California Street/Redlands Boulevard Widening Project
APNs: 0292-034-[10, 11, 17]

City of Redlands, County of San Bernardino, California

JURISDICTIONAL DELINEATION REPORT

Prepared For:

City of Redlands
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Section 1 Introduction

This Jurisdictional Delineation Report presents the results of a delineation of aquatic resources and drainage features conducted for the California Street and Redlands Boulevard Widening Project (Project) in the City of Redlands. The City of Redlands ("City") proposes to reconstruct the northwest corner of the California Street and Redlands Boulevard intersection and widen the west side of California Street (Figure 1, Regional Vicinity). The California Street widening extends approximately 770 feet north of the Redlands Boulevard intersection.

1.1 PROJECT LOCATION

The Project site is located south of Interstate 10 (I-10) and extends into a portion of the Mission Zanja Channel. The Project includes storm drain improvements that involve the construction of a triple reinforced concrete box (RCB) culvert and concrete transition structure in the Mission Zanja Channel. The property consists of three parcel, Accessor's Parcel Number (APN): 0292-034-10, 0292-034-11, and 0292-034-17 as seen on U.S. Geological Society (USGS) 7.5-minute *Redlands* Quadrangle (Figure 2, USGS Quadrangle Map).

1.2 PROJECT BACKGROUND AND DESCRIPTION

The Project site is located within the western portion of the City of Redlands and is surrounded by commercial uses to the north and east, high density residential uses to the southeast, open space to the northwest, high density residential uses within the City of Loma Linda to the west, and an elementary school within the City of Loma Linda to the southwest. Surrounding recreational uses include the multi-use Orange Blossom Trail that runs parallel to the Mission Zanja Channel.

The City proposes to widen the west side of California Street, north of Redlands Boulevard and south of the existing Anthem Oil gas station. California Street is classified as a Major Arterial roadway and the proposed widening Project is designed to accommodate the high volume of motorists that utilize the roadway to travel between residential areas, major activity centers, and the I-10 and I-215 freeways.

The proposed storm drain improvements consist of the construction of a reinforced concrete block triple culvert totaling fifty-four (54) feet wide and eleven (11) feet tall in the Mission Zanja Channel. The RCB culvert is comprised of concrete transition structures, a sloped concrete invert, the installation of a guard rail, and a 6-foot-tall chain link fence. The specifications for the culvert are in accordance with the County of San Bernardino Flood Control Standards and the Standard Plans for Public Works Construction (SPPWC) Standards. Construction of the Project is proposed to commence in Spring 2024 and be completed by Winter 2024.

For this jurisdictional delineation field survey and report, the location assessed and considered the Project site consisted of Mission Zanja Channel North of Redlands Boulevard as shown in Figure 3, Jurisdictional Delineation Limits and Photo Point Location Map.

1.3 REGULATORY BACKGROUND

Several regulations have been established by federal, state, and local agencies to protect and conserve aquatic resources. The descriptions below provide a brief overview of agency regulations that may be applicable to the project. Regulatory agencies make the final determination of whether a project requires authorization pursuant to these regulations.

1.3.1 APPLICABLE AQUATIC RESOURCE PROTECTION REGULATIONS

Clean Water Act

Pursuant to Section 404 of the Clean Water Act (CWA), the U.S. Army Corps of Engineers (USACE) is authorized to regulate any activity that would result in the discharge of dredged or fill material into waters of the U.S. (including wetlands), which include those waters listed in 33 CFR 328.3 (USACE 2020). USACE, with oversight from the U.S. Environmental Protection Agency (USEPA), has the principal authority to issue CWA Section 404 permits. The USACE would require a Standard Individual Permit (SIP) for more than minimal cumulative adverse effects on the environment may meet the conditions of an existing Nationwide Permit (NWP) (USACE 2021).

A water quality certification or waiver pursuant to Section 401 of the CWA is required for all Section 404 permitted actions. The Regional Water Quality Control Board (RWQCB), a division of the State Water Resources Control Board, provides oversight of the 401-certification process in California. The RWQCB is required to provide “certification that there is reasonable assurance that an activity that may result in the discharge to waters of the United States will not violate water quality standards.” Water Quality Certification must be based on the finding that proposed discharge will comply with applicable water quality standards.

The National Pollutant Discharge Elimination System (NPDES) is the permitting program for discharge of pollutants into surface waters of the U.S. under Section 402 of the CWA.

California Fish and Game Code Sections 1600-1602

Pursuant to Division 2, Chapter 6, Section 1602 of the California Fish and Game Code (CFGC), CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel or bank of any river, stream or lake that supports fish or wildlife. A Notification of Lake or Streambed Alteration must be submitted to California Department of Fish and Wildlife (CDFW) for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” CDFW has jurisdiction over riparian habitats associated with watercourses. Jurisdictional waters are delineated by the outer edge of riparian vegetation (i.e., drip line) or at the top of the bank of streams or lakes, whichever is wider (CDFW 2010, 2023). CDFW jurisdiction does not include tidal areas or isolated resources. CDFW

reviews the proposed actions and, if necessary, submits (to the applicant) a proposal that includes measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by the CDFW and applicant is the Lake or Streambed Alteration Agreement

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Water Code Section 13000 et seq.) provides for statewide coordination of water quality regulations. The State Water Resources Control Board was established as the statewide authority and nine separate RWQCBs were developed to oversee water quality on a day-to-day basis. The RWQCB is the primary agency responsible for protecting water quality in California. As discussed above, the RWQCB regulates discharges to surface waters under the federal CWA. In addition, the RWQCB is responsible for administering the California Porter-Cologne Water Quality Control Act.

Pursuant to the Porter-Cologne Water Quality Control Act, the state is given authority to regulate waters of the state, which are defined as any surface water or groundwater, including saline waters. As such, any person proposing to discharge waste into a water body that could affect its water quality must first file a Report of Waste Discharge if Section 404 is not required for the activity. “Waste” is partially defined as any waste substance associated with human habitation, including fill material discharged into water bodies.

1.4 CONTACT INFORMATION

Applicant and Property Owner:

