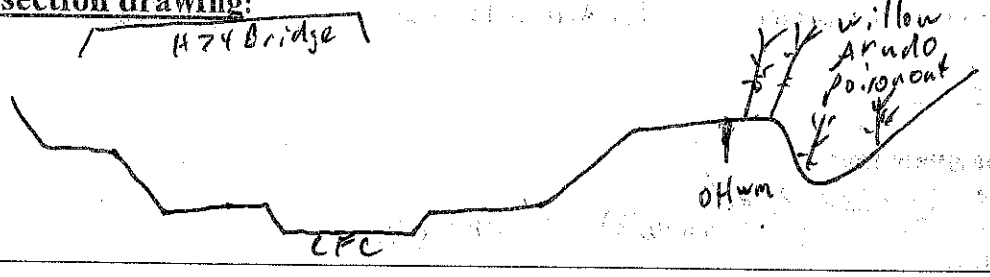
Indicators:

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

Comments: steep banks of LFC rise to AFP. wetland veg of Cyperus, Polygonon, Typha.

Project ID: RMV **Cross section ID:** T5 **Date:** 4/13/18 **Time:** 10:05

Cross section drawing:



OHWM

GPS point: T5 OHWM

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments: Transition to Mature willow, Arundo, & poison oak
Sandy bench transition to silty sand
Approx 8-10' Elevation change above LFC

Floodplain unit:

- [ ] Low-Flow Channel
- [ ] Active Floodplain
- [x] Low Terrace

GPS point: T5 P1

Characteristics of the floodplain unit:

Average sediment texture: Silty sand w/ decomp veg layer

Total veg cover: 100 % Tree: 100% Shrub: 100% Herb: 50 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [x] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris (delete)
- [ ] Presence of bed and bank
- [x] Benches
- [x] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments: Mature veg layer willow & Arundo
Soil transition to silty sand w/ veg layer

Project ID: AMV **Cross section ID:** T5 **Date:** 4/13/18 **Time:**

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

GPS point: T5 P2

Characteristics of the floodplain unit:

Average sediment texture: Coarse Sand

Total veg cover: 50 % Tree: 50 % Shrub: 50 % Herb: 50 %

Community successional stage:

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

Indicators:

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

Comments: Sandy soil in AFP w/ sparse vegetation growth

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

GPS point: T5 P3

Characteristics of the floodplain unit:

Average sediment texture: Coarse Sand

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

Community successional stage:

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

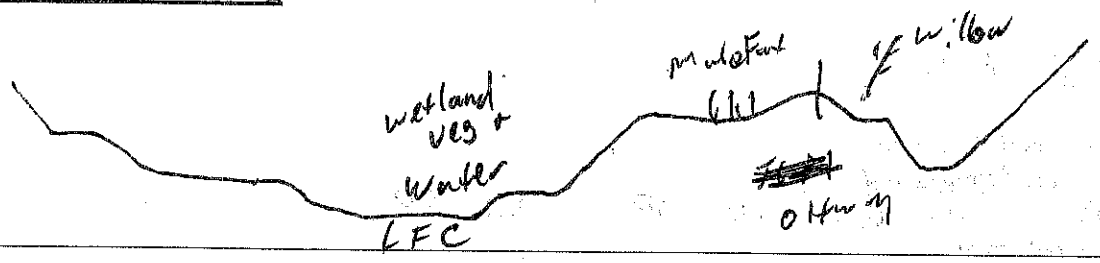
Indicators:

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

Comments: Dense wetland veg community w/ Typha, Nasturtium, Mulefat

Project ID: RMV **Cross section ID:** T6 **Date:** 4/13/18 **Time:** 10:40

Cross section drawing:



OHWM

GPS point: T6OHWM

Indicators:

- [X] Change in average sediment texture
- [X] Change in vegetation species
- [X] Change in vegetation cover
- [ ] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments: ~~Mule~~ Mule Fat to willow (Mature) & Arundo, treeline transition of soil → sandy to silty w/ veg layer

Floodplain unit:

- [ ] Low-Flow Channel
- [ ] Active Floodplain
- [X] Low Terrace

GPS point: T6 P1

Characteristics of the floodplain unit:

Average sediment texture: silty sand w/ decomp veg layer

Total veg cover: 100 % Tree: 50 % Shrub: 30 % Herb: 100 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [X] Late (herbaceous, shrubs, mature trees)

Indicators:

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

Comments: Mature willow & Arundo w/ poison oak

silty soil w/ decomp veg layer.

