P3021-RS-00036

Jurisdictional Delineation for the SR-91/71 Interchange Project, Riverside County, California

Submitted to:

RCTC

Submitted by:

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December 2013

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1.0 INTRODUCTION AND PROJECT SUMMARY

The California Department of Transportation (Caltrans), in cooperation with the Riverside County Transportation Commission (RCTC), proposes to improve the existing State Route 91 (SR-91) and State Route 71 (SR-71) interchange in the city of Corona, Riverside County. The improvements include constructing a new direct flyover connector from eastbound (EB) SR-91 to northbound (NB) SR-71 and reconfiguring the EB SR-91 ramp between Green River Road and the SR-91/71 interchange. The project is anticipated to improve current and future mobility on SR-91 and SR-71 by enhancing operations and capacity at the SR-91/71 interchange.

Several jurisdictional delineations by other projects were previously conducted within the project site. A jurisdictional delineation was completed for the SR-91 Corridor Improvement Project in November 2009. The report identified all potential wetlands and waters of the United States within the project area. In November 2010, Caltrans submitted the report and requested a Jurisdictional Determination from the United States Army Corps of Engineers (USACE) Los Angeles District. Subsequent to the request, Caltrans and RCTC provided information to USACE on three separate occasions in 2011. In March 2013, additional fieldwork was conducted and a memorandum produced to verify jurisdictional streambeds and habitat to the California Department of Fish and Wildlife (CDFW) for the SR-91 Corridor Improvement Project. Additionally, a jurisdictional delineation for the SR-91/71 Interchange Project was completed in June 2010 and a subsequent jurisdictional delineation was recently conducted on April 2013.

This Jurisdictional Delineation Report provides a summary of the USACE, Regional Water Quality Control Board (RWQCB), and CDFW jurisdictional waters that may occur within the proposed project site. The current study was conducted to consolidate existing jurisdictional delineation information, to update the delineation, and to expand the limits of the delineation to cover areas for final design and permitting.

Throughout these surveys, several areas have been disturbed by other projects, including the Orange County Transportation Authority (OCTA) SR-91 Eastbound Lane Addition Project and the USACE Reach 9 Phase II A & B Project. The purpose of this delineation is to account for these changes and provide updated information on jurisdictional resources that currently exist.

The jurisdictional delineation conforms to the unified Federal method, as defined by USACE, using methodology outlined in the *Corps of Engineers Wetlands Delineation Manual* [Environmental Laboratory 1987] and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Region Supplement Version 2.0) [USACE 2008]. The boundaries of potential waters of the U.S. were delineated through field determination, made in conjunction with aerial photograph interpretation. The 2007 and 2011 USACE and U.S. Environmental Protection Agency (EPA) guidance on jurisdictional delineations were also considered.

1.1 Project Location

The project area is located in the western portion of the County of Riverside, California (Figure 1) within the U.S. Geological Survey (USGS) 7.5-minute Prado Dam topographic quadrangle, San Bernardino Base Meridian, in Sections 19, 20, 29, and 30 of Township 3 South, Range 7 West. The project area is made up of ten parcels that are intersected by Caltrans right-of-way (Assessor's Parcel Numbers [APN] 101-040-004, 101-040-009, 101-120-009, 101-140-013, 101-

140-031, 101-180-035, 101-180-017, 101-140-010, 101-140-034, and 101-140-035). The approximate center of the project area is located at 33.883245º, -117.643551º. The project area is comprised of the entirety of the SR-91/SR-71 interchange as it is currently configured and segments of the SR-71 and SR-91.

1.2 Project Description

The project proposes to improve the existing SR-91/SR-71 interchange by constructing a new direct flyover connector from eastbound SR-91 to northbound SR-71. In addition to the flyover, the Green River Road eastbound onramp will be reconstructed, the SR-71 realigned, and access to properties relocated. Other project features include drainage improvements, signage, and retaining walls.

Features of the project include the following:

- Construct a direct two-lane flyover connector from EB SR-91 to NB SR-71;
- Replace the existing Green River Road EB SR-91 on-ramp with a slip on-ramp to the SR-91/71 flyover;
- Realign SR-71 to accommodate the new flyover connector and modified connectors;
- Restripe the SR-91 EB lanes from the 11-ft width to the 12-ft standard width between PM R0.6 to PM R2.6;
- Modify or construct new drainage facilities;
- Construct retaining walls along portions of the Green River Road on-ramp south of SR-91, along SR-71, and at the abutment ends of the flyover connector;
- Relocate the USACE driveway approximately 0.3-mile north of its current location; and
- Install freeway signage within the project area for the new flyover connector and for the Green River Road on-ramp. Ramp metering may be installed on the Green River Road on-ramp prior to merging with EB SR-91.