City of Redlands
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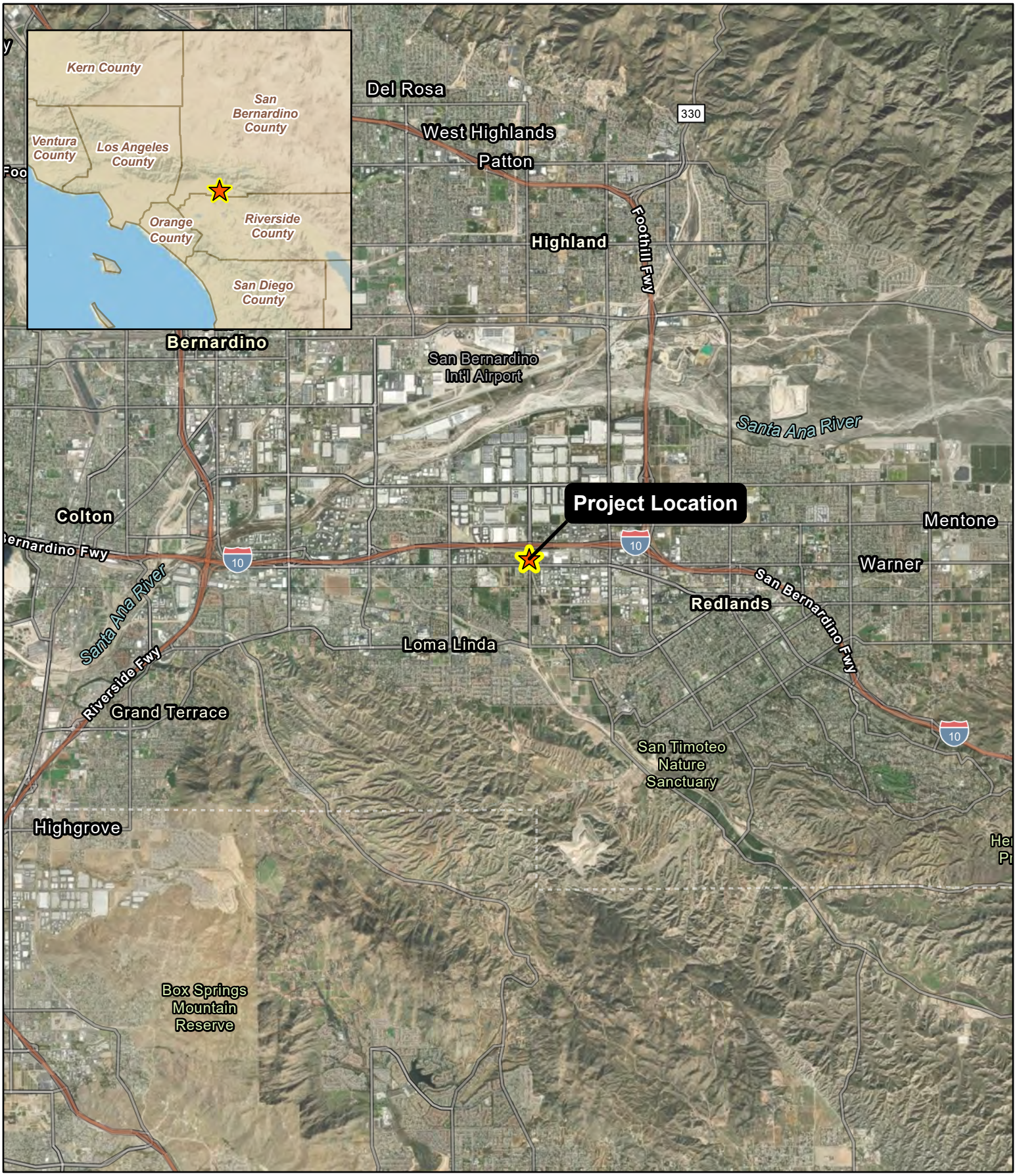

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0 1 2 Miles

1" = 2 Miles

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Aerial: ESRI World Imagery, 12/20/2022; ESRI USA Topo Maps
County: ESRI USA Counties, accessed 8/11/2023
Map Date: 8/11/2023

Figure 1

Regional Vicinity

APN: 0292-34-[10, 11, 17]

California Street & Redlands Blvd Intersection/Mission Zanja Channel
Redlands, CA

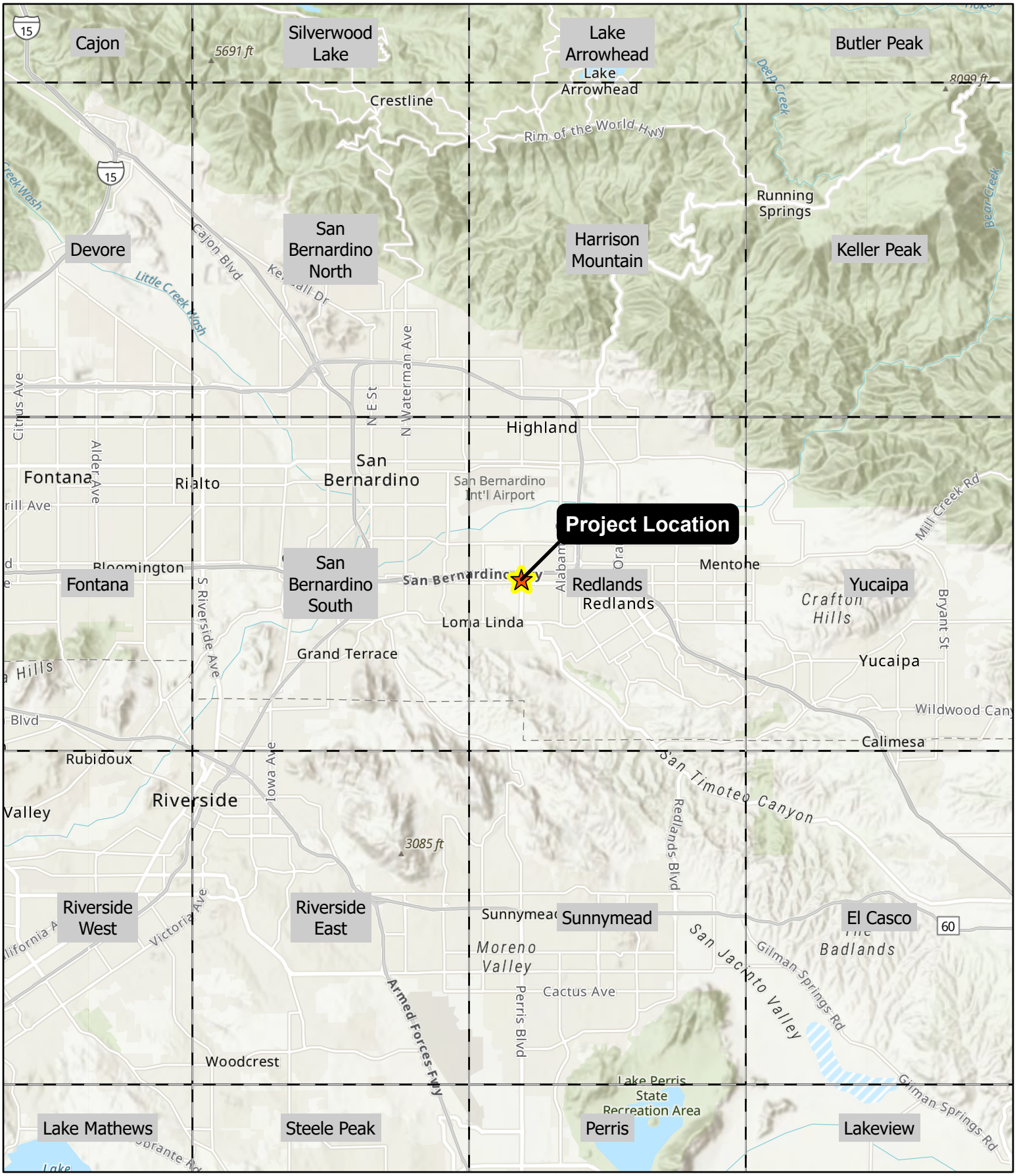


Figure 2

USGS Quadrangle Index

APN: 0292-34-[10, 11, 17]

CASC Engineering and Consulting

Aerial: ESRI World Topographic Map and World Hillshade
USGS 1:24,000 Topographic Maps 7.5- by 7.5-minute quadrangles, accessed 8/11/2023
Map Date: 8/11/2023

California Street & Redlands Blvd Intersection/Mission Zanja Channel
Redlands, CA

Section 2 Methodology

Prior to the on-site delineation, field maps were created using a Geographic Information System (GIS) and incorporating topographic maps with two-foot contours and a color aerial photograph at a 1:100 scale. U.S. Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI), U.S. Geological Survey (USGS), and National Hydrography Dataset (NHD) data was overlaid on a USGS topographic map of the area to further determine the locations of potential areas of jurisdiction. Google Earth was utilized to assess the presence or absence of visible flow patterns historically and in recent years.

