Jurisdictional Delineation Report for the Gilman Springs Mine

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1.0 INTRODUCTION

This report describes existing aquatic resources in the Project survey area for the Gilman Springs Mine (Project). This report provides the U.S. Army Corps of Engineers (Corps) and the California Department of Fish and Wildlife (CDFW) with information necessary to assess impacts to jurisdictional resources under the federal Clean Water Act and California Fish and Game Code, respectively.

1.1 Project Description

The Project involves increasing the area for mining by adding 54.5 acres to the 150.44 currently permitted acres, resulting in a total permitted acreage of 204.94 acres. As part of the project, 430.01 acres are proposed to be placed in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Conservation Area. A reclamation and revegetation plan will be prepared for the proposed mine expansion area.

1.2 Project Location

The survey area for this Project is located northeast of the intersection of Gilman Springs Road and Bridge Street in unincorporated Riverside County (County), California, west of the City of Beaumont. It is in an area of the County named The Badlands, which is a mountain range that separates the cities of Beaumont and Moreno Valley (Figures 1 and 2). Access to the mine and survey area is off of Gilman Springs Road south of Bridge Street via a paved, gated, private road.

2.0 ENVIRONMENTAL SETTING

The approximately 134.0-acre survey area for this Project includes land surrounding the northwestern portion of the existing, active mine (i.e., the permitted disturbance area). The survey area is within Section 25, Township 3 South, Ranges 1 and 2 West, as shown on the U.S. Geological Survey (USGS) 7.5-minute El Casco quadrangle map (Figure 2). The proposed mine expansion area was defined to be within this survey area to avoid impacting MSHCP Riparian/Riverine habitats that are present to the east.

The survey area (which does not include the active mine) is undeveloped. A few dirt roads are present. Eleven vegetation communities are present in the survey area including tamarisk scrub, chamise chaparral, chamise chaparral-disturbed, chamise chaparral/Riversidean sage scrub (*Encelia farinosa*-dominated), scrub oak chaparral, Riversidean sage scrub, Riversidean sage scrub (*Artemisia californica*-dominated), Riversidean sage scrub (*Encelia farinosa*-dominated), Riversidean sage scrub (*Encelia farinosa*-dominated-disturbed), non-native grassland, and disturbed habitat.

2.1 Topography

Topographically, the survey area is part of The Badlands, a mountain range that trends northwest–southeast with the San Jacinto Valley to the southwest, the San Timoteo Canyon to the northeast and the San Jacinto Mountains to the east. Elevations in the survey area range from approximately 1,878 to 2,202 feet above mean sea level.

2.2 Hydrology

The survey area is within the Gilman Hot Springs Hydrologic Subarea of the San Jacinto Valley Hydrologic Unit in the Santa Ana River Basin. The Santa Ana Region (Region 8) is located roughly between Los Angeles and San Diego (California Regional Water Quality Control Board 2016).

2.3 Surrounding Land Uses

Immediate, surrounding land uses to the survey area include undeveloped land throughout the remainder of the Chandler Aggregates property. Outside the property to the west lies Gilman Springs Road. Undeveloped land lies outside the remainder of the Chandler Aggregates property to the north, south, and east.

3.0 METHODS

A delineation of potential jurisdictional features was conducted on October 30, 2017 by Rocks Biological Consulting. As stated in Section 2.0 of this report, the proposed mine expansion area was defined to be within the identified survey area to avoid impacting MSHCP Riparian/Riverine habitats that are present to the east. This identified survey area, within which the mine expansion is proposed, is a result of the delineation of potential jurisdictional features. Most of the wetland sample points and ordinary high water mark (OHWM) data points, therefore, lie just east of the identified survey area. Since the soils, vegetation, and topographic conditions within the area delineated to the east are very similar to the conditions within the identified survey area, the data from the wetland sample points and OHWM data points were extrapolated to the identified survey area for the proposed mine expansion.

Areas were determined to be potential non-wetland waters of the U.S. (WUS) if there was evidence of regular surface flow (e.g., bed and bank), but neither the vegetation criterion nor soils criterion was met. The potential jurisdictional limits for these areas were defined by the OHWM, which is defined in 33 Code of Federal Regulations Section 329.11 as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas.” The U.S. Army Corps of Engineers (Corps; 2008a) has issued further guidance on the OHWM (Riley 2005), which was also used for the delineation. The OHWM widths were measured to the nearest foot at various locations along each channel.