1.3 Project Purpose

This estimated $118 million project is a major element of RCTC's 10-year Measure A delivery plan and a high priority within the region. The SR-91/71 Interchange is a significant source of traffic congestion in the area. The proposed project is designed to:

- Improve the operational efficiency of the eastbound SR-91 to northbound SR-71 connector;
- Minimize future congestion and delay in the eastbound direction of SR-91 between Green River Road and the SR-91/71 interchange;
- Improve accessibility to SR-71 from eastbound SR-91 at Green River Road; and
- Improve access and reduce congestion associated with weaving from Green River Road to eastbound SR-91.

Map Date: 5/17/2013

Service Layer Credits: Sources: USGS, ESRI, TANA, AND

Figure 1. Project Vicinity

2013-033 SR 91/71 Bio Assessment Survey

Project Location

Feet
0 1,000 2,000

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Map Date: 5/17/2013
USGS Topographic Quadrangle

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Figure 2. Project Location

2013-033 SR 91/71 Bio Assessment Survey

2.0 EXISTING CONDITIONS

2.1 Regional Setting

The southern portion of the project area is located within Corona; the northern portion of the project area is located within an unincorporated area of the County of Riverside, California. Corona has an average elevation of 678 feet above mean sea level (AMSL), and averages 12.71 inches of precipitation annually [WRCC 2013]. The climate tends to be variable and warm, with the warmest month in July and the coolest month in January [WRCC 2013]. Temperatures usually range from the high 40s degrees Fahrenheit (°F) in the winter to the 90s °F in the summer.

Land uses within Corona include urban land uses and single-family residences, as well as a variety of recreational uses within the Prado Basin. The project area is located within the Santa Ana Watershed (HUC 18070203), which is a watershed of approximately 3,000 square miles [EPA 2013]. A further discussion of watersheds is discussed in Section 2.7.

2.2 Topography

The project area topography consists of the broad floodplain of the Santa Ana River along SR-91 and rolling hills leading eastward to the Prado Basin along the majority of SR-71. All drainage features within the study area drain to the Santa Ana River. The floodplain associated with the drainages generally slopes from north to south, from approximately 550 feet AMSL in the north to 450 feet AMSL in the south. The western side of SR-71 consists of steep canyons and hillsides. SR-71 rests on the foot of the Chino Hills and is bounded on the east by the Prado Basin. SR-91 follows an east-west path and runs approximately parallel to the Santa Ana River.

2.3 Precipitation Data and Hydrologic Data

Precipitation and hydrologic data were reviewed in support of field delineation activities [USACE 2008; NOAA 2012; and DWR 2010]. Reviewing the available precipitation records for the region provides valuable information on recent precipitation events. Recent rain events, or the lack of them, can determine the extent to which the Ordinary High Water Mark (OHWM) is visible during the time of field surveys and provides an indication of the return interval associated with storms responsible for creating the OHWM indicators at the time of the survey.

Appendix C provides a record of monthly precipitation during the 2010 to 2012 wet seasons at the Santa Ana (ANA) Station. In 2010-2011, rainfall was abnormally high, totaling nearly 20 inches. In 2011-2012, rainfall was more normal, totaling approximately 10 inches. The ANA record is from the California Data Exchange Center [DWR, 2010]. The ANA station is located approximately 10 miles southwest of the project area at an elevation of approximately 135 feet. It is likely that the project area (located at an elevation of approximately 678 feet) received approximately the same amount of rainfall as this station.

Conditions in the months prior to the survey being conducted were typical of the winter season in southern California, and rainfall totals were close to normal for the time period.

2.4 National Wetlands Inventory Mapping/National Hydrology Dataset

United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps were reviewed to determine locations of mapped wetlands and streams within the project area [USFWS, 2009]. There are five wetland types mapped in the region of the proposed project: Freshwater Emergent Wetland, Freshwater Forested/Shrub Wetland, Freshwater Pond (Palustrine System), Riverine (Riverine System), and Lake (Lacustrine System) (Figure 3). The types are described briefly below.

The Freshwater Emergent Wetland Class is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. All water regimes are included except subtidal and irregularly exposed.