Dennis Peterson and Katelyn Faulkner of Casc Engineering and Consulting (Casc) conducted the jurisdictional delineation field visit on June 27, 2023. Areas with depressions, drainage patterns, and/or wetland vegetation within the project site boundary were evaluated for potential jurisdictional status, with focus on the presence of defined channels and/or wetland vegetation, soils and hydrology. Field staff examined potential jurisdictional wetland areas using the methods set forth in the Corps 1987 *Wetland Delineation Manual* (Wetland Manual) (Environmental Laboratory 1987) and the 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0* (Arid West Supplement) (Corps 2008a). Wetland plant indicator status was determined using the *National Wetland Plant List* (NWPL; Corps 2020) and hydric soils indicators on *Field Indicators of Hydric Soils in the United States, Version 8.1 National Resources Conservation Service* (NRCS 2023). Soil chromas were identified in the field according to *Munsell's Soil Color Charts* (Kollmorgen 2000).

Lateral limits of potential non-wetland waters of the US, waters of the State, and RWQCB were identified using field indicators of an ordinary high-water mark (OHWM) as described in *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (Corps 2008b). For each feature exhibiting potential presence of an OHMW, Casc completed a 2010 Arid West Ephemeral and Intermittent Streams OHWM Datasheet (OHWM Datasheet).

CDFW potential jurisdictional boundaries were determined based on the presence of a streambed (i.e., bed and bank) and associated riparian habitat. Streambeds considered within CDFW jurisdiction were delineated based on the following definition: "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). Riparian habitat refers to vegetation and habitat associated with a stream. The CDFW jurisdictional habitat includes all riparian, shrub or tree canopy that may extend beyond the banks of a stream.

While in the field, potentially jurisdictional features were recorded using a hand-held Global Positioning System (GPS) (Arrow 100) unit with a level of accuracy within one foot.

Section 3 Results

3.1 TOPOGRAPHY

Elevations on-site range from 1,100 and 1,200 feet above mean sea level. Potentially jurisdictional areas on the project site include the Mission Zanja Channel which flows south to north though the Project site.

3.2 WATERSHED

The proposed Project site is within the Santa Ana River Hydrologic Unit Code [HUC] 8 (18070202), Upper Santa River Watershed HUC 10 (1807020305), and the Mission Zanja HUC 12 (180702030506) sub-watershed. USGS NHD and USFWS NWI maps both map this feature as an intermittent stream (Figure 4, National Wetlands Inventory Map). The Mission Zanja Channel is a tributary to the Santa Ana River which connects approximately 2.75 miles downstream of the Project site. The Santa Ana River ultimately drains into the Pacific Ocean.

3.3 HYDROLOGY

To date, the rainfall for 2023 in the Project region has been recorded at 12.19 inches. This total is more than 2 inches above the 10-year annual average of 10.03 inches. This is indicative of a relatively wet year where evidence of recent hydrology should be easily observable in the field.

Annual precipitation data for the Project region is shown below in Table 1 Precipitation Data for Redlands, California. This table describes the estimated monthly total and average precipitation for the Project region between 2013 and 2023. Casc's biologists accessed precipitation data through the National Resources Conservation Service (NRCS) Agricultural Applied Climate Information System (AgACIS) database from the Redlands Station in San Bernardino County on June 31, 2023. Table 1 utilizes the Redlands Station precipitation data.

The field survey conducted on June 27, 2023, occurred during above-average historic precipitation (0.08 inch) for the month of June, which averaged 0.02 inches between 2013-2023 (Table 1).

Table 1. Precipitation Data for Redlands, California

Monthly Total Precipitation (inches) for Redlands, CA													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2013	1.28	1.43	0.92	0.02	0.24	0	0.2	0.11	0	0.59	1.33	0.31	6.43
2014	0.03	1.91	0.48	1.13	0.01	0	0	1.25	0	0	0.39	3.97	9.17
2015	0.53	0.93	0.51	0.53	0.8	0	1.66	0	0.98	0.35	0.24	1	7.53
2016	3.4	0.23	1.41	1.11	0.08	0	0	0	0.01	0.82	1.39	3.89	12.34
2017	7.02	2.61	0.1	0.01	0.27	0	0	0.19	0.01	0.01	0.05	0	10.27
2018	3.4	0.4	2.06	0	0.37	0	0.11	0	0	0.87	1.1	1.43	9.74
2019	3.17	5.66	2.24	0.07	1.44	0.01	0	0	0	0	2.69	2.77	18.05
2020	0.11	0.38	4.85	4.37	0	0.02	0	0	0	0	0.69	1.37	11.79
2021	2.2	0.28	1.59	0.01	0	0.12	0.34	0.02	0.01	0.6	0	4.24	9.41
2022	0.31	0.34	0.71	0.28	0.04	0.02	0	0	0.73	0.47	1.56	1.06	5.52
2023	4.85	3.77	2.75	0.17	0.57	0.08	M	M	M	M	M	M	M
Mean	2.39	1.63	1.6	0.7	0.35	0.02	0.23	0.16	0.17	0.37	0.94	2	10.03

*Per AgACIS database: “Monthly summarized data - means, sums, daily extremes or frequencies for the selected variable for each month of the year for the selected range of years. HDD, CDD and GDD are heating, cooling and growing degree days, respectively. Note: trace precipitation/snowfall/snow depth amounts are treated as zero in sums, means, and frequency counts. Annual average temperatures are the average of the twelve-monthly values. Values of 'M' indicate missing data and 'T' indicates a trace.”

3.4 SOILS

Per the NRCS soil survey, the Project site consists of soils characterized as Hanford sandy loam, 0 to 2 percent slopes (Figure 5, Soils Map). This series is characteristically well drained with very low runoff potential. This soil is considered prime farmland if irrigated. The proportion of soils rated as hydric is zero.

3.5 FEATURES OBSERVED

Casc’s biologists investigated the Mission Zanja Channel. This feature is classified as R4SBC by the NWI (Figure 4). This classification specifies a riverine intermittent streambed that is seasonally flooded. In addition, this drainage is manipulated in the form of a manmade excavated drainage flowing from a concrete box that passes under the intersection of Redlands Boulevard and California Street and into an excavated channel. Within the Project site a portion of the substrate is concrete lined and likely not jurisdictional.

In order to be considered a jurisdictional wetland under Section 404, an area must possess three wetland characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation is plant life that grows, and is typically adapted for life, in permanently or periodically saturated soils. The hydrophytic vegetation criterion is met if more than 50 percent of the dominant plant species from all strata (tree, shrub, and herb layers) is considered hydrophytic. To be considered hydrophytic, the species must have wetland indicator status, i.e., be rated as obligate (OBL: occurring primarily in wetlands), facultative wet (FACW: occurring usually in wetlands) or facultative (FAC: equally likely to occur in wetlands and non-wetlands).