Project ID: RMV **Cross section ID:** T6 **Date:** 4/17/18 **Time:**

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

GPS point: T6 P2

Characteristics of the floodplain unit:

Average sediment texture: Coarse sand

Total veg cover: 50 % Tree: 0 % Shrub: 50 % Herb: 50 %

Community successional stage:

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

Indicators:

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

Comments: 6' elevation over LFC

Veg community of Mulefat & Arundo

Coarse sandy soil

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

GPS point: T6 P3

Characteristics of the floodplain unit:

Average sediment texture: coarse sand

Total veg cover: 100 % Tree: 0 % Shrub: 10 % Herb: 100 %

Community successional stage:

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

Indicators:

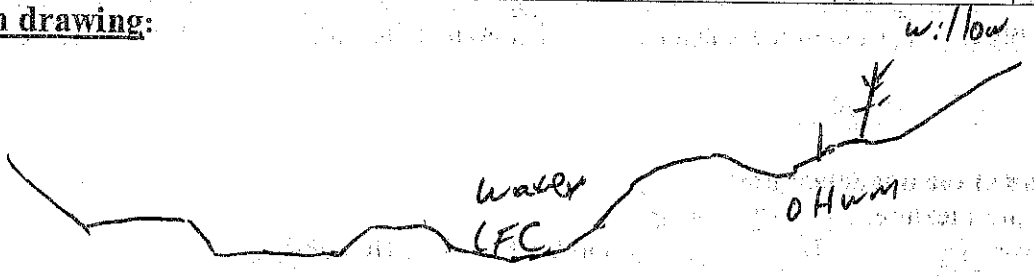
- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☒ Other: water
- ☐ Other: _____
- ☐ Other: _____

Comments: Steep bank of LFC leading to AFP.

Dense wetland veg community

Project ID: RMV **Cross section ID:** T 7 **Date:** 4/13/18 **Time:** 11:15

Cross section drawing:



OHWM

GPS point: T7 OHWM

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [ ] Change in vegetation cover
- [ ] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments: Sand to Silty Sand w/ veg layer

Floodplain unit:

- [ ] Low-Flow Channel
- [ ] Active Floodplain
- [x] Low Terrace

GPS point: T7 FP1

Characteristics of the floodplain unit:

Average sediment texture: Silty sand w/ veg layer

Total veg cover: 90 % Tree: 80 % Shrub: 60 % Herb: 90 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [x] Mid (herbaceous, shrubs, saplings)
- [x] Late (herbaceous, shrubs, mature trees)

Indicators:

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

Comments: mid to late stage vegetation Mature willow, Annuals & poisonoak

Silty sand w/ decomposing veg layer

Project ID: ANV **Cross section ID:** T7 **Date:** 4/13/18 **Time:** 11:15

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

GPS point: T7 P2

Characteristics of the floodplain unit:

Average sediment texture: Coarse Sand

Total veg cover: 80% Tree: 50% Shrub: 80% Herb: 80%

Community successional stage:

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

Indicators:

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

Comments:

Sandy soil
mid stage growth Muletat & Arundo

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

GPS point: T7 P3

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: 100% Tree: 0% Shrub: 80% Herb: 100%

Community successional stage:

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

Indicators:

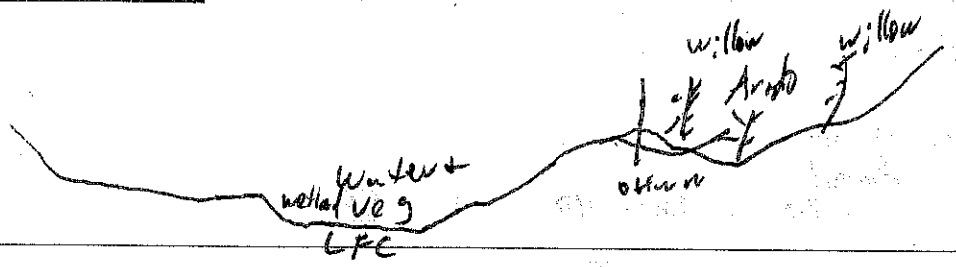
- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☒ Other: water
- ☐ Other: _____
- ☐ Other: _____

Comments:

Dense wetland vegetation in flowing water
Typha & Arundo dominant.