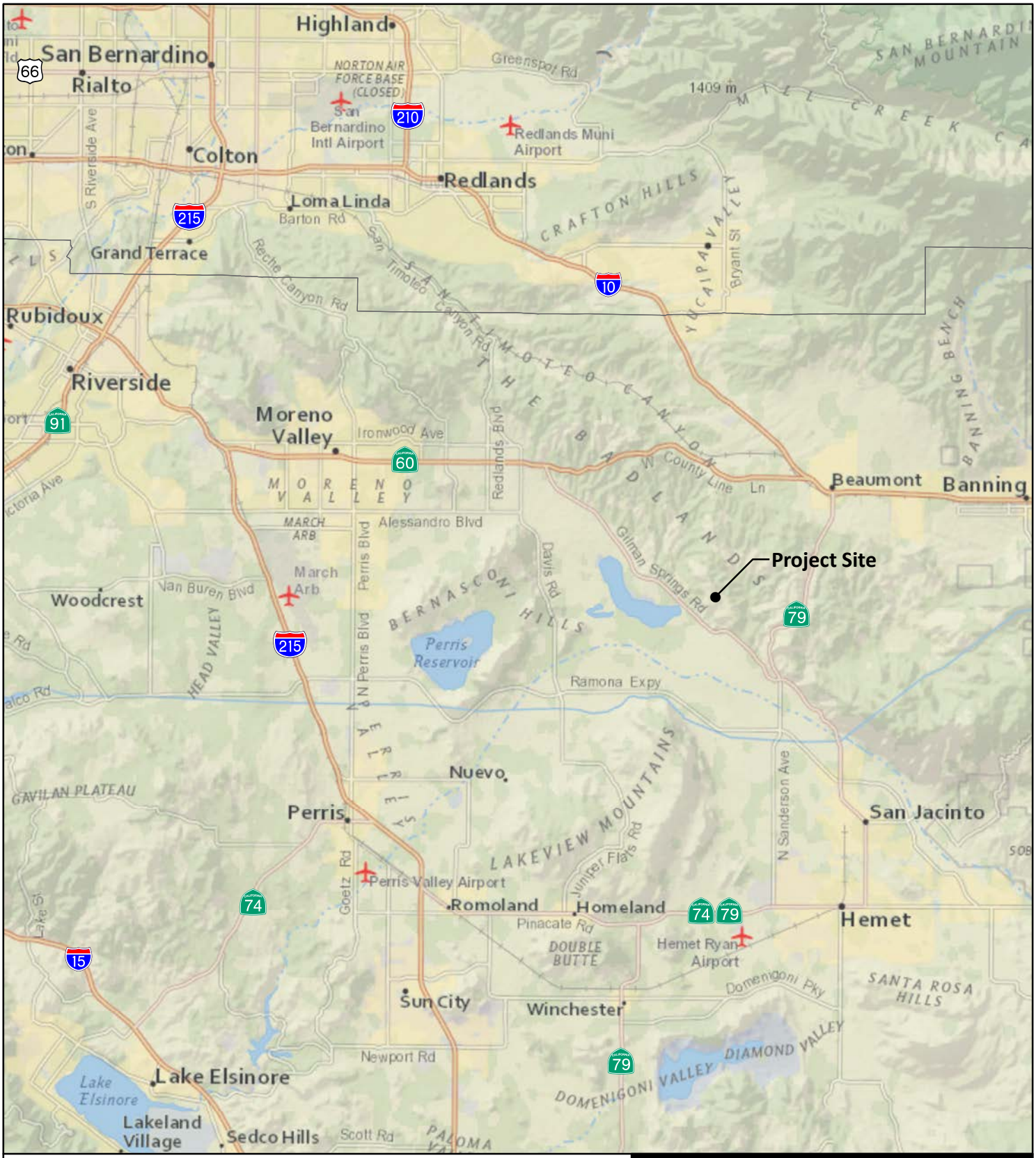

Figure 1

Regional Location

GILMAN SPRINGS MINE
JURISDICTIONAL DELINEATION REPORT

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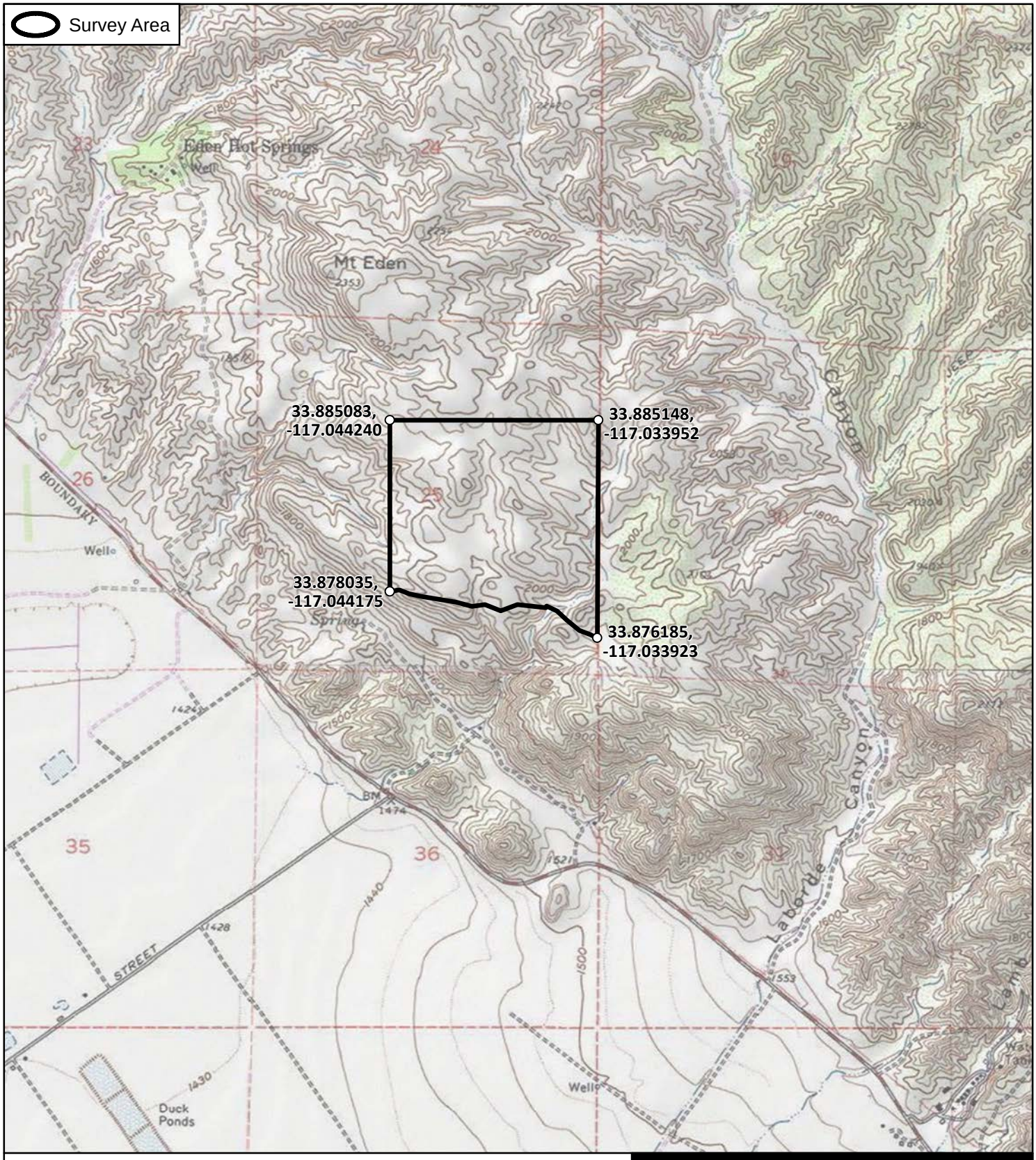

USGS Quadrangles: El Casco, Lakeview
Township 03S, Range 02W, Section 25

Figure 2

Project Location

GILMAN SPRINGS MINE
JURISDICTIONAL DELINEATION REPORT

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Potential CDFW jurisdictional boundaries (i.e., Waters of the State [WS]) were determined based on the presence of riparian vegetation or regular surface flow. Streambeds were delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). This definition for CDFW jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., oak woodland and alluvial fan sage scrub). Streambed widths were measured to the nearest foot at various locations along each channel.

Three wetland sampling points and two OHWM data points were studied. Standard wetland determination data forms for the Arid West region and Arid West Ephemeral and Intermittent Streams OHWM Datasheets were completed for the sampling points and are included in Appendix A. A Global Positioning System (GPS) unit with sub-meter accuracy was used to help collect data in the field. These data were transferred as shapefiles and measurements of jurisdictional area per agency were calculated using Geographic Information System software.

3.1 WATERS OF THE U.S.

3.1.1 Non-wetland Waters of the U.S.

In the absence of wetlands, the limits of Corps and California Regional Water Quality Control Board (RWQCB) jurisdiction in non-tidal waters typically extend to the OHWM. An OHWM can be determined by, but not limited to, the observation of benches, breaks in bank slope, particle size distribution, sediment deposits, drift, litter, and/or changes in plant communities.

3.1.2 Wetland Waters of the U.S.

The Regional Supplement presents wetland indicators, delineation guidance, and other information that is specific to the Arid West Region. According to the 1987 Manual (Environmental Laboratory 1987) and Regional Supplement (Corps 2008b), identification of wetlands is based on a three-criteria approach involving the predominance or prevalence of hydrophytic vegetation, and indicators of hydric soil and wetland hydrology as follows:

Hydrophytic vegetation is based on designations provided in *The National Wetland Plant List: 2016 Wetland Ratings* (Lichvar et al. 2016). OBL, FACW, and FAC are considered hydrophytic.

- OBL - Obligate (always found in wetlands)
- FACW - Facultative Wetland (usually found in wetlands)
- FAC - Facultative (found in wetlands as often as found in uplands)
- FACU - Facultative Upland (usually found in uplands)
- UPL - Upland (always found in uplands)

Hydric soils are identified by examining soil profile characteristics using *Munsell Soil Color Charts* (Munsell Color 2009). Hydric soils are those permanently or seasonally saturated by water resulting in anaerobic conditions. Hydric soils mapped by the Natural Resource Conservation Service (NRCS), which are used for reference only, are listed on the *National Hydric Soils List* (NRCS 2015).

Wetland hydrology is based on the presence of at least one primary or two secondary indicators, as provided in the Regional Supplement.

To be considered a wetland, an area must exhibit at least minimal characteristics within these three criteria. Where wetlands are suspected (i.e., primarily areas where wetland vegetation is evident and evidence of current or past wetland hydrology exists), soil samples are examined by excavating pits. When conditions are consistent, and wetlands are determined present, areas with similar vegetation and hydrologic consistency are extrapolated—often tied to topography. Where there are changes in vegetation and/or hydrology, additional soil samples are examined to identify the boundaries between wetland and upland. Vegetation, soils, and hydrology data are documented on the *Wetland Determination Data Form - Arid West Region* (Appendix A).

3.2 WATERS OF THE STATE

Aquatic/hydrological features lacking a nexus to (i.e., isolated from) adjacent or downstream waters are potentially considered Waters of the State. Currently, for this region (Santa Ana Regional Board), RWQCB jurisdiction coincides with Corps jurisdiction by defining an OHWM and utilizing the three-criteria approach for wetlands.

Streambeds within CDFW jurisdiction are delineated based on the definition of a streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports riparian vegetation." CDFW jurisdictional limits for streambeds are mapped to the top of the active bank. Vegetated CDFW jurisdictional riparian habitats are mapped to the limits of the riparian vegetation canopy.

4.0 RESULTS

4.1 HYDROLOGY

In very broad terms, the Santa Ana Region is a group of connected inland basins and open coastal basins drained by surface streams flowing generally southwest towards the Pacific Ocean. The San Jacinto River normally terminates in Lake Elsinore (California Regional Water Quality Control Board 2016). Drainage in the survey area is to the west or southwest (Figures 3 and 4) toward the San Jacinto River, which lies off site to the southwest.

A NRCS Climate Analysis for Wetlands Tables (WETS) report was generated for the survey area using the Elsinore Station. The WETS report is included as Appendix B.