Where the concrete ends the substrate becomes coarse sand, pebble, and cobble to a depth well below 20 inches and is very well drained, and completely lacking the potential for hydric soils to develop. Given this field observation combined with the lack of hydric soils mapped in the area a wetland should not occur within the Project site. As a result, wetland sample points were not needed in the field. At the time of the site visit water was flowing north out of the concrete lined channel passing under the intersection. The water flowed north and quickly percolated below the surface upon reaching the coarse sand, pebble, and cobble substrate. Representative site photos are show in Appendix A and photo point locations are shown on Figure 3.

Because of these field conditions, Casc's biologist subsequently completed an Arid West Ephemeral and Intermittent Streams Ordinary High Watermark (OHWM) Datasheet to determine jurisdictional boundaries of observed non-wetland waters (Appendix B, OHWM Data Sheets). The lateral extent of USACE jurisdiction was measured at the OHWM which in this case was toe of slope. The streambed was primarily unvegetated and indicators for OHWM were a break in bank and slop, change of vegetation cover, and drift and debris deposits.

The lateral extent of a CDFW jurisdictional streambed can be measured in several ways depending on the particular situation. The outer edge of riparian vegetation is used as the line of demarcation between riparian and upland habitats and is therefore an identifiable boundary of the lateral extent of a CDFW jurisdictional drainage. On smaller streams or dry washes with little or no riparian habitat, the top of bank-to-top of bank width (TOB) is used to mark the lateral extent of the jurisdictional drainage, as was the case for this jurisdictional delineation. The vegetation community within this drainage is ruderal, consisting of mostly non-native species (Figure 6, Vegetation Communities). The vegetation that occurs right around the OHWM and extends upslope does contain some hydrophytic species. This includes seep monkey flower (*Erythranthe guttata*) (OBL), curly dock (*Rumex crispus*) (FAC), and tall sedge (*Cyperus eragrostis*) (FACW). The presence of these hydrophytic species is consistent with vegetation that is influenced by the streambed and contained within the barrier fence installed above the rip rap on the excavated slope. The TOB at this location is determined to be at the location of the barrier fence. Appendix C and D is a compendia of plant and wildlife recorded during the field survey.

The Project site consists of Mission Zanja Channel with an average OHWM of approximately 25 feet and a CDFW streambed bank-full width of approximately 45 feet. The channel slopes from south to north and converges with the Santa Ana River approximately 2.75 miles north (downstream) of the Project site.

3.6 JURISDICTIONAL RESOURCES AND ANALYSIS

Non-wetland waters of the U.S.

Waters of the U.S. (WoUS) are defined as: “All waters used in interstate or foreign commerce; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent and ephemeral streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, where the use, degradation, or destruction of which could affect interstate commerce; impoundments of these waters; tributaries of these waters; or wetlands adjacent to these waters”. CWA jurisdiction exists over the following:

1. all traditional navigable waters (TNWs);

2. all wetlands adjacent to TNWs;

3. non-navigable tributaries of TNWs that are relatively permanent (RPW) (i.e., tributaries that

    typically flow year-round or have continuous flow at least seasonally); and

4. every water body determined to have a significant nexus with TNWs.

Mission Zanja Channel is an intermittent stream that flows during rain events, likely for less than 5 months per year, and would therefore be classified as a non-relatively permanent water (RPW) by the USACE. This channel feature flows into a RPW, the Santa Ana River. The Mission Zanja Channel /Santa Ana River confluence is located approximately 2.75 miles downstream of the project location. The Santa Ana River terminates at the Pacific Ocean, a Traditionally Navigable Water (TNW). Mission Zanja Channel has a surface water connection to a TNW, and therefore would be considered a jurisdictional WoUS. Due to the proximity of the unnamed drainage to Mission Zanja Channel and the Santa Ana River, it is likely that the USACE would consider it to have a “significant nexus” with a TNW and be considered a jurisdictional WoUS.

Wetlands

There is no historical, biological, or hydrological evidence that would indicate the presence of wetland features. No swales, ephemeral ponds, or stock ponds are present on the Project site. There are no depressions on the Project site. None of the mapped soils on site are listed on the USDA-NRCS National Hydric Soils List. The duration, timing, and frequency of inundation on the Project site provides no indication or validation of wetland ecology. Water does not accumulate on surface for seasonal periods (more than 3 weeks) of inundation. Clay soils are not mapped on site. The site lacks the water retention capabilities necessary to support wetlands. The biological functions and values of wetlands do not exist on site.

Areas meeting all three parameters would be designated as USACE wetlands. All three requirements were not met. Therefore, no wetlands were identified in the study area during this investigation.

Table 2. Potential Jurisdictional Aquatic Features

	Wetland Waters of U.S./State		Non-wetland Waters of U.S./State		Waters of the State (Unvegetated Streambed)		Waters of the State (Riparian Habitat)	
	(USACE/RWRCB)		(USACE/RWRCB)		(CDFW)		(CDFW)	
Aquatic Feature	**Acres**	**Linear Feet**	**Acres**	**Linear Feet**	**Acres**	**Linear Feet**	**Acres**	**Linear Feet**
The Mission Zanja Channel	0	0	0.452	806	0.739	806	0.0	0
Total	0	0	0.452	806	0.739	806	0.0	0