The Freshwater Forested Wetland Class is characterized by woody vegetation that is 20 feet tall or taller. The Shrub Wetland Class includes areas dominated by woody vegetation less than 20 feet tall. The species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. All water regimes except subtidal are included in both class types.

The Palustrine System was developed to group the vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen, and prairie, which are found throughout the United States. It also includes the small, shallow, permanent or intermittent waterbodies often called ponds.

The Riverine System includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts in excess of 0.5 percent. A channel is "an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water."

The Lacustrine System includes permanently flooded lakes and reservoirs, intermittent lakes (e.g., playa lakes), and tidal lakes with ocean-derived salinities below 0.5 percent. Typically, there are extensive areas of deep water and considerable wave action. Islands of Palustrine wetland may lie within the boundaries of the Lacustrine System.

There are four National Hydrography Dataset (NHD) flow type features mapped for the area, including Artificial Path, Canal/Ditch, Pipeline, and Stream/River. Artificial Path flow types contain no attributes other than the name of a waterbody for reference purposes. Canal/Ditch flow types represent aqueducts or stormwater control features. Pipelines can represent many different manmade water conveyances. Stream/River flow types are natural watercourses classified as either ephemeral, intermittent, or perennial.

The locations of mapped features roughly coincide with most of the mapped features within the jurisdictional delineation. The flow path of some mapped NWI of NHD features have been modified by development or other disturbances.

2.5 Vegetation Communities

The project site supports several different vegetation types (Sawyer *et al.* 2009) (Figure 4). The dominant vegetation communities in the Biological Study Area (BSA) are California sagebrush-California buckwheat scrub, non-native grassland, and disturbed habitat.

2.5.1 California Sagebrush-California Buckwheat Scrub

California sagebrush-California buckwheat scrub is dominated by California sagebrush *(Artemesia californica)* and California buckwheat *(Eriogonum fasciculatum).* This community occurs on slopes that are usually steep and can be up to 6 feet tall. Within this plant community, individuals of many-stemmed dudleya *(Dudleya multicaulus)* were observed during a recent rare plant survey. The location of this rare plant is provided in Figure 4.

2.5.2 Disturbed Habitat

The disturbed community primarily occurs along the edges of development, railroad tracks, dirt roads, dirt parking lots, and areas that have been disturbed mechanically that are mostly unvegetated. This community rarely has any vegetative cover, and if this community does exhibit vegetation, it would be considered non-native grassland.

2.5.3 Eucalyptus/Ornamental Woodland

Eucalyptus/ornamental woodland is dominated by gum trees *(Eucalyptus* sp.), Jeffery pine *(Pinus jeffreyi),* golden wattle *(Acacia longifolia),* or other ornamental species planted for landscaping purposes and maintained frequently.

2.5.4 Mixed Scrub

Mixed scrub is dominated by California buckwheat and California sagebrush, with small annual and perennial species, including Western ragweed *(Ambrosia psilostachya),* coyote brush *(Baccharis pilularis),* doveweed *(Croton setigerus),* and telegraph weed *(Heterotheca grandiflora).*

2.5.5 Mulefat Thickets

Mulefat thickets are dominated by mulefat *(Baccharis salicifolia).* Associated species with this community in the BSA include California live oak *(Quercus agrifolia),* scrub oak *(Q. berberidifolia),* and Western sycamore *(Platanus racemosa).*

2.5.6 Non-Native Grassland

Non-native grassland is dominated by non-native species, including wild oat (*Avena fatua*), mustards *(Brassica* sp. and *Hirschfeldia* sp.), brome grasses *(Bromus* sp.), Bermuda grass *(Cynodon dactylon),* and red-stemmed filaree *(Erodium cicutarium).*

2.5.7 Oak Woodland

The oak woodland community is a combination of the scrub oak chaparral and coast live oak woodland communities. Oak woodland is dominated by California live oak and scrub oak. Associated species include brome grasses, chamise *(Adenostema fasciculatum),* toyon *(Heteromeles arbutifolia),* and poison oak *(Toxicodendron diversilobum).*

2.5.8 Fremont Cottonwood Forest

Fremont cottonwood forest is dominated by Fremont's cottonwood trees *(Populus fremontii)* and is associated with California live oak and willow trees *(Salix* sp.).

2.5.9 Urban/Developed

Urban and developed areas include paved streets and highways, buildings, or any other permanent facilities or structures that are man-made. Only ornamental vegetation, if any, is found within this community.