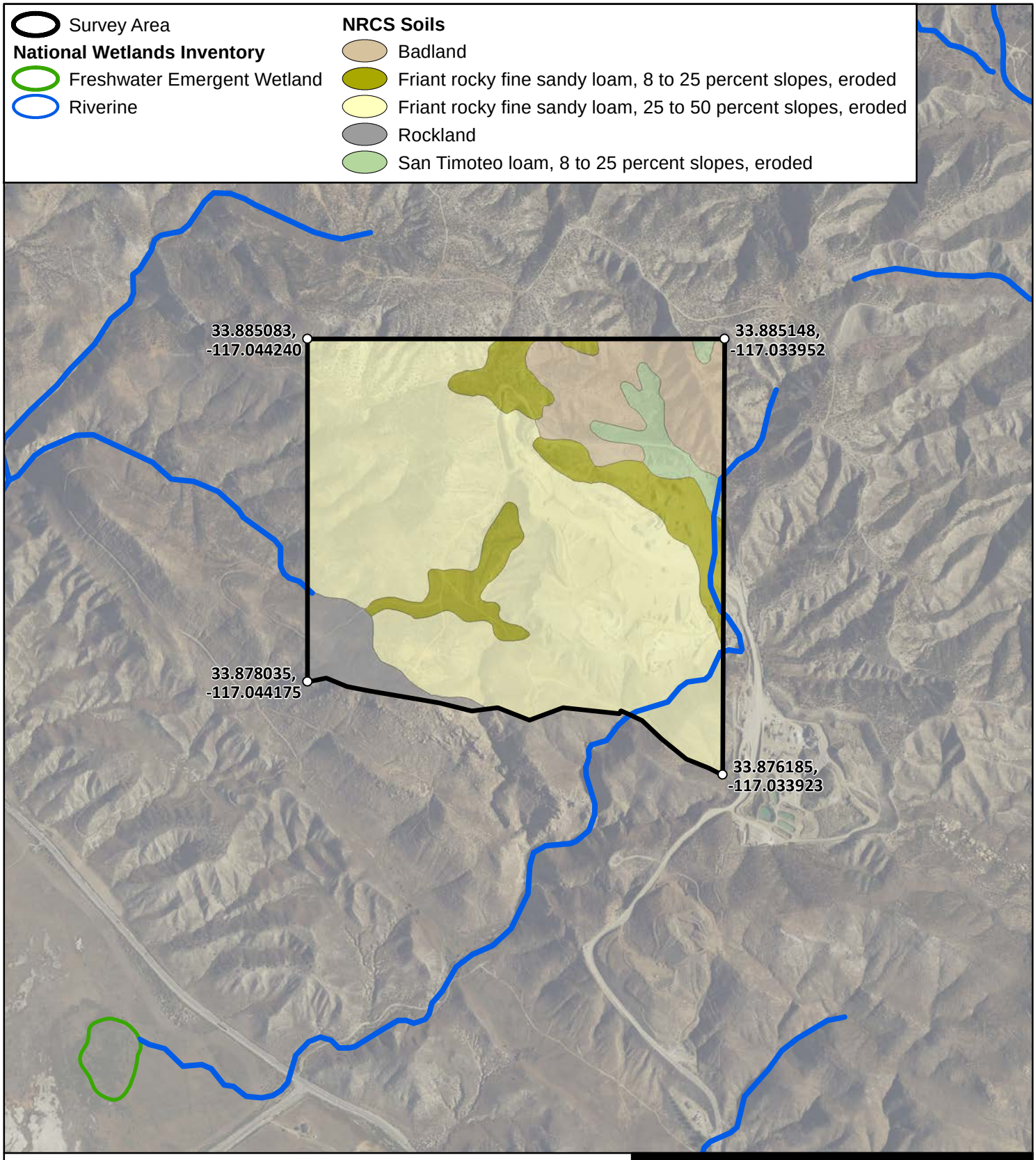

Figure 3

NRCS Soil Survey and National Wetland Inventory Data

GILMAN SPRINGS MINE
JURISDICTIONAL DELINEATION REPORT

N
W E
S

0 500 1,000 Feet

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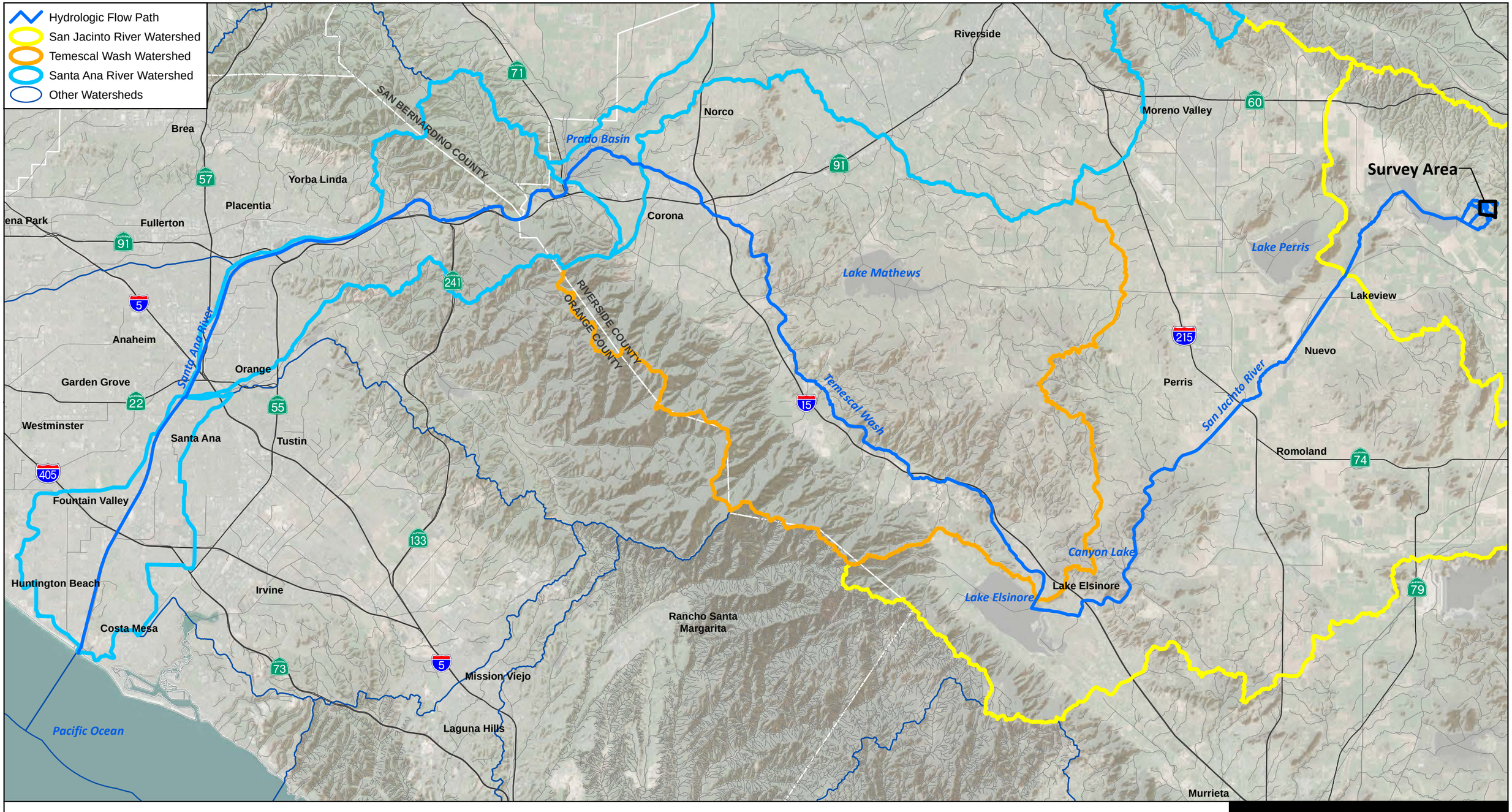

N
W E
S

0 1.75 3.5 Miles

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Figure 4

Watersheds

GILMAN SPRINGS MINE
JURISDICTIONAL DELINEATION REPORT

4.2 SOILS

The predominant soil in the survey area consists of Friant rocky fine sandy loam. Three other soil types are also mapped in the survey area including Badland, San Timoteo loam, and Rockland (Figure 3).

A review of the *National Hydric Soils List* (NRCS 2015) was conducted to identify soils in the survey area that are considered hydric. According to the soils list, Badland is a hydric soil that is "frequently ponded for long duration or very long duration during the growing season that: a) based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or b) show evidence that the soil meets the definition of a hydric soil." San Timoteo loam and Rockland are not hydric soils.