Table 3. Potential Impacts by Jurisdiction

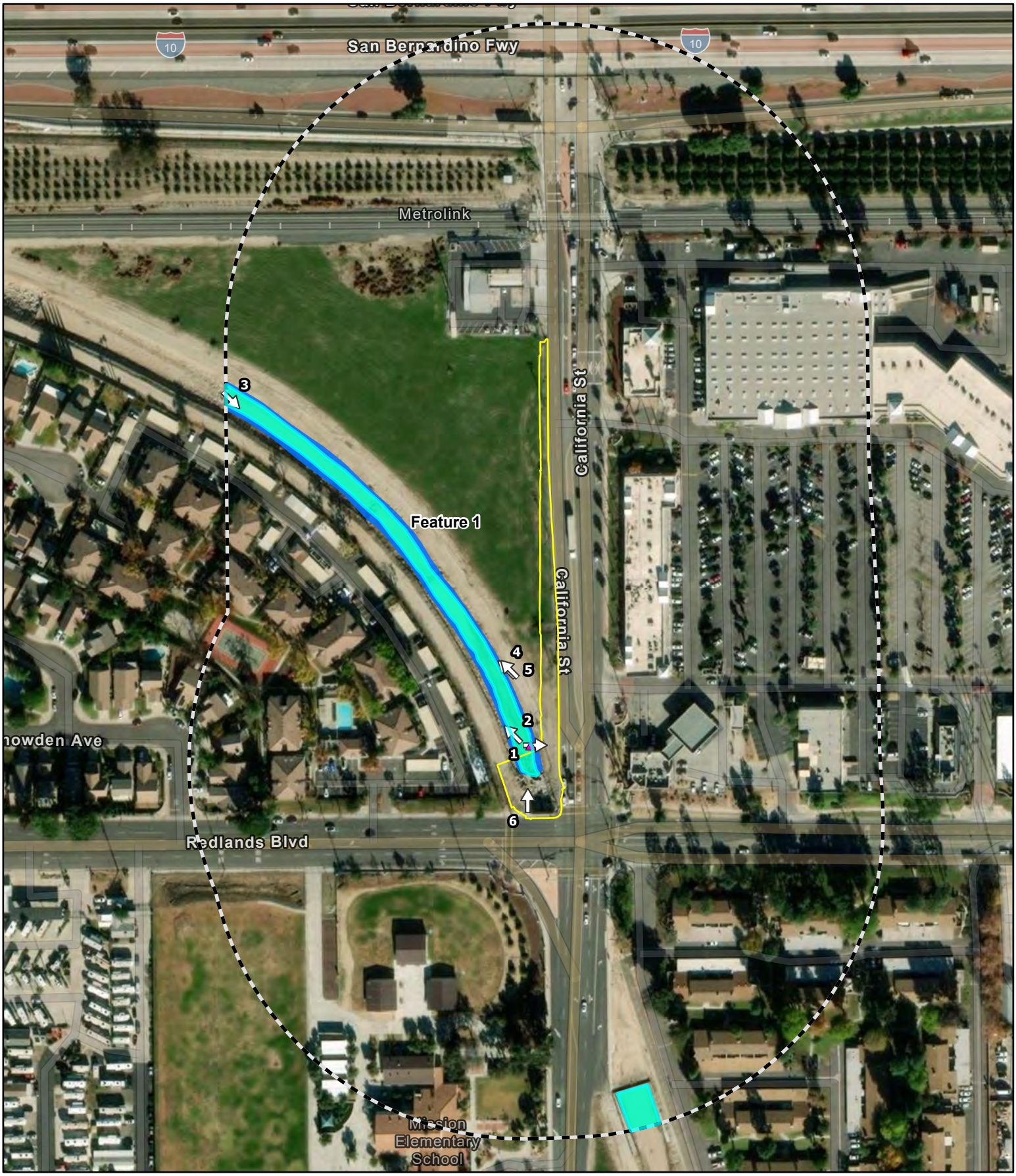
	Wetland Waters of U.S./State		Non-wetland Waters of U.S./State		Waters of the State (Unvegetated Streambed)		Waters of the State (Riparian Habitat)	
	(USACE/RWRCB)		(USACE/RWRCB)		(CDFW)		(CDFW)	
Aquatic Feature	**Acres**	**Linear Feet**	**Acres**	**Linear Feet**	**Acres**	**Linear Feet**	**Acres**	**Linear Feet**
The Mission Zanja Channel	0	0	0.017	35	0.030	35	0.0	0
Total	0	0	0.017	35	0.030	35	0.0	0

Table 4. Vegetation Communities at the Project Site

Vegetation Type	**Acreage within 500-ft Buffer**	**Acreage within Project Site**
Agricultural	1.75	0.00
Annual Non-native Grassland	3.71	0.20
Developed/Disturbed	30.00	0.27
Ornamental	0.64	0.00
Unvegetated Streambed	0.76	0.03
TOTAL	**36.86**	**0.50**

3.7 PROPOSED JURISDICTIONAL IMPACTS

Permanent impacts at the proposed Project site would be limited to the portion of the streambed and associated banks that are not currently lined with concrete. The Project site contains no wetland WoUS or wetland waters of the state, and lacked aquatic features with all three wetland indicators (i.e., hydrophytic vegetation, hydric soils, and hydrology). The Project site includes 0.017 acre (35 linear feet) of potential non-wetland WoUS and waters of the state, subject to USACE and RWQCB jurisdiction. The Project site contains 0.030 acre (35 linear feet) potentially subject to CDFW jurisdiction (Table 2, Potential Jurisdictional Aquatic Features, Table 3, Potential Impacts by Jurisdiction). The limits of CDFW jurisdiction include non-wetland WoUS, and extend beyond, to include the full extent of the riparian corridor defined here as top of bank. The lack of riparian vegetation at the Project site further supports these conclusions (Table 4, Vegetation Communities at the Project Site).



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1" = 200 Feet

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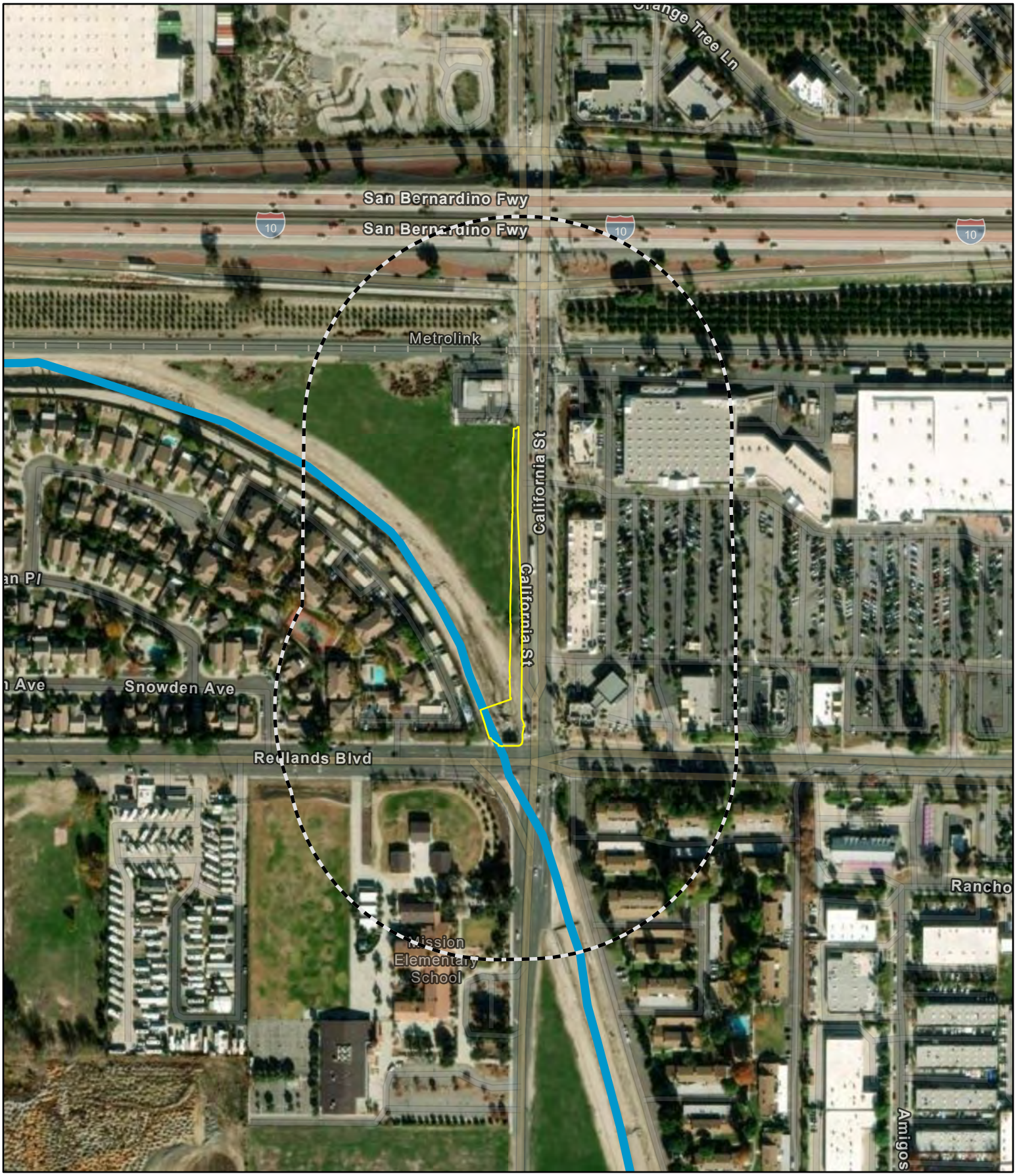
Project Boundary	Potentially Jurisdictional Waters
500-ft Buffer	CDFW
Photo Points	CDFW/USACE/RWQCB
OHWM	