2.5.10 Water

This community includes the Prado Dam and portions of the Santa Ana River.

Intermittent streams and wetlands within the study area have riparian vegetation associated with them. Vegetation along these features tends to be extensive with diverse structural layers and a dominance of hydrophytic characteristics. Within the smaller, ephemeral drainage features of the study area, marginal vegetation was observed. Most of the smaller drainages contained scoured beds, and vegetation surrounding them did not encroach beyond the bank.

2.6 Soils

Ten soil series are associated with the project area: Altamont, Arbuckle, Cortina, Garretson, Gaviota, Grangeville, Metz, Perkins, San Emigdio, and Vallecitos (Figure 5). A soil series is a group of soils with similar profiles. There were also riverwash soils, water features, terrace escarpments, dams, and a borrow pit present in the soil mapping. Soil types were determined using the Natural Resources Conservation Service (NRCS) Web Soil Survey [USDA 2008] and checked against the United States Department of Agriculture (USDA), NRCS National Hydric Soils List. The presence of hydric soils was field verified.

Three of the soil series present within the study area are identified by the NRCS as hydric soils: Metz loamy sand, riverwash, and Grangeville fine sandy loam. Hydric soil types are formed under conditions of saturation, flooding, or ponding during the growing season. Hydric soil conditions are formed when inundation events occur long enough to develop anaerobic conditions in the upper soil layers. Anaerobic conditions are caused by a lack of exposure of soils to air and are a typical feature of wetland soils. Indicators of hydric soils persist in the soil during wet and dry seasonal periods.

The use of field indicators, as well as the examination of flooding indicators, is necessary in making the determination of whether hydric soils are present on a property. The field indicators that were observed included a high water mark, cracked soils, and/or sediment deposits. These indicators were only present within the active parts of the drainage channels. No field indicators of aerobic conditions or extended inundation were present in drainages of the project area.

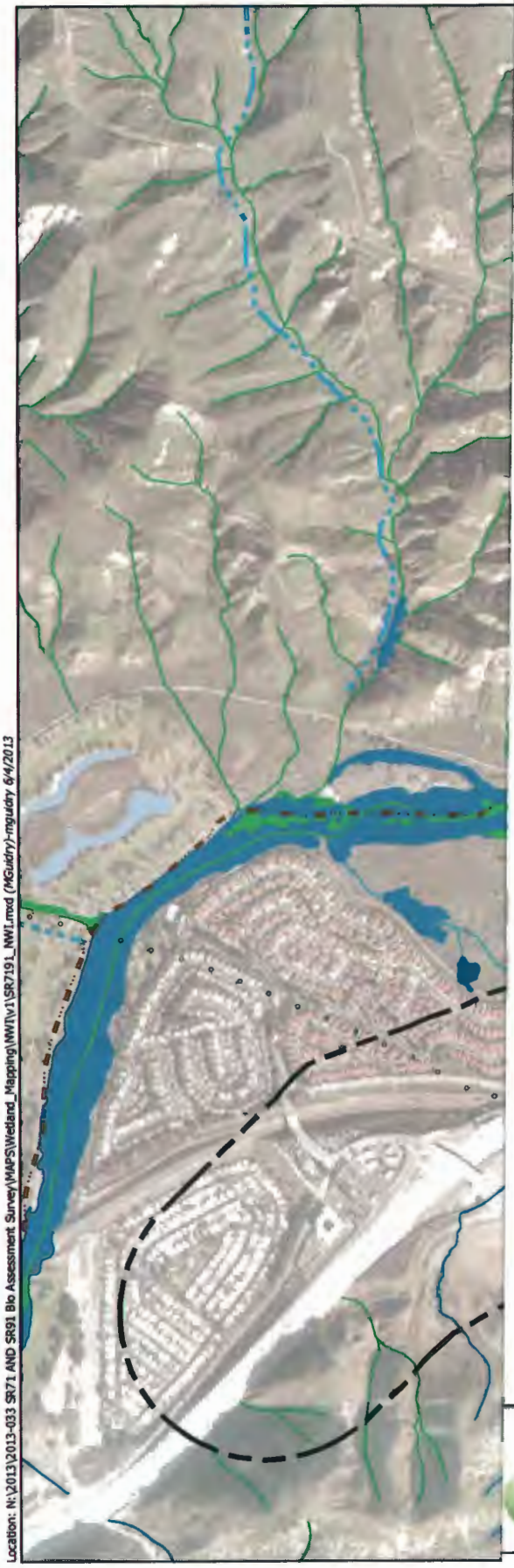
2.7 Watersheds

The project area is part of the Santa Ana River Watershed (HUC 18070203) and is within two subwatersheds (HUCs 180702030804 and 180702031001) (Figure 6).