4.3 WATERS OF THE U.S. AND STATE

WUS and WS occur in the survey area and include non-wetland WUS, CDFW riparian habitats, and CDFW streambed/lake features as described in the following sections.

4.3.1 Waters of the U.S.

Areas under potential Corps jurisdiction in the survey area consist of 1.13 acres of non-wetland WUS (Figure 5; Table 1).

Table 1
WATERS OF THE U.S. IN THE SURVEY AREA

Potential Jurisdictional Feature	Area (Acres)	Length (Feet)
Non-Wetland		
Ephemeral stream	1.10	13,211
Unvegetated pond	0.03	--
TOTAL	**1.13**	**13,211**

4.3.2 Waters of the State

Areas under potential CDFW jurisdiction in the survey area consist of 1.63 acres of riparian habitat and streambed/lake features (Figure 5; Table 2).

Table 2 WATERS OF THE STATE IN THE SURVEY AREA		
Potential Jurisdictional Feature	**Area** (Acres)	**Length** (Feet)
Riparian Habitat		
Tamarisk scrub	0.5	--
Streambed/Lake		
Ephemeral stream	1.10	13,211
Unvegetated pond	0.03	--
Features with discontinuous OHWM	--	725
TOTAL	**1.63**	**13,936**

4.4 SAMPLING POINTS

Three wetland sampling points and two OHWM data points were studied (Figure 5). Standard wetland determination data forms for the Arid West region and Arid West Ephemeral and Intermittent Streams OHWM Datasheets were completed for the sampling points and are included in Appendix A. The results for each point are presented below.

Wetland Sample Point 1

This sampling point was located within mule fat scrub habitat (Figure 5). An active mining road bisects an area where small drainages flow and impounds ephemeral flows resulting in occasional ponding and riparian vegetation in the form of mule fat scrub and tamarisk scrub. The habitat at Wetland Sample Point 1 is dominated by mule fat (*Baccharis salicifolia*; a FAC shrub species) with 60 percent total cover; non-native grasses (UPL and FACU herbaceous species) comprise three percent total cover with 20 percent bare ground. Therefore, the wetland vegetation criterion was not met. The soil pit did not reveal the presence of hydric soil indicators, but wetland hydrology indicators (surface soil cracks and water marks) were observed. This area did not meet all of the three wetland criteria, and it is not jurisdictional to the Corps or RWQCB but is CDFW riparian habitat and MSHCP Riparian/Riverine habitat. Mule fat scrub does not occur within the survey area for the proposed mine expansion, so data from this point was not extrapolated to the survey area.

Wetland Sample Point 2

This sampling point was located in a sandy drainage within the active mine (Figure 5). It is likely a natural drainage that is enlarged by water flowing off of the mine. The vegetation at Wetland Sample Point 2 is comprised of three percent total cover of a FAC shrub species (tree tobacco; *Nicotiana glauca*) and two percent total cover of herbaceous non-indicator and FACU species (wild mustard [*Hirschfeldia incana*] and Russian thistle [*Salsola tragus*]). Therefore, the wetland vegetation criterion was not met. The soil pit did not reveal the presence of hydric soil indicators, but wetland hydrology indicators (drift deposits and drainage patterns) were observed. This area did not meet all of the three wetland criteria, and it is not jurisdictional to the Corps, RWQCB, or CDFW, and it is not MSHCP Riparian/Riverine habitat. Since the active mine is already permitted, it was not surveyed further for biological or potential jurisdictional resources.

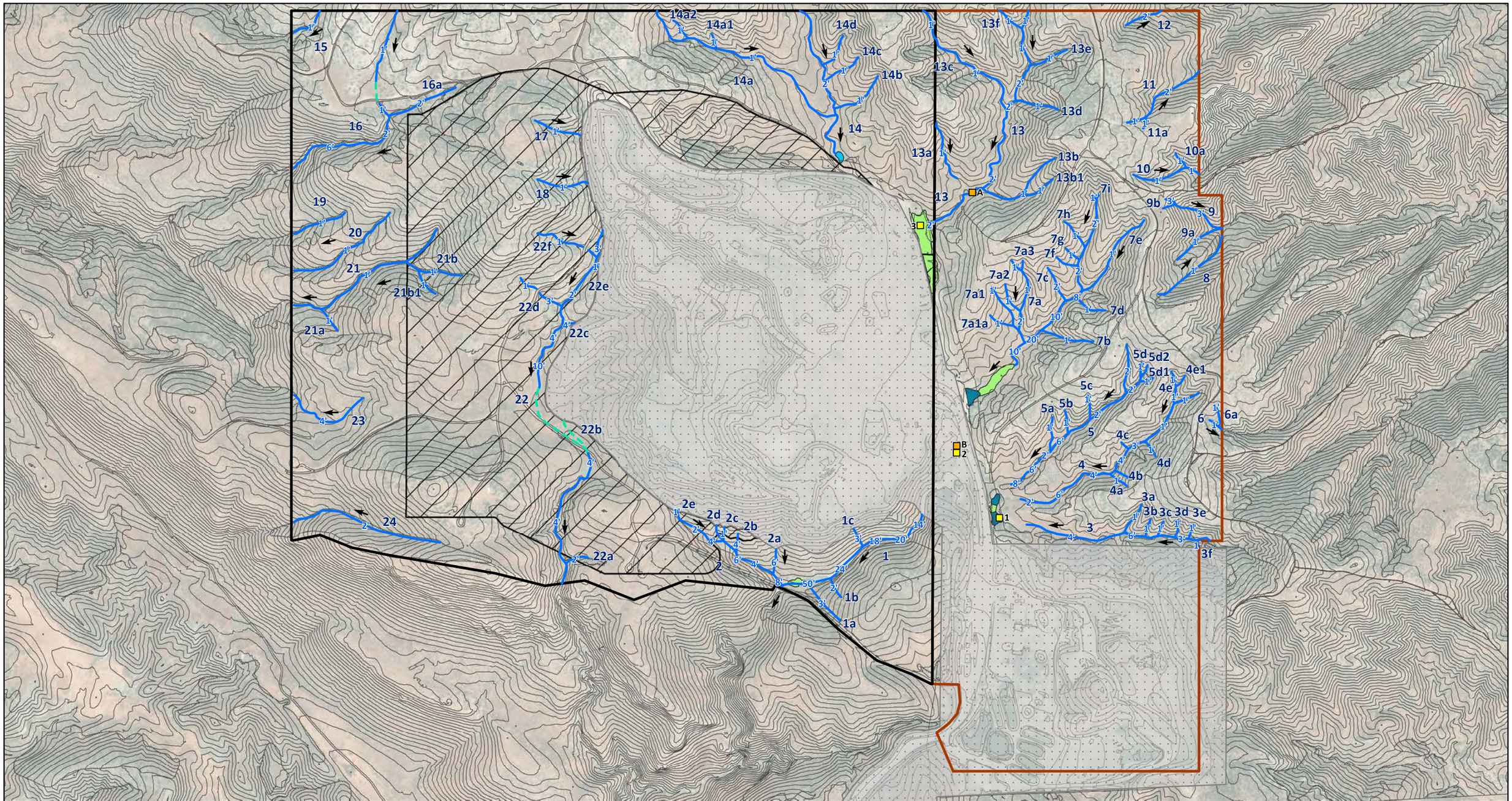

Figure 5

Riparian/Riverine Habitats and Potential Jurisdictional Features

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JURISDICTIONAL DELINEATION REPORT

Wetland Sample Point 3

This sampling point was located within tamarisk scrub habitat (Figure 5) within the survey area. An active mining road bisects drainage flow and impounds ephemeral flows resulting in occasional ponding and riparian vegetation in the form of tamarisk scrub. The habitat at Wetland Sample Point 3 is dominated by tamarisk (*Tamarix* sp.; a FAC shrub species) and mule fat (FAC) with 55 percent total cover. Black willow (*Salix gooddingii*; FACW; tree stratum) covers five percent. Therefore, the wetland vegetation criterion was met. The soil pit did not reveal the presence of hydric soil indicators, but wetland hydrology indicators (surface soils cracks, drainage patterns, and FAC-Neutral Test)) were observed. This area did not meet all of the three wetland criteria, and it is not jurisdictional to the Corps or RWQCB but is CDFW riparian habitat and MSHCP Riparian/Riverine habitat.