Figure 3
Jurisdictional Delineation Limits and Photo Point Location Map

APN: 0292-34-[10, 11, 17]

Aerial: ESRI World Imagery, 12/20/2022
Map Date: 8/23/2023

California Street & Redlands Blvd Intersection/Mission Zanja Channel
Redlands, CA



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1" = 300 Feet

Project Boundary
500-ft Buffer
USA Wetlands
River

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Figure 4
National Wetland Inventory Map

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Aerial: ESRI World Imagery, 12/20/2022
NWI: U.S. Fish and Wildlife Service 10/7/2022, accessed 8/12/2023
Map Date: 8/12/2023

California Street & Redlands Blvd Intersection/Mission Zanja Channel
Redlands, CA

Figure 5

Soils

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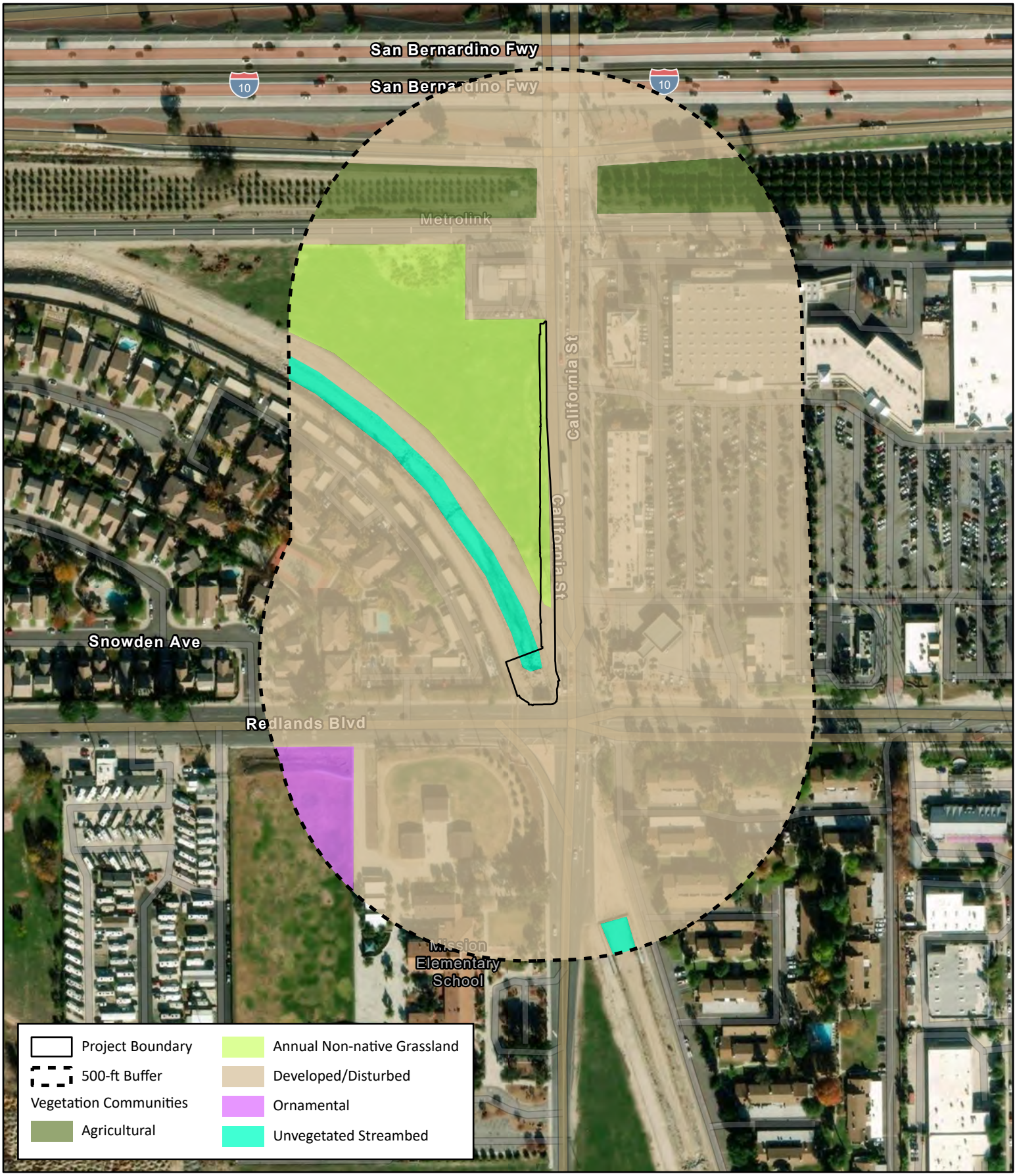
Aerial: ESRI World Imagery, 12/20/2022
Soils: USDA-NRCS, accessed 8/12/2023
Map Date: 8/12/2023

California Street & Redlands Blvd Intersection/Mission Zanja Channel
Redlands, CA



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1" = 250 Feet

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Aerial: ESRI World Imagery, 12/20/2022
Map Date: 8/12/2023

Figure 6

Vegetation Communities

APN: 0292-34-[10, 11, 17]

California Street & Redlands Blvd Intersection/Mission Zanja Channel
Redlands, CA

Section 4 Recommendations

A top priority for any Project that has jurisdictional waters on site is to avoid all impacts to those areas. However, impacts cannot be avoided in this case as Project improvements will occur to the road and flood control channel for public safety purposes. This Project is intended to improve traffic flow by realigning the road and improve the channel's flood control function by way of installing concrete box culverts. Therefore, all Project-related impacts to jurisdictional waters are considered permanent. Authorizations from the USACE, RWQCB, and CDFW are required for any permanent impacts to jurisdictional areas. Subject to regulatory approvals from USACE, RWQCB, and CDFW, and compliance with applicable conditions of approval, less than significant impacts are anticipated.

Permanent and temporary fills and discharges (impacts) to WoUS are regulated by USACE under Section 404 of the CWA (33 USC 401 et seq.; 33 USC 1344; USC 1413; and Department of Defense, Department of the Army, Corps of Engineers 33 CFR Part 323). Impacts to WoUS would require a CWA Section 404 permit from the Los Angeles District USACE. If impacts cannot be avoided, the proposed activities would likely be considered consistent with those covered under a Nationwide Permit.