Project ID: AMV **Cross section ID:** T8 **Date:** 4/13/18 **Time:** 12:00

Cross section drawing:



OHWM

GPS point: T8 POHWM

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [ ] Change in vegetation cover
- [ ] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Sand & silt w/ decomposing veg layer
veg cover shrub to Mature Artmo + willow

Floodplain unit:

- [ ] Low-Flow Channel
- [ ] Active Floodplain
- [x] Low Terrace

GPS point: T8P1

Characteristics of the floodplain unit:

Average sediment texture: Silty sand w/ decomp veg layer

Total veg cover: 100 % Tree: 60 % Shrub: 100 % Herb: 10 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [x] Mid (herbaceous, shrubs, saplings)
- [x] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [ ] Presence of bed and bank
- [ ] Benches
- [x] Soil development
- [ ] Surface relief
- [x] Other: Veg Stage
- [ ] Other: _____
- [ ] Other: _____

Comments:

Mid to Late stage artmo & willow

Project ID: AMV **Cross section ID:** T8 **Date:** 4/13/18 **Time:**

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

GPS point: T8 p2

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: 70 % Tree: 70 % Shrub: 40 % Herb: 40 %

Community successional stage:

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

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☐ Presence of bed and bank
- ☑ Benches
- ☐ Soil development
- ☑ Surface relief
- ☑ Other: veg. cover & species
- ☐ Other:
- ☐ Other:

Comments: Mulefat & arundo. veg community

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

GPS point: T8B3

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: 100 % Tree: 0 % Shrub: 10 % Herb: 100 %

Community successional stage:

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

Indicators:

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

Comments: Dense wetland veg. in flowing water. Steep banks of LFC.

APPENDIX B

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: RMV Park at San Juan Creek City/County: San Juan Cap / Orange Sampling Date: 4/4/18

Applicant/Owner: San Juan Capistrano State: CA Sampling Point: JP1

Investigator(s): Nick Ricono Section, Township, Range: Sec 5, T8S, R7W

Landform (hillslope, terrace, etc.): Stream channel Local relief (concave, convex, none): _____ Slope (%): 5

Subregion (LRR): _____ Lat: 33° 30' 58.56" N Long: 117° 37' 36.12" W Datum: NAD83

Soil Map Unit Name: Riverwash NWI classification: PSS / USC

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

Hydric Soil Present? Yes X No _____

Wetland Hydrology Present? Yes X No _____

Is the Sampled Areas within a Wetland? Yes X No _____

Remarks: Site lies in low flow channel 20' upstream of Farm Road crossing that is culverted. San Juan creek is a braided perennial channel with low flow channels, active floodplain, & low terrace units

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Baccharis salicifolia	20%	Y	FAC
2. Arundo donax	20%	Y	FACW
3. Tamarix chinensis	10%	Y	FAC
4. Salix lasiolepis	10%	Y	FACW
5.			
Total Cover:	80		
Herb Stratum			
1. Cyperus eragrostis	20%	Y	FACW
2. Mimulus guttatus	20%	Y	OBL
3. Nasturtium officinale	40%	Y	OBL
4. Typha latifolia	10%	N	OBL
5. Juncus effusus	10%	N	FACW
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Dense vegetation present w/ flowing water.

SOIL Sampling Point: SP1

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"	2.5YR3/3	90					Sand	
0-6"	Gley1 3/N	10					Sand	

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

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

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

Indicators for Problematic Hydric Soils [3]:

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks: Gley sandy material within upper 6" of soil in flowing water.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 4"

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

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

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks: site at edge of low flow channel w/ flowing water.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Juan Creek @ RMV Bank City/County: San Juan Cap / Orange Sampling Date: 4/4/18

Applicant/Owner: San Juan Capistrano State: CA Sampling Point: SP2

Investigator(s): Nick Rivera Section, Township, Range: Sec 5, T 8S, R 7W

Landform (hillslope, terrace, etc.): Stream channel Local relief (concave, convex, none): none Slope (%): 5