The Santa Ana River Watershed encompasses approximately 2,650 square miles (1,696,000 acres) spanning parts of San Bernardino, Riverside, Los Angeles, and Orange counties, following the path of the Santa Ana River. Headwaters of the Santa Ana River are located in the San Bernardino Mountains, within National Forest lands to the east of San Bernardino. Headwaters of various contributing streams along the river's length generally flow from the south side of the San Bernardino Mountains, the Cajon Pass, the San Timoteo Badlands, the western side of the San Jacinto Mountains, portions of the Santa Ana Mountains, and portions of the eastern San Gabriel Mountains. The river flows approximately 100 miles, through a combination of natural areas and urban environments, to enter the Pacific Ocean near Huntington Beach. Major tributaries include Lytle Creek, San Timoteo Creek, Temescal Wash, Santiago Creek, and many others [USGS, 2001].

The watershed is an arid region; therefore, there are few natural perennial flows for its surface water; however, from the city of San Bernardino to the city of Riverside, the Santa Ana River flows perennially, largely due to treated discharges from wastewater treatment plants. From the city of Riverside to the recharge basins below Imperial Highway, river flow consists of highly treated wastewater discharges, urban runoff, irrigation runoff, and groundwater forced to the surface by shallow/rising bedrock. Near Corona, the river cuts through the Santa Ana Mountains and the Puente-Chino Hills. The river then flows into the Orange County Coastal Plain; the channel lessens and the gradient decreases.

In a natural environment, a river in a coastal plain would have a much wider channel, increase in meandering, and a buildup of sediment; however, much of the Santa Ana River channel in this reach has been contained in concrete-lined channels that modify the flow regime and sediment deposition environment.



Location: N:\2013\2013-033 SR71 AND SR91 Bio Assessment Survey\MAPS\Wetland_Mapping\NWI\v1\SR7191_NWI.mxd (MGuidry)-mguidry 6/4/2013

Figure 3.
National Wetland Inventory (NWI)
and
National Hydrology Dataset (NHD)

NHD Flow Type

- Artificial Path
- CanalDitch
- Pipeline
- Stream River

NWI Wetland Type

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine
- Lake

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Map Date: 6/3/2013

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Figure 4.
Vegetation Communities and Sensitive Resources

Map Features

- Many-stemmed dudleya location

Biological Survey Area

- Proposed Permanent Impacts Area
- Proposed Temporary Impacts Area
- 500 foot (150-meter) buffer

Vegetation within the Biological Survey Area

- California sagebrush-California buckwheat scrub
- Disturbed habitat
- Eucalyptus / Ornamental woodland
- Mixed scrub
- Mulefat thickets
- Non-native grassland
- Oak woodland
- Fremont cottonwood forest
- Urban / Developed
- Water

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Location: h:\2013\2013-033 SR71 AND SR91 Bio Assessment Survey\MAPS\Vegetation\Vegetation\v2\SR71SR91_Veg_Resources.mxd (XD):mgulsby 6/4/2013