A CWA Section 401 Water Quality Certification (WQC) administered by the State Water Resources Control Board (SWRCB) or RWQCB must be issued prior to any 404 Permit. The USACE jurisdictional areas addressed in this report would also be subject to 401 Certification by the RWQCB. There are no isolated waters or wetlands under RWQCB jurisdiction within the Project site that would be subject to the State Porter-Cologne Water Quality Control Act only. If impacts to WoUS are proposed, a 401 WQC from the Santa Ana RWQCB would be required.

The CDFW regulates temporary and permanent alterations or impacts to streambeds or lakes under California Fish and Game Code Sections 1600 et seq. Notification of Lake or Streambed Alteration to CDFW is required for projects that will divert or obstruct the natural flow of water; change the bed, channel, or bank of any stream; or use any material from a streambed. A Streambed Alteration Agreement (SAA) is issued by CDFW as a contract between the applicant and CDFW stating what activities can occur in the riparian zone and stream course (California Association of Resource Conservation Districts 2002). If impacts to CDFW jurisdiction are proposed, Notification of Lake or Streambed Alteration would be required by CDFW.

Section 5 References

California Department of Fish and Wildlife (CDFW). 2010. *A Review of Stream Processes and Forms in Dryland Watersheds*. December 2010. Prepared by Kris Vyverberg, Conservation Engineering Program, Sacramento, CA.

_____. 2023 Fish and Wildlife Code of California. Available at: http://leginfo.legislature.ca.gov/. Accessed August 2023.

California Native Plant Society (CNPS). 2023. Manual of California Vegetation Online. Available online at: https://vegetation.cnps.org/. Accessed August 2023.

Google Earth. 2023. Aerial Images: Lat 34.063025, Lon -117.226110: May 12, 2023 - April 15 2020; Accessed August 2023.

National Resources Conservation Service (NRCS) Agricultural Applied Climate Information System (AgACIS) Database. Monthly Total Precipitation for Redlands, CA Station, 2007-2018. https://agacis.rcc-acis.org/ Accessed June 2023.

United States Army Corps of Engineers (USACE). 2021. Reissuance and Modification of Nationwide Permits, Final Rule. *Federal Register* 86 (8): 2744–2877. January 13, 2021.

_____. 2020a. The Navigable Waters Protection Rule: Definition of "Waters of the United States"; Final Rule. *Federal Register* 85 (77): 22250–22342. April 21, 2020.

_____. 2020b. National Wetland Plant List; Final Notice. *Federal Register* 85 (96): 29689–29691. May 18, 2020.

_____. 2012. *National Wetlands Plant List Indicator Rating Definitions*. US Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. ERDC/CRREL. Publication ERDC/CRREL TN-12-1. Published July 2012. Lichvar, R.W., N.C Melvin, M.L. Butterwick, W.L. Kirchner.

_____. 2010. Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Publication ERDC/CRREL TN-10-1. Published July 2010. K.E. Curtis and R.W. Lichvar.

_____. 2008a. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. US Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. ERDC/CRREL. Publication ERDC/EL TR-08-28. Published September 2008.

_____.2008b. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*. US Army Corps of Engineers, Engineer Research and Development Center. Publication ERDC/CRREL TR-08-12. Lichvar, R.W., and S.M. McColley.

———. 1987. *Corps of Engineers Wetlands Delineation Manual.* Wetlands Research Program Technical Report Y-87-1. Department of the Army, Vicksburg, VA. U.S. Army Waterways Experiment Station. Hickman. J.C. [ed.].

United States Department of Agriculture. NRCS 2023. Web Soil Survey. Available at: https://websoilsurvey.sc.egov.usda.gov/. Accessed July 2023

_____. 2023b. Natural Resource Conservation Service Soils. Lists of Hydric Soils. Available at: https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/. Accessed July 2023

United States Fish and Wildlife Service (USFWS). 2023. US. Department of the Interior, Fish and Wildlife Service. National Wetlands Inventory. Wetlands Mapper. Available at: https://www.fws.gov/wetlands/data/Mapper.html. Accessed July 2023.

United States Geological Service (USGS). 2021a. National Hydrography Dataset (NHD) 1:24,000.

_____. 2023b. Watershed Boundary Dataset. Available at: https://www.usgs.gov/core-science-systems/ngp/national-hydrography/watershed-boundary-dataset?qt-science_support_page_related_con=4#qt-science_support_page_related_con. Accessed July 2023.

Appendix A Representative Site Photographs

Photo Point 1. Water entering north side of intersection and end of concrete lining.

Photo Point 2. Water entring streambed and quickly percolating below the surface.

Photo Point 3. Northern portion of Zanaja Channel in Survey Area.

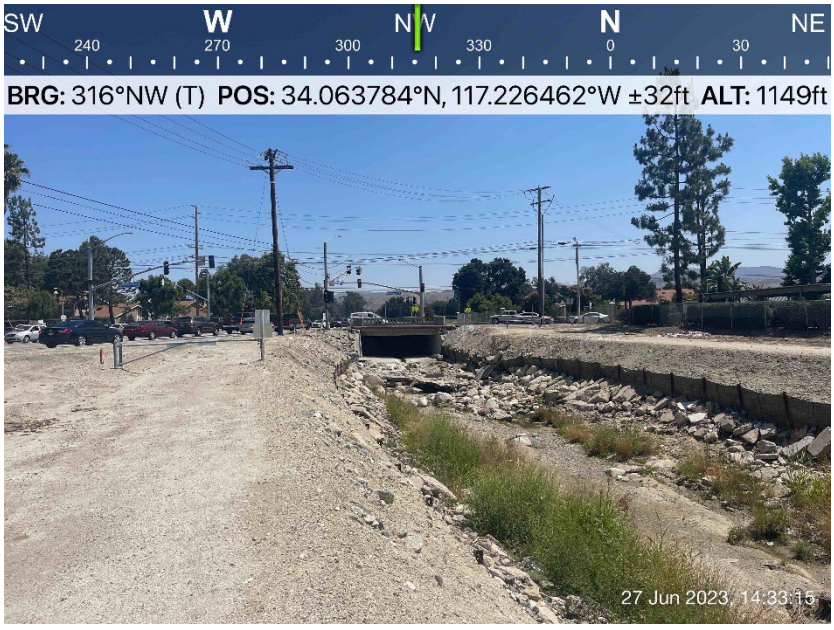


Photo Point 4. Overview of Project Area. Barrier fence visible on right side and corresponds with top of bank.

Photo Point 5. Zanaja Channel north of Project Area.

Photo Point 6. OHWM visible at toe of slope near vegetation line. TOB visible at Barrier fence.

Appendix B Data Sheets

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: California St/Redlands Blvd. Widening **Date:** 6/27/23 **Time:** 10:20
Project Number: 107-0124 **Town:** Redlands **State:** CA
Stream: Mission Zanja Canal **Photo begin file#:** 1 **Photo end file#:** 6
Investigator(s): Dennis Peterson, Katie Faulkner

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

Y ☒ / N ☐ Is the site significantly disturbed?

Location Details: Intersection Redlands Blvd, California St.
Projection: **Datum:**
Coordinates: 34.063484, -117.226417

Potential anthropogenic influences on the channel system:
Drainage is within an urban/suburban environment, in a manipulated drainage. The banks are lined with riprap, portions of streambed are concrete lined.