OHWM Data Point A

This data point was located in a hilly area within upland habitat bisected by small drainages outside the survey area (Figure 5). It is typical of drainages in the survey area. The bank is one foot high indicated by a change in vegetation cover and a break in bank slope. The active floodplain is characterized by fine silt and is indicated by the presence of bed and bank. Information from OHWM Data Point A was extrapolated to the all other drainages in hilly areas in upland habitat in the survey area. Therefore Drainages 1 and 2, a small part of Drainage 13, and Drainages 14 through 24 are jurisdictional to the Corps, RWQCB, CDFW, and are MSHCP Riparian/Riverine habitat.

OHWM Data Point B

This data point was located in the active mining area in a large drainage coming off the active mine (Figure 5). It is typical of drainages in the active mine area; however, since the active mine is already permitted, it was not surveyed further for biological or potential jurisdictional resources.

4.5 DRAINAGE/FEATURE DESCRIPTIONS

Within the survey area there are 17 Drainages/Features, based on topography and presence of aquatic resources (Figure 5). Drainages 1 and 2, a small part of Drainage 13, and Drainages 14 through 24 are located in the survey area. Of those, Drainages 15 through 22 are located in the proposed mine expansion area.

The drainages in the survey area are characteristic of the drainage described for OHWM Data Point A. That is, they are typically located within hilly areas in upland habitats and have defined beds and banks. These width of the beds in the drainages in the survey area range from one to 10 feet, and in one case south of the active mine up to 50 feet (Drainage 1; Figure 5). The drainages in the survey area are jurisdictional (non-wetland) to the Corps, RWQCB, and the CDFW. They are also MSHCP Riparian/Riverine habitat.

Tamarisk scrub (a CDFW riparian habitat based on Wetland Sampling Point 3) occurs along this 50-foot wide channel in Drainage 1 as well as at the end of Drainage 13. Tamarisk scrub is outside the proposed mine expansion area. Tamarisk scrub is both CDFW riparian habitat and MSHCP Riparian/Riverine habitat. It is not Corps jurisdictional.

There is an unvegetated pond in the northeastern portion of the survey area (outside the proposed mine expansion area) at the southern end of Drainage 14. This pond is Corps jurisdictional as non-wetland WUS since it would not meet the wetland vegetation criterion. It is also jurisdictional to the CDFW as a lake feature, and it is MSHCP Riparian/Riverine habitat.

Areas with discontinuous OWHMs are present along Drainages 16 and 22 inside the proposed mine expansion area. These areas do not meet the OHWM requirement for Corps WUS, but they are CDFW streambed WS and MSHCP Riparian/Riverine habitat.

Table 3
SUMMARY OF DRAINAGES AND FEATURES IN THE SURVEY AREA

Drainage/ Feature	Type	Area/Length (acre/feet)	Width (Feet)	OHWM/Wetland Presence	Dominant Vegetation[1]
1	Non-wetland	0.48/1,271	2-50	Bed and bank	CC, RSS, TS
2	Non-wetland	0.10/1,046	1-8	Bed and bank	RSS
13	Non-wetland	0.01/191	2	Bed and bank	SOC
14	Non-wetland	0.08/2,807	1-2	Bed and bank	NNG
15	Non-wetland	<0.01/179	1	Bed and bank	CC
16	Non-wetland	0.10/1,408 (1,518[2])	1-6	Bed and bank	CC
17	Non-wetland	0.01/235	1	Bed and bank	CC
18	Non-wetland	0.01/255	1	Bed and bank	CC
19	Non-wetland	0.01/272	1	Bed and bank	CC
20	Non-wetland	0.01/577	1	Bed and bank	CC
21	Non-wetland	0.03/1,424	1	Bed and bank	CC
22	Non-wetland	0.19/2,353 (2,968[2])	1-10	Bed and bank	NNG, CC, RSS
23	Non-wetland	0.04/443	4	Bed and bank	RSS, NNG
24	Non-wetland	0.03/750	2	Bed and bank	RSS, CC
Tamarisk Scrub[2]	Non-wetland	0.50/--	N/A	Bed and bank, vegetation	TS
Unveg-etated Pond	Non-wetland	0.03/--	N/A	Hydrology	N/A

[1]CC = chamise chaparral; NNG = non-native grassland; RSS = Riversidean sage scrub, SOC = scrub oak chaparral; TS = tamarisk scrub
[2]CDFW

5.0 JURISDICTIONAL DETERMINATION

5.1 U.S. ARMY CORPS OF ENGINEERS

Approximately 1.13 acre (13,211 linear feet) of Corps jurisdictional non-wetland WUS occur within the survey area (Table 3; Figure 5).

Table 4
JURISDICTION IN THE SURVEY AREA

Drainage/ Feature	Corps	RWQCB	CDFW	
	Non-wetland (Acres/Linear Feet)	Non-wetland (Acres/Linear Feet)	Riparian (Acres)	Streambed/Lake (Acres/Linear Feet; includes discontinuous OHWM)
1	0.48/1,271	0.48/1,271	N/A	0.48/1,271
2	0.10/1,046	0.10/1,046	N/A	0.10/1,046
13	0.01/191	0.01/191	N/A	0.01/191
14	0.08/2,807	0.08/2,807	N/A	0.08/2,807
15	<0.01/179	<0.01/179	N/A	<0.01/179
16	0.10/1,408	0.10/1,408	N/A	0.10/1,518
17	0.01/235	0.01/235	N/A	0.01/235
18	0.01/255	0.01/255	N/A	0.01/255
19	0.01/272	0.01/272	N/A	0.01/272
20	0.01/577	0.01/577	N/A	0.01/577
21	0.03/1,424	0.03/1,424	N/A	0.03/1,424
22	0.19/2,353	0.19/2,353	N/A	0.19/2,968
23	0.04/443	0.04/443	N/A	0.04/443
24	0.03/750	0.03/750	N/A	0.03/750
Tamarisk Scrub	N/A	N/A	0.50	N/A
Unvegetated Pond	0.03/--	0.03/--	N/A	0.03/--
Total	**1.13/13,211**	**1.13/13,211**	**0.50**	**1.13/13,936**

5.2 REGIONAL WATER QUALITY CONTROL BOARD

Approximately 1.13 acre of RWQCB jurisdictional non-wetland WUS occur in the survey area (Table 3; Figure 5).

5.3 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

Approximately 1.63 acres (13,936 linear feet) of CDFW jurisdictional WS occur in the survey area (Table 3; Figure 5).

5.4 MSHCP RIPARIAN/RIVERINE HABITAT

Approximately 1.63 acres (13,936 linear feet) of MSHCP Riparian/Riverine habitat occur in the survey area (Figure 5).

6.0 REFERENCES

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Appendix A

DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandler Mine City/County: Riverside Co Sampling Date: 10/30/17

Applicant/Owner: State: CA Sampling Point: Pit 1

Investigator(s): Lee Ripma Section, Township, Range:

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

Subregion (LRR): MEDITERRANEAN CALIFC Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

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

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

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

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

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

Remarks:

Road for active mine is bisecting an area where three small drainages flow. The flow is likely very infrequent but whenever it does flow all water is impounding east of road. Road is 10 feet above impinging area with no drainage via culvert. Area contains evidence of occasional ponding and riparian veg in the form of tamarisk scrub and MES

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft)			
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 5 ft)			
1. Baccharis salicifolia	60	Yes	FAC
2.			
3.			
4.			
5.			
	60% = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Bromus madritensis	1	Yes	UPL
2. Bromus hordeaceus	2	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	3% = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

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

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	60	x 3 =	180
FACU species	2	x 4 =	8
UPL species	1	x 5 =	5
Column Totals:	63 (A)		193 (B)

Prevalence Index = B/A = 3.06

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 76% in herb stratum. Does not pass dominance or prevalence test however the dominate species is mule fat which requires a decent amount of water in order to persist.

SOIL

Sampling Point: Pit 1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/3	100					Silt 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:

No hydric soils, soils fine and uniform. While the area is heavily disturbed by mining activities, hydric soils likely would not occur within this area as ephemeral flows would be expected to continue to flow uninterrupted downstream.