Photo Source: USGS 2011

Map Date: 6/3/2013

2013-033 SR 91/71 Bio Assessment Survey

Scale in Feet
0 1,000

NRCS Soil Classification

- AaF - Altamont clay, 25 to 50 percent slopes
- AkC - Arbuckle loam, 2 to 8 percent slopes
- AkD - Arbuckle loam, 8 to 15 percent slopes
- BP - Borrow pit
- CmC - Cortina cobbly loamy sand, 2 to 8 percent slopes
- CnC - Cortina gravelly coarse sandy loam, 2 to 8 percent slop es
- DAM - Dams
- GaC - Garretson very fine sandy loam, 2 to 8 percent slopes
- GaD2 - Garretson very fine sandy loam, 8 to 15 percent slopes, eroded
- GdD2 - Garretson gravelly very fine sandy loam, 8 to 15 percen t slopes, eroded
- GeG3 - Gaviota rocky fine sandy loam, 25 to 75 percent slopes, severely eroded
- GfF2 - Gaviota very fine sandy loam, 15 to 50 percent slopes, eroded
- GgF2 - Gaviota rocky very fine sandy loam, 25 to 50 percent sl opes, eroded
- Go - Gaviota-Rock outcrop complex
- GuB - Grangeville fine sandy loam, poorly drained, saline-alk ali, 0 to 5 percent slo
- GvB - Grangeville fine sandy loam, saline-alkali, 0 to 5 perc ent slopes
- MdC - Metz loamy sand, 2 to 8 percent slopes
- MeD - Metz loamy sand, channeled, 0 to 15 percent slopes
- MfA - Metz loamy fine sand, 0 to 2 percent slopes
- PeC - Perkins loam, 2 to 8 percent slopes
- PgC - Perkins gravelly loam, 5 to 8 percent slopes
- PgD2 - Perkins gravelly loam, 8 to 15 percent slopes, eroded
- RsC - Riverwash
- RuF - Rough broken land
- SfA - San Emigdio fine sandy loam, deep, 0 to 2 percent slope s
- SgA - San Emigdio loam, 0 to 2 percent slopes
- TeG - Terrace escarpments
- VeF2 - Vallecitos loam, thick solum variant, 15 to 50 percent slopes, eroded
- ND - No Data

Map Date: 6/3/2013
Photo Source: USGS 2011

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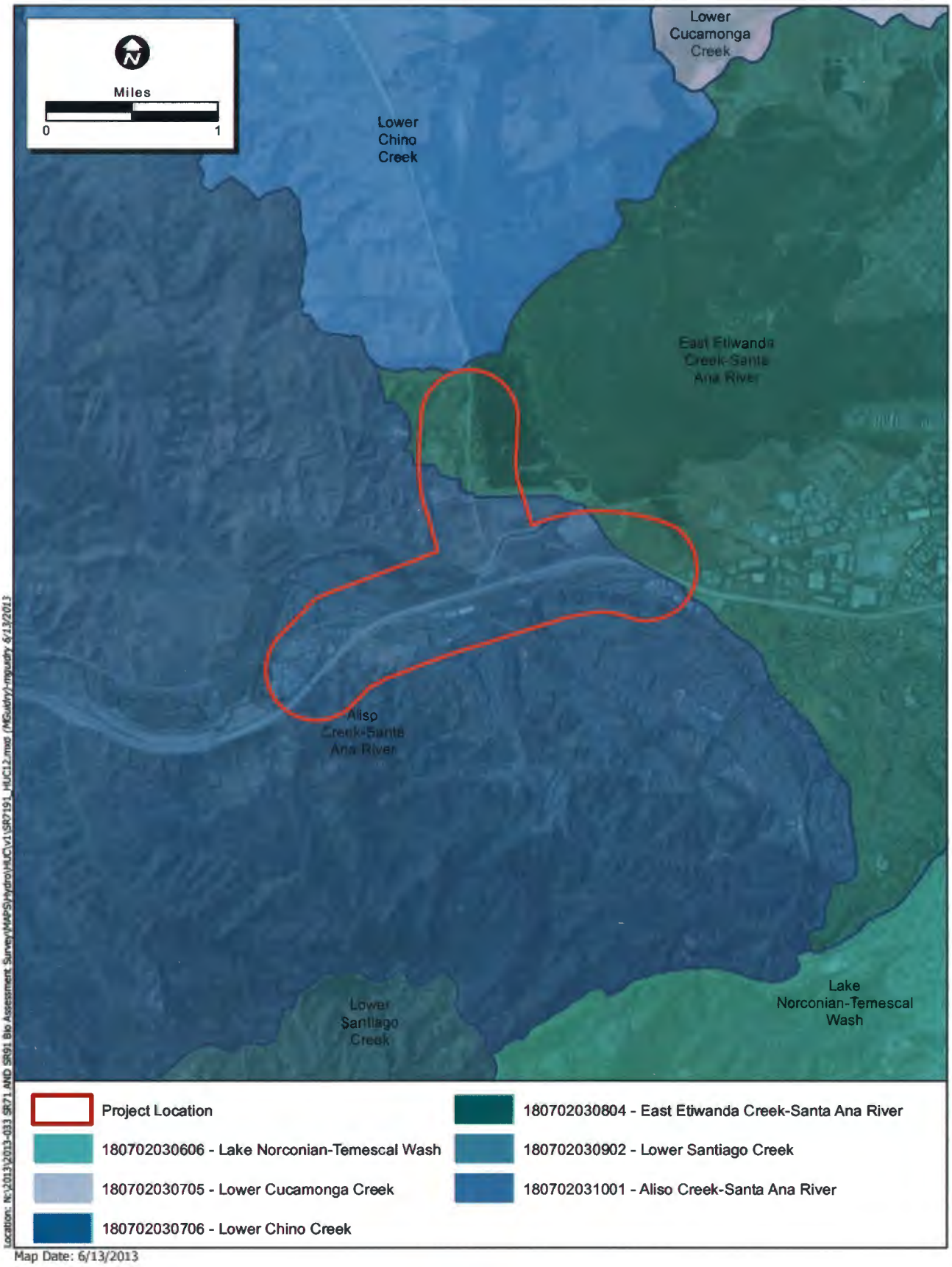
Figure 5. NRCS Soil Classifications