Subregion (LRR): _____ Lat: 33° 30' 58.56" Long: 117°37' 35.94" W Datum: NAD83

Soil Map Unit Name: River wash NWI classification: PSS/USC

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

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

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

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

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

Remarks: site lies within the Active Flood plain of San Juan Creek, approx 4' elevation above the low flow channel. Problematic soils are present due to active stream channel influences.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	40	Y	FACW
2.			
3.			
4.			
Total Cover:	40		
Sapling/Shrub Stratum			
1. Arundo donax	20	Y	FACW
2. Baccharis salicifolia	20	Y	FAC
3. Nicotiana glauca	10	Y	FAC
4.			
5.			
Total Cover:	50		
Herb Stratum			
1. Artemisia douglasiana	20	Y	FAC
2. Toxicodendron diversilobum	10	Y	FACU
3. Xanthium strumarium	5	N	FAC
4.			
5.			
6.			
7.			
8.			
Total Cover:	35		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 65 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)
Total Number of Dominant Species Across All Strata: 7 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 86 (A/B)

Prevalence Index worksheet:

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

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

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Sparcity of vegetation cover likely due to high channel flows in 2017 and repeated during the 5-10 yr flood event

SOIL

Sampling Point: SP2

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
0-14	2.5YR 5/3	100					Sand	Coarse Sand

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks: Sandy depositional soils in the active Floodplain. No sign of redox features to a depth of 14 inches. The coarse sandy conditions are not likely to collect or concentrate water outside of large storm events (5-10 year flow based on flood stage mapping).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- X Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): >14"

Water Table Present? Yes ___ No X Depth (inches): >14"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): >14"

Wetland Hydrology Present? Yes X No ___

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

Remarks: Sand deposition indicates active floodplain conditions. Last large storm event took place in 2017 based on anecdotal evidence as USGS Records only occur to 2016 at present. Site likely sits above the 5yr flow stage and below the 10yr. flow stage.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Juan Creek @ RMV City/County: San Juan Cap/Orange Sampling Date: 4/4/18

Applicant/Owner: San Juan Capistrano State: CA Sampling Point: SP3

Investigator(s): Nick Ricono Section, Township, Range: Sec 5, T8S, R7W

Landform (hillslope, terrace, etc.): Stream channel Local relief (concave, convex, none): none Slope (%): 5

Subregion (LRR): Lat: 33°30'58.49" Long: 117°37'35.56"W Datum: NAD83

Soil Map Unit Name: River wash NWI classification: PSS / USC

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

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

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

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

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

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

Remarks: site lies within the Low Terrace unit of San Juan creek outside of the active Floodplain and inside the 100yr floodchannel. Problematic soils are present due to stream channel influences.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	80	Y	FACW
2.			
3.			
4.			
Total Cover:	80		
Sapling/Shrub Stratum			
1. Arundo donax	60	Y	FACW
2.			
3.			
4.			
5.			
Total Cover:	60		
Herb Stratum			
1. Toxicodendron diversilobum	100	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Dense Vegetation growth

SOIL

Sampling Point: SP3

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
0-14	2.5 Y R 3/3	100					Silty Sand	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks: silty sandy soils in the Low Terrace have no sign of redox features to a depth of 14". Presence of leaf litter & vegetation, appears that area was not disturbed during recent high flows in 2017. Conditions & topography are not likely to collect & hold water.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ~~24"~~

Water Table Present? Yes ___ No X Depth (inches): >14"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): >14"

Wetland Hydrology Present? Yes ___ No X

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

Remarks: site lies within the 100 yr flood plain of San Juan Creek but does not appear to have been affected by recent high flows in 2017.

APPENDIX C

SITE PHOTOGRAPHS

Photo 1 (4/4/18): San Juan Creek facing southwest from the Highway 74 Bridge showing hydrogeomorphic conditions of the project area. The Riding Park is on the east (left) bank of this photo. The Low-Flow Channel (with dense wetland vegetation) transitions to the Active Floodplain (sandy soils with sparse vegetation) then to the Low Terrace (with mature willow and large Arundo stands) further east.