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:

Water from drains clearly ponds here occasionally. Ponding too infrequent to develop hydric soils but does lead to surface soil cracks and hydrophytic veg.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandler Mine City/County: Riverside Co Sampling Date: 10/30/17

Applicant/Owner: State: CA Sampling Point: Pit 2

Investigator(s): Lee Ripma Section, Township, Range:

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

Subregion (LRR): MEDITERRANEAN CALIFC Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

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

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

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

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

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

Remarks:

Drainage in sand coming from active mine. Likely a natural drainage that is enlarged by water flowing off of mine site.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 5 ft)			
1. Nicotiana glauca	3	Yes	FAC
2.			
3.			
4.			
5.			
	3% = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Hirschfeldia incana	1	Yes	NL
2. Salsola tragus	1	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	2% = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 98% % Cover of Biotic Crust

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	3	x 3 =	9
FACU species	1	x 4 =	4
UPL species	1	x 5 =	5
Column Totals:	5 (A)		18 (B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No ✓

Remarks:

No leaf litter.

SOIL

Sampling Point: Pit 2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 5/2	100					Sand	Top layer w larger grain size
1-12	10YR 3/3	100					Sand	

[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 hydric soils, sand

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:

Drainage in sand devoid of almost all veg, clear evidence of flow

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandler Mine City/County: Riverside Co Sampling Date: 10/30/17

Applicant/Owner: State: CA Sampling Point: Pit 3

Investigator(s): Lee Ripma Section, Township, Range:

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

Subregion (LRR): MEDITERRANEAN CALIFC Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

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

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

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

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

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

Remarks:

Road for active mine is bisecting an area where three small drainages flow. The flow is likely very infrequent but whenever it does flow all water is impounding east of road. Road is 10 feet above impinging area with no drainage via culvert. Area contains evidence of occasional ponding and riparian veg in the form of tamarisk scrub and MES

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	5	Yes	FACW
2.			
3.			
4.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5 ft)			
1. Tamarisk	50	Yes	FAC
2. Baccharis salicifolia	5	No	FAC
3.			
4.			
5.			
	55	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	4	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 80 % 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:

Leaf litter 20% in herb stratum.

SOIL

Sampling Point: Pit 3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10 YR 3/3	100					Silt loam	Very fine soils

[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 hydric soils, soils fine and uniform

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:

Water from drains clearly ponds here occasionally. Ponding too infrequent to develop hydric soils but does lead to surface soil cracks.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Chandler Mine
Project Number:
Stream: Drain on site, typical
Investigator(s): Lee Ripma

Date: 10/30/2017
Town: Riverside
Photo begin file#:

Time: 1645
State: CALIFORNIA
Photo end file#:

Y ☐ / N ☑ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details:
Riverside

Projection: 999
Datum: 999
Coordinates: 999 - 999

Potential anthropogenic influences on the channel system:
None noted

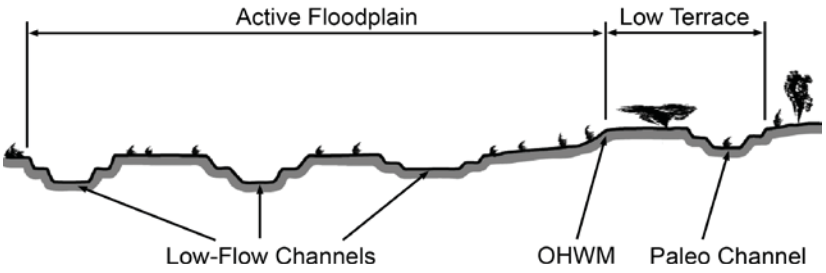
Brief site description:
Hilly area bisected by small drainages.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 1/1/2017
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☑ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

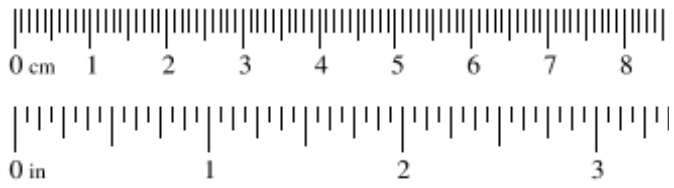


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

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

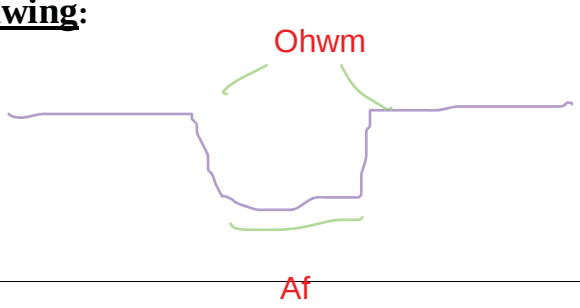
Wentworth Size Classes

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



Project ID: **Cross section ID:** **Date:** 10/30/17 **Time:** 1645

Cross section drawing:



OHWM

GPS point: OHWM

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:
Bank is 1 ft high

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Fine silt

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

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:
Single AF w 1 ft tall banks

Project ID: **Cross section ID:** **Date:** 9/20/17 **Time:**

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

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

Community successional stage:

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

Indicators:

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

Comments:

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

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

Community successional stage:

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

Indicators:

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

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Chandler Mine
Project Number:
Stream: Big one draining off mine
Investigator(s): Lee Ripma

Date: 10/30/2017
Town: Riverside
Photo begin file#:

Time: 1005
State: CALIFORNIA
Photo end file#:

Y ☐ / N ☑ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
Riverside

Projection: 999
Datum: 999
Coordinates: 999 - 999

Potential anthropogenic influences on the channel system:
Large drain coming off active mine

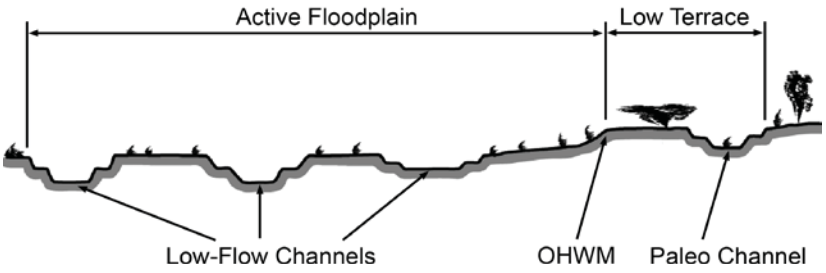
Brief site description:
Hilly area bisected by small drainage with large active mine disrupting channel flow

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 1/1/2017
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☑ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

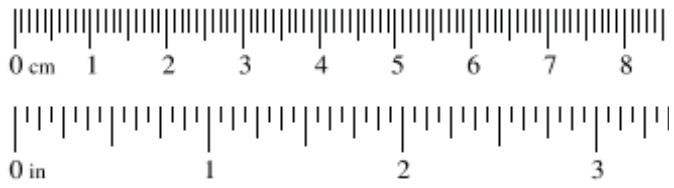


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

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

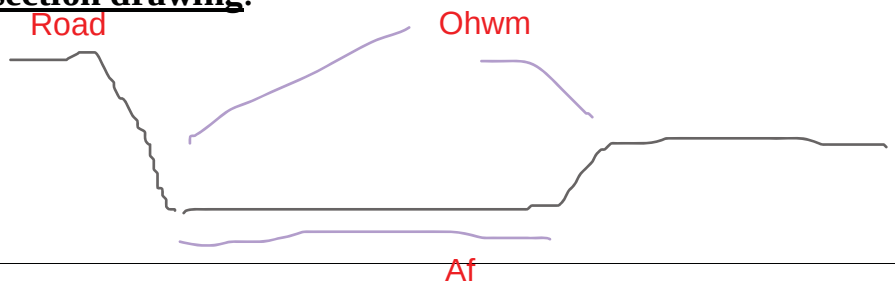
Wentworth Size Classes

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



Project ID: **Cross section ID:** **Date:** 10/30/17 **Time:** 1645

Cross section drawing:



OHWM

GPS point: OHWM

Indicators:

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

Comments:
Bank is 3 ft high

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Medium sand and pebble n
Total veg cover: 5 % Tree: 0 % Shrub: 0 % Herb: 5 %
Community successional stage:

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

Indicators:

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

Comments:
Single AF w 3 ft tall banks, banks have medium sand and some pebble, AF is the same with more pebble

Project ID: **Cross section ID:** **Date:** 9/20/17 **Time:**

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

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

Community successional stage:

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

Indicators:

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

Comments:

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

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

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

Community successional stage:

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

Indicators:

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

Comments:

Appendix B

WETS REPORT

WETS Table

WETS Station: ELSINORE, CA								
Requested years: 1971 - 2018								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	66.5	39.2	52.8	2.64	0.72	2.79	4	0.0
Feb	68.3	40.7	54.5	2.60	0.80	2.95	4	0.0
Mar	72.6	43.7	58.1	1.75	0.57	1.93	3	0.0
Apr	77.2	46.5	61.9	0.57	0.18	0.57	1	0.1
May	82.4	52.0	67.2	0.20	0.00	0.14	1	0.0
Jun	91.5	57.0	74.3	0.02	0.00	0.00	0	0.0
Jul	97.9	61.8	79.9	0.17	0.00	0.00	0	0.0
Aug	98.5	62.6	80.6	0.10	0.00	0.00	0	0.0
Sep	93.5	59.4	76.5	0.28	0.00	0.15	0	0.0
Oct	83.8	52.1	67.9	0.50	0.00	0.35	1	0.0
Nov	73.4	43.5	58.5	0.70	0.25	0.71	2	0.0
Dec	66.3	38.3	52.3	1.89	0.55	2.08	3	0.0
Annual:					6.74	12.02		
Average	81.0	49.7	65.4	-	-	-	-	-
Total	-	-	-	11.40			21	0.1

GROWING SEASON DATES

Years with missing data:	24 deg = 30	28 deg = 31	32 deg = 23
Years with no occurrence:	24 deg = 16	28 deg = 10	32 deg = 4
Data years used:	24 deg = 18	28 deg = 17	32 deg = 25
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	Insufficient data	Insufficient data	2/19 to 12/13: 297 days
70 percent *	Insufficient data	Insufficient data	2/1 to 1/1: 334 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1897			M0.77	0.00	0.03			0.29	0.26	1.06	T	0.19	2.60
1898	2.29	0.15	0.82	0.23	1.32	M0.01				0.00	0.04	1.38	6.24
1899	3.43	0.48	0.96		T	M0.18		T	T	0.98	0.69	0.55	7.27
1900	1.56	0.00	0.39	0.77	1.04	0.00	T	T	T	0.06	5.04	0.00	8.86
1901	3.59	4.61	0.42	0.10	0.47	T	0.00	0.74	0.00	1.08	0.35	0.00	11.36
1902	2.30	2.03	2.64	0.30	T	0.21	0.08	0.00	0.00	0.13	1.26	3.04	11.99
1903	0.81	2.50	6.55	1.71	T	0.00			0.40	0.05	0.00	T	12.02
1904	0.19	1.49	4.14	0.28	0.03	0.00	0.00	1.12	0.82	T	0.00	0.91	8.98

1905	5.32	7.72	4.36	0.30	0.92	0.00	0.00	0.00	T	0.12	5.61	0.20	24.55
1906	1.25	1.04	7.65	0.93	0.32	T		T	0.17	0.04	2.99	5.09	19.48
1907	M4.79	2.24	3.68	0.07	0.04	0.05	T	0.00	0.00	2.99	0.08	0.41	14.35
1908	4.93	2.80	0.47	0.18	0.04	0.00	0.00	0.73	0.30	0.53	0.24	0.82	11.04
1909	M6.13	3.57	2.29	0.00	0.00	0.04	0.00	0.55	0.00	0.09	1.43	6.65	20.75
1910	3.74	0.14	1.19	0.35	0.00	0.00	0.09	0.00	T	0.53	0.19	0.14	6.37
1911	5.81	3.24	1.38	0.25	0.00	0.00	0.00	0.00	0.58	0.15	0.20	0.80	12.41
1912	0.08	0.00	6.73	1.80	0.13	0.00	T	0.10	0.00	0.87			9.71
1913													
1914													
1915				1.15	0.78			T	M0.01		0.56	5.19	7.69
1916	14.83	0.78	1.14	0.20				0.02	0.51	0.95	M0.04	2.23	20.70
1917	3.12	3.09	0.45	0.99	M0.09		M2.10	MT		MT	M0.11		9.95
1918	M1.30	3.38	4.54	M0.24	M0.30		M0.17	M0.21	0.19	0.83	0.71	M0.81	12.68
1919	0.11	2.35	M1.48	0.25	0.33		T	M0.04	M0.35	M0.46	M0.66	M1.08	7.11
1920	M0.67	3.94	4.63	0.15	M0.58				M0.03	M0.97	M0.12	M0.42	11.51
1921	M3.46	M0.41	M2.02	M0.05	2.33		M0.08	M0.06	M1.37	M0.05	M0.11	M13.22	23.16
1922	M6.42	M2.28	M1.93	M0.27	M0.43		MT	M0.01	M0.01	M0.16	M1.67	M1.41	14.59
1923	M1.47	M1.55	M0.22	M0.88			MT	MT	M0.04	M0.20	M0.67	1.56	6.59
1924	0.16	0.01	3.70	M1.32	0.00					M0.27	0.44	1.68	7.58
1925	0.13	0.20	1.42	1.14	M0.56	M0.40	0.00			M2.50	M0.36	0.98	7.69
1926	1.00	2.51	0.45	6.30		0.00	0.00	0.00	0.00	0.12	1.35	2.73	14.46
1927	0.33	9.57	1.84	0.43	0.05	0.03	0.06	0.00	0.00	2.15	0.12	3.14	17.72
1928	0.50	1.06	0.64	0.06	0.29	0.00	0.00	0.00	0.00	0.70	0.76	1.73	5.74
1929	1.37	0.54	1.00	1.12	0.00	0.00	0.00	0.08	1.03	0.00	0.00	0.00	5.14
1930	M6.41	0.47	4.74	2.07	2.27	0.00	0.00	0.00	0.00	0.23	1.24	0.00	17.43
1931	2.23	5.84	0.00	1.43	0.33	0.04	0.00	0.51	0.12	0.58	2.12	4.91	18.11
1932	1.04	9.60	0.16	0.49	0.00	0.14	0.00	0.00	0.24	1.16	0.04	1.91	14.78
1933	5.28	0.00	0.00	0.31	0.39	0.00	0.00	0.00	0.00	0.22	0.13	4.09	10.42
1934	0.26	1.45	1.55	0.03	0.00	0.28	T	0.51	0.11	1.51	1.81	3.15	10.66
1935	2.62	3.11	2.70	1.41	0.35	0.00	0.00	0.42	T	0.15	0.47	0.41	11.64
1936	0.09	5.95	1.39	0.45	T	0.00	0.09	0.07	2.22	3.75	0.08	7.66	21.75
1937	2.03	5.70	4.39	0.19	0.17	0.00	0.02	T	0.10	0.00	0.01	1.17	13.78
1938	1.73	5.68	9.39	0.70	0.11	0.00	0.06	0.07	0.05	0.18	T	6.34	24.31
1939	2.44	2.08	0.81	0.45	0.15	0.00	0.00	T	3.48	0.30	0.85	0.43	10.99