2013-033 SR 91/71 Bio Assessment Survey



Map Date: 6/13/2013
Imagery Source: ESRI

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Figure 6. HUC 12 Watersheds

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3.0 METHODS

The unified Federal method, as defined by USACE, using methodology outlined in the *Corps of Engineers Wetlands Delineation Manual* [Environmental Laboratory 1987] and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Region Supplement Version 2.0) [USACE 2008] was used to delineate the jurisdictional areas. The boundaries of potential waters of the U.S. were delineated through a field determination, made in conjunction with aerial photograph interpretation. The 2007 USACE and EPA guidance and 2011 draft guidance on jurisdictional delineations also were used.

The boundaries of potential waters of the U.S. were delineated through field assessment, made in conjunction with research of hydrological connectivity, soils data, and aerial photograph interpretation. A color aerial photograph was used to assist with mapping and ground-truthing. *The Jepson Manual* [Baldwin, *ed.* 2012] was used for plant nomenclature and identification. Vegetation community designations follow Sawyer (2009).

The field surveys were conducted by walking the project area limits to determine the location and extent of potential waters of the U.S. and of the state. There were a total of four areas suspected of being wetlands, and two sample points were taken. The total area of the potential waters within the project area was recorded in the field using a post-processing capable global positioning system (GPS) unit with sub-meter accuracy (Trimble GeoXT).

3.1 Waters of the U.S.

Waters of the U.S. that may be regulated by USACE under Section 404 of the Clean Water Act (CWA) include traditionally navigable waters, other waters of the U.S., and wetlands. Wetlands are a subset of Waters of the U.S. that meet specific vegetative, soil, and hydrologic criteria.

Other waters of the U.S. include ephemeral, intermittent, and perennial stream courses that do not have wetland indicators but convey flows to Interstate Waters [USACE 1986a]. According to the "Interstate Commerce" clause, waters subject to "foreign or interstate commerce" would be considered potentially jurisdictional as waters of the U.S. Interpretation of the federal Clean Water Act by EPA and USACE designated wetlands as a subset of the waters of the U.S. and designated this standard. For the purposes of this delineation, the limits of waters of the U.S. streambed boundaries are generally considered to be the limits of a 10-year flood event.

"Other Waters of the U.S." typically support hydrologic indicators but no wetland vegetation or wetland soil indicators. The limit of USACE jurisdiction for non-tidal watercourses (without adjacent wetlands) is defined in 33 *Code of Federal Regulations* (CFR) 328.4(c)(1) as the "ordinary high water mark." The OHWM is defined as the "*line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas*" [USACE 1986b].

The bank-to-bank extent of the channel serves as a good first approximation of the lateral limit of USACE jurisdiction because it generally denotes the water flow during a normal rainfall year. The lateral extent of jurisdiction is typically defined by the limits of bank shelving, flow lines,

sediment deposition or scour, mineral staining, salt deposits, and/or deep or superficial cracking. The upstream limits of other waters are defined as the point where the lateral extent of jurisdiction is no longer perceptible.

Additional factors must be considered when delineating isolated, non-navigable waters (e.g., vernal pools, intrastate waters, man-made structures). The January 9, 2001, Supreme Court decision in the case of *Solid Waste Agency of Northern Cook County* v. *U.S. Army Corps of Engineers* (SWANCC) eliminated jurisdiction over isolated, intrastate, non-navigable waters where the sole basis of jurisdiction is founded on the presence of migratory bird habitat [SWANCC 2001]. No official USACE policy on the SWANCC decision has been published.