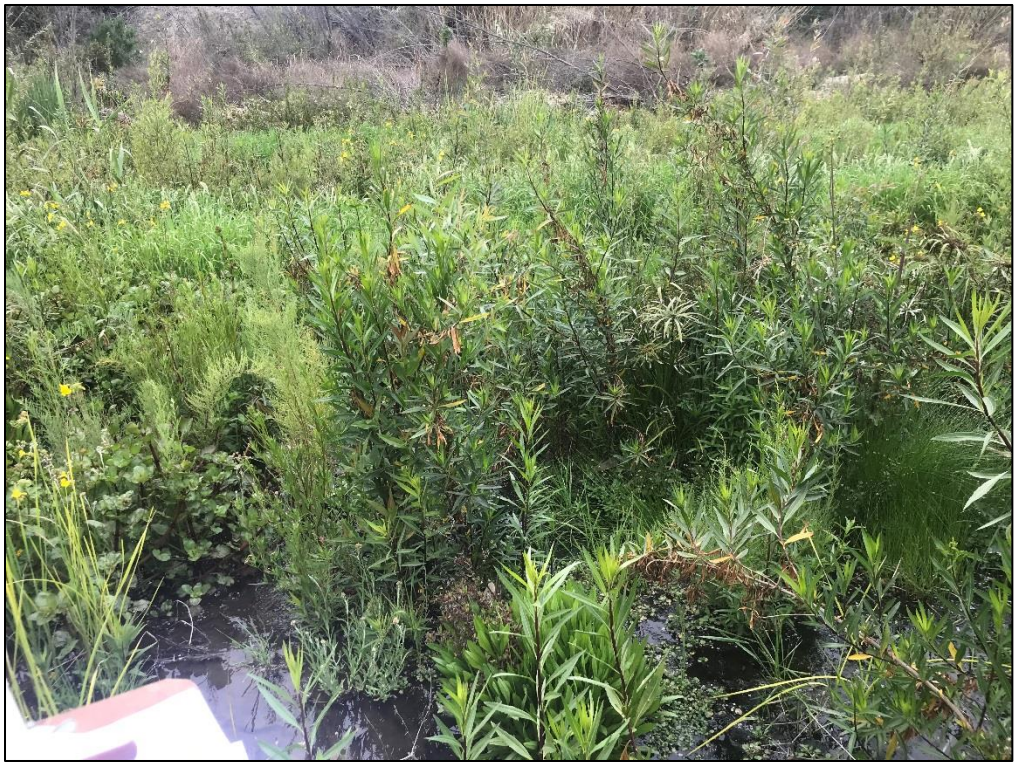


Photo 2 (4/4/18): Dense wetland vegetation and flowing water within the Low-Flow Channel at Transect (T) 2.

Photo 3 (4/4/18): Facing northwest along T2 showing the transition from the Active Floodplain (cobble and sandy soil) to the Low-Flow Channel (dense wetland vegetation).

Photo 4 (4/4/18): Facing southeast along T2 showing the transition from the Low-Flow Channel (moist soil) to the Active Floodplain (cobble and sandy substrate) with the Low Terrace (dense mature willow and Arundo) in the background.

Photo 5 (4/4/18): Facing east along T2 showing the elevated sandy bench that transitions from Active Floodplain (sandy substrate) to Low Terrace (dense mature willow and Arundo in the background.

Photo 6 (4/4/18): Showing soil conditions within the Low Terrace at T2, showing silty sandy soil with leaf litter and decomposing vegetation occurring on the surface.

Photo 7 (4/4/18): Facing northwest along T3 showing culverted farm road crossing San Juan Creek.

Photo 8 (4/4/18): Facing southeast along T3 showing culverted farm road crossing San Juan Creek.

Photo 9 (4/4/18): Facing northeast at the OHWM at T3 with the transition between mulefat (*Baccharis salicifolia*) dominated riparian to *Artemesia californica* dominated upland communities along the farm road.

Photo 10 (4/4/18): Facing southwest showing the east (left) bank of the project area with the Low-Flow Channel rising steeply through the Active Floodplain and into the Low Terrace with mature willow along the bank.

Photo 11 (4/13/18): Facing south-southwest along T5 showing the Low-Flow Channel with dense wetland vegetation rising steeply through the Active Floodplain to the east (left).

Photo 12 (4/13/18): Facing east along T5 showing the Low-Flow Channel with dense wetland vegetation rising steeply through the Active Floodplain to the east.

Photo 13 (4/13/18): Facing south along T5 showing the OHWM where the Active Floodplain transitions to the Low Terrace with dense mature willow riparian communities and silty soil.