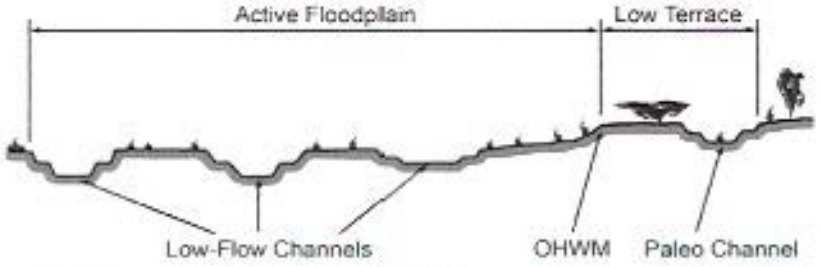
Brief site description: see above, a lot of trash/Debris, streambed mostly un-vegetated

Checklist of resources (if available):

- ☒ Aerial photography
  Dates:
- ☒ 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:

Project ID: 107-0124 **Cross section ID:** 1 **Date:** 6/27/23 **Time:** 10:30 AM

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

GPS point: 34.063479, -117.226439

Characteristics of the floodplain unit:

Average sediment texture: Pebble

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: un vegetated
- ☒ Other: some boulders
- ☐ Other: _____

Comments:

Primarily un-veg streambed/chanel, some boulders

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

GPS point: 34.063451, -117.226486

Characteristics of the floodplain unit:

Average sediment texture: cobble

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

Community successional stage:

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

Indicators:

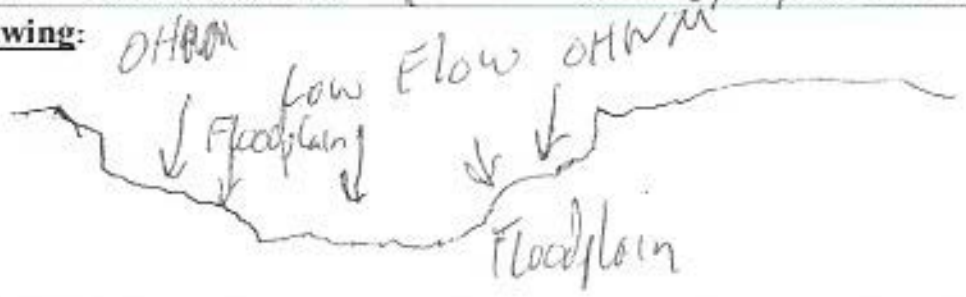
- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain is transition from rip-rap to streambed.

Project ID: 1017-0124 **Cross section ID:** 1 **Date:** 6/27/23 **Time:** 10:30 AM

Cross section drawing:



OHWM

GPS point: 34.063494, -117.226384

Indicators:

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

Comments:

OHWM is on man-made rip rap bank.

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

GPS point: 34.063491, -117.226402

Characteristics of the floodplain unit:

Average sediment texture: cobble

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

Community successional stage:

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

Indicators:

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

Comments:

Floodplain is transition from rip-rap to streambed.

Appendices C Plant Species

APPENDIX C

Plant Compendia

The following vascular plant species were observed by CASC at the Project Site in Redlands, California on June 27, 2023.

*Indicates introduced nonnative species

SPECIES/SCIENTIFIC NAME	FAMILY/COMMON NAME
ANGIOSPERMAE	***FLOWERING PLANTS***
ADOXACEAE	*HONEYSUCKLE FAMILY*
Sambucus racemosa var. racemose	red elderberry
ASTERACEAE (COMPOSITAE)	*SUNFLOWER FAMILY*
Ambrosia psilostachya	ragweed
*Centaurea melitensis**	maltese star-thistle*
*Erigeron bonariensis**	hairy fleabane*
Erigeron canadensis	horseweed
Helianthus annuus	hairy leaved sunflower
*Helianthus petiolaris ssp. Petiolaris**	prairie sunflower*
*Sonchus oleraceus**	sow thistle*
COMMELINACEAE	*DAYFLOWER FAMILY*
*Commelina benghalensis**	dayflower*
CYPERACEAE	*SEDGE FAMILY*
Cyperus eragrostis	tall flatsedge
FABACEAE	*LEGUME FAMILY*
*Melilotus indicus**	yellow sweet clover*
GERIANIACEAE	*GERANIUM FAMILY*
*Erodium cicutarium**	common stork's-bill*
ONAGRACEAE	*EVENING PRIMROSE FAMILY*
*Oenothera biennis**	small flowered evening primrose*
PHRYMACEAE	*MONKEY-FLOWER FAMILY*
Erythranthe guttata	seep monkeyflower
POLYGONACEAE	*BUCKWHEAT FAMILY*
Persicaria lapathifolia	pale smartweed
*Rumex crispus**	curly dock*
SOLANACEAE	*NIGHTSHADE FAMILY*
Datura wrightii	jimsonweed

SPECIES/SCIENTIFIC NAME	FAMILY/COMMON NAME
ZYGOPHYLLACEAE	*TWINLEAF FAMILY*
*Tribulus terrestris**	puncture vine*

MONOCOTYLEDONES	***MONOCOTS***
POACEAE	*GRASS FAMILY*
*Eragrostis cilianensis**	stinkgrass*
*Lolium perenne**	perennial ryegrass*
Panicum capillare	old witch grass

Floral compendia identified during surveys were recorded in terms of relative abundance and host habitat type. Floral taxonomy used in this report follows the *Jepson Manual* (Hickman 1993) and for sensitive species, the *California Native Plant Society Rare Plant Inventory*, 5th Edition (Pavlik and Skinner 1994). Additional common plant names are taken from Munz (1974) and Sawyer and Keeler-Wolf (2009)

Appendices D Wildlife Species

APPENDIX D

Wildlife Compendia

The following is a list of wildlife species recorded by CASC at the Project Site in Redlands, California on June 27, 2023. Presence may be noted if a species is seen or hears, or identified by the presence of tracks, scat, or other sign.

*Indicates introduced nonnative species

SPECIES/SCIENTIFIC NAME	FAMILY/COMMON NAME
REPTILIA	***REPTILES***
IGUANIDAE	*IGUANID LIZARDS FAMILY*
Sceloporus undulatus	fence lizard
AVES	***BIRDS***
CHARADRIIDAE	*PLOVER FAMILY*
Charadrius vociferus	killdeer
COLUMBIDAE	*PIGEON AND DOVE FAMILY*
Zenaida macroura	mourning dove
CORVIDAE	*CROWS AND RAVENS FAMILY*
Corvus corax	common raven
HIRUNDINIDAE	*SWALLOW FAMILY*
Hirundo rustica	barn swallow
MIMIDAE	*MOCKINGBIRD FAMILY*
Mimus polyglottos	northern mockingbird

Taxonomy and nomenclature follows Beher (1998) and Laudenslayer et.al. (1991. A checklist of the amphibians, reptiles, birds, and mammals of California. California Fish and Game 77:109-141.), Sibley (2000) and the American Ornithologists' Union (1998. The A.O.U. Checklist of North American Birds, 7th Ed. American Ornithologists' Union, Washington D.C.