1940	3.28	3.77	0.29	0.95	0.00	0.00	0.00	0.00	0.01	0.87	0.21	6.97	16.35
1941	1.33	6.72	6.35	3.44	0.06	0.00	T	0.07	0.00	2.50	0.83	3.08	24.38
1942	0.73	0.92	1.12	1.95	0.00	0.00	0.00	0.46	0.00	0.13	0.02	0.72	6.05
1943	8.75	2.33	1.82	0.48	0.00	0.00	0.00	0.00	0.25	0.34	0.02	8.52	22.51
1944	0.46	5.64	0.69	0.61	0.03	0.00	0.00	0.00	0.00	0.00	3.54	0.72	11.69
1945	0.08	2.33	3.38	0.04	0.00	0.00	T	0.99	T	0.36	0.20	3.20	10.58
1946	0.15	0.06	2.51	0.26	T	0.00	T	T	0.52	0.23	4.03	1.37	9.13
1947	0.18	0.10	1.15	0.05	0.26	0.00	0.00	T	T				1.74
1948								M0.00	0.00	0.55	0.00	1.78	2.33
1949	3.97	1.08	0.66	0.00	0.11	0.00	M0.00	0.00	T	0.44	0.89	0.75	7.90
1950	1.87	0.88	0.71	0.53	0.10	0.00	0.07	0.00	0.00	0.00	0.68	0.00	4.84
1951	1.47	0.68	0.77	0.79	0.00	0.00	0.00	0.20	0.17	0.44	0.73	4.64	9.89
1952	5.67	0.53	4.47	1.00	0.00	0.00	0.00	0.00	0.59	0.00	2.80	2.68	17.74
1953	0.62	0.25	0.71	0.59	0.01	0.00	0.02	0.00	0.00	0.02	0.67	0.11	3.00
1954	4.51	2.00	3.00	0.05	0.00	T	0.03	0.00	0.00	0.00	2.23	0.71	12.53
1955	3.08	1.10	0.07	0.42	0.98	0.00	0.00	0.00	0.00	0.00	0.78	0.41	6.84
1956	3.12	0.24	0.00	1.31	0.22	0.00	0.16	0.00	0.00	0.08	0.00	0.24	5.37
1957	5.03	0.77	0.67	0.67	0.83	0.02	0.00	0.00	0.00	2.12	1.00	1.91	13.02
1958	0.77	3.89	4.58	4.27	0.12	0.00	0.00	0.24	0.05	0.06	0.17	0.00	14.15
1959	1.06	2.87	0.00	0.13	0.00	0.00	0.00	0.05	0.00	0.11	0.34	2.35	6.91
1960	2.64	2.22	0.11	1.26	0.01	0.00	0.00	0.00	0.02	0.00	0.98	0.15	7.39
1961	1.37	0.10	0.34	0.02	0.00	0.00	0.00	1.18	0.00	0.02	1.07	1.78	5.88
1962	2.99	4.10	1.17	0.00	0.30	0.07	0.00	0.00	0.00	0.00	0.02	0.05	8.70
1963	0.09	3.24	1.77	1.09	0.00	0.03	0.00	0.20	3.24	0.26	1.91	0.00	11.83
1964	1.49	0.16	1.77	0.56	0.36	0.03	0.00	0.00	0.00	0.14	2.47	0.87	7.85
1965	0.13	0.00	2.43	2.42	T	0.00	0.31	0.00	0.18	0.00	7.33	4.43	17.23
1966	0.74	0.53	0.45	0.02	0.06	0.00	0.01	0.00	0.01	0.23	1.14	8.67	11.86
1967	2.35	T	1.13	2.16	0.01	0.00	0.00	0.00	0.03	0.00	3.50	1.29	10.47
1968	0.57	0.37	2.66	0.12	0.10	0.00	0.28	0.00	0.00	0.12	0.55	0.94	5.71
1969	9.40	10.09	1.06	0.44	0.27	0.00	0.00	0.00	0.00	0.00	0.68	0.04	21.98
1970	1.31	2.18	2.54	0.33	0.00	0.00	0.00		0.00	0.07	3.26	4.46	14.15
1971	0.84	0.31	0.14	0.28	0.25	0.00	0.00	0.00	0.00	0.89	0.02	4.81	7.54
1972	T	0.16	0.00	0.00	0.05	0.32	0.00	0.00	0.00	0.78	0.60	0.80	2.71
1973	2.73	3.09	2.31	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.61	0.16	8.94
1974	6.03	0.02	2.22	0.29	0.01	0.00	0.00	0.00	0.	0.	0.00	3.67	12.

									02	46			72
1975	0.28	2.85	1.79	2.16	0.00	0.00	0.00	0.00	0.00	M0.00		0.05	7.13
1976		4.37	2.26			0.00	0.00	0.00	4.26	0.28	0.37	0.38	11.92
1977	2.26	0.78	0.86	T	2.02	0.00	0.00	3.13	0.00	0.00	T	4.04	13.09
1978		10.58	9.83	1.07		0.00	0.00	0.00	1.08	0.00	1.45	2.68	26.69
1979	8.31	1.79	2.93		0.00	0.00							13.03
1980	6.01			0.25	0.00		0.00	0.00	0.00	0.00	0.00	0.47	6.73
1981	M0.21	M0.44	2.31	0.29	0.36	0.00	0.00	0.00	0.00	0.42	1.49	0.29	5.81
1982	3.60	M1.07	5.21	M0.89	M0.41	0.00	0.00	0.11	M0.19	M0.07	3.28	2.21	17.04
1983	2.13	M5.01	8.07	2.42	0.18	0.00	M0.00	0.00	1.01	0.26	1.99	1.95	23.02
1984	0.04	0.00	0.02	0.15	0.00	M0.00	1.67	0.00	0.48	0.00	0.93	4.49	7.78
1985	M0.53	M0.45	0.98	0.00	0.00	0.00	M0.00	0.00	0.55	0.19	M3.09	0.61	6.40
1986	1.10	2.07	M1.60	0.49	0.00	0.00	0.06	0.00	0.00	0.69	M0.24	0.83	7.08
1987	1.11	1.24	1.09	0.03	M0.00	0.00	0.00	0.00	0.00	M3.65	1.18	2.64	10.94
1988		1.07	0.55	2.02	M0.11	0.00	0.00		0.00	0.00	0.72	2.44	6.91
1989	0.90	1.72	0.35	0.00	T	0.00	0.00	0.00	0.46	0.16	0.00	0.04	3.63
1990	1.64	2.22	M0.29	M1.12	0.58	0.16	0.35	0.00	T	0.00	0.47	0.02	6.85
1991	M1.56	2.29	8.40	0.00	0.03	0.00	0.09	0.00	0.04	0.00	T	2.41	14.82
1992	2.10	4.55	2.56	0.17	0.67	0.00	0.23	0.00	0.00	0.74	0.00	M4.39	15.41
1993	13.94	6.15	1.57	0.00	0.00	M0.00	0.00	0.00	0.00	0.25	0.85	0.48	23.24
1994	0.44	3.38	2.16	0.56	0.12	0.00	0.00	0.00	0.00	0.48	0.55	0.41	8.10
1995	10.13	1.39	3.33	0.80	0.10	0.25	0.10	0.00	0.00	0.00	0.00	0.72	16.82
1996	1.03	2.21	0.95	0.10	0.00	0.00	0.00	0.00	0.00	0.48	1.56	1.60	7.93
1997	1.79	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.03	1.13	3.35	7.45
1998	2.55	11.94	1.67	1.19	1.25	0.00	0.00	0.15	0.23	0.00	1.53	0.75	21.26
1999	0.99	0.69	0.09	1.11	0.04	0.00	0.45	0.00	0.00	0.00	0.00	0.20	3.57
2000	0.46	3.91	1.56	0.48	0.00	0.00	0.00	0.05	0.00	0.78	0.13	0.00	7.37
2001	3.77	5.45	0.65	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.10	M0.72	11.63
2002	0.20	0.01	0.34	0.24	0.00	0.00	0.00	0.00	0.00	0.00	M2.10	M1.76	4.65
2003	M0.16	6.45	3.15	1.14	0.02	0.00	0.17	0.00	0.00	M0.00	0.98	0.43	12.50
2004	M0.00	3.03	0.00	0.00	MT	0.00	0.00	0.00	0.00	7.66	0.18	4.47	15.34
2005	11.76	8.28	0.67	0.75	M0.35	0.00	2.50	0.00	1.65	0.22	0.00		26.18
2006	M0.00	3.03	M1.42	M2.36	MT	M0.00	M0.00	M0.00	0.00	0.00	0.00	M0.05	6.86
2007	M0.00	M0.01	M0.00	0.32	0.00	M0.00	M0.00		M0.00	M0.00	M0.00	0.00	0.33
2008	M0.52	0.00	0.00	M0.00	M0.34	0.00	0.00	0.00	0.	0.	M0.	4.05	5.10

									00	00	19		
2009	0.18	3.97	0.13	0.05	0.00	0.00	0.00	0.01	0.00	0.22	0.07	3.76	8.39
2010	8.88	1.81	0.44	1.23	0.13	0.00	0.00	0.00	0.00	1.61	1.06	11.67	26.83
2011	0.70	3.07	2.96	0.46	0.78	0.07	0.10	0.09	0.03	0.44	1.37	0.74	10.81
2012	0.55	0.67	1.51	1.18	0.00	0.00	0.30	0.05	0.24	0.36	0.30	1.78	6.94
2013	0.91	0.46	0.46	0.00	0.14	0.00	0.00	0.00	0.00	0.16	0.53	0.70	3.36
2014	0.13	1.28	1.27	0.50	0.00	0.00	0.00	0.66	0.45	0.00	0.21	3.65	8.15
2015	0.55	0.37	0.44	0.11	0.96	0.00	1.29	0.00	1.08	0.11	0.12	0.58	5.61
2016	2.79	0.30	0.74	0.28	0.06	0.00	0.00	0.00	0.10	0.39	1.18	3.81	9.65
2017	8.23	3.27	0.08	0.02	0.29	0.00	0.00	0.26	0.04	0.01	0.05	0.00	12.25
2018	2.01	0.20	1.11	0.02	0.05	0.00	0.00	0.00	M0.00				3.39

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2016-07-22