Subsequent cases, *Rapanos v. United States* [Rapanos 2006] and *Carabell v. United States* [Carabell 2006], provided further review of the determination of jurisdictional areas. Based on these cases, USACE and EPA issued a joint guidance memorandum, dated June 5, 2007. The memorandum confirmed jurisdiction over Traditional Navigable Waters (TNW) and all wetlands adjacent to TNWs. It also asserts jurisdiction over certain non-navigable waterways if that waterway is a Relatively Permanent Waterway (RPW). An RPW is water that typically flows year-round or at least seasonally (typically three months).

Wetlands that are adjacent to RPWs also are considered to be jurisdictional. For non-navigable waterways that are not relatively permanent (e.g., ephemeral streams) and their adjacent wetlands, the jurisdictional determination is to include a determination of the OHWM and an assessment as to whether there is the existence of a "significant nexus" to a TNW.

Determination of a "significant nexus" involves a functional analysis of hydrological and ecological factors for each ephemeral tributary. The physical features and the "significant nexus" must be found for an ephemeral tributary and its adjacent wetlands to be considered jurisdictional. The 2007 guidance further provides that geographic features, such as swales or erosional features; gullies; small washes characterized by low volume, infrequent, or short duration flow; and ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water, are generally not considered to be jurisdictional waters.

The factors to be considered in the significant nexus evaluation include:

(1) The consideration of hydrologic factors including, but not limited to, the following:

- Volume, duration, and frequency of flow, including consideration of certain physical characteristics of the tributary
- Proximity to the TNW
- Size of the watershed average annual rainfall
- Average annual winter snow pack

(2) The consideration of ecologic factors including, but not limited to, the following:

- The ability for tributaries to carry pollutants and flood waters to TNWs
- The ability of a tributary to provide aquatic habitat that supports a TNW
- The ability of wetlands to trap and filter pollutants or store flood waters
- Maintenance of water quality

USACE and EPA provided additional draft guidance in 2011 as to determining jurisdictional areas. In the 2011 draft guidance, USACE and EPA summarized the key points in determining whether an area is subject to jurisdiction of the CWA. That summary is provided below:

> Based on the agencies' interpretation of the statute, implementing regulations and relevant case law, the following waters are protected by the CWA:
>
> - TNWs;
> - Interstate waters;
> - Wetlands adjacent to either TNWs or interstate waters;
> - Non-navigable tributaries to TNWs that are relatively permanent, meaning they contain water at least seasonally; and
> - Wetlands that directly abut relatively permanent waters.
>
> In addition, the following waters are protected by the CWA if a fact-specific analysis determines they have a "significant nexus" to a TNW or interstate water:
>
> - Tributaries to TNWs or interstate waters;
> - Wetlands adjacent to jurisdictional tributaries to TNWs or interstate waters; and
> - Waters that fall under the "other waters" category of the regulations. The guidance divides these waters into two categories, those that are physically proximate to other jurisdictional waters and those that are not, and discusses how each category should be evaluated.
>
> The following aquatic areas are generally not protected by the CWA:
>
> - Wet areas that are not tributaries or open waters and do not meet the agencies' regulatory definition of "wetlands;"
> - Waters excluded from coverage under the CWA by existing regulations;
> - Waters that lack a "significant nexus" where one is required for a water to be protected by the CWA;
> - Artificially irrigated areas that would revert to upland should irrigation cease;
> - Artificial lakes or ponds created by excavating and/or diking dry land and used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
> - Artificial reflecting pools or swimming pools created by excavating and/or diking dry land;
> - Small ornamental waters created by excavating and/or diking dry land for primarily aesthetic reasons;
> - Water-filled depressions created incidental to construction activity;
> - Groundwater drained through subsurface drainage systems; and
> - Erosional features (i.e., gullies and rills), and swales and ditches that are not tributaries or wetlands.

The final authority on jurisdiction of other waters rests with USACE.

Wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [USACE 1986b].

Wetlands can be perennial or intermittent, and isolated or adjacent to other waters. Vegetation, hydrological, and soil features are used as indicators of wetlands.

To be determined a wetland; the following three criteria should be met:

- A majority (greater than 50 percent) of dominant vegetation species are wetland associated species;
- Hydrologic conditions exist that result in periods of flooding, ponding, or saturation for at least 5 percent of the growing season; and
- Soils must exhibit hydric characteristics indicative of permanent or periodic inundation.

These criteria are described in further detail below.

3.1.1 Vegetation

To determine whether an area contains hydrophytic vegetation, the dominant species are classified according to their probability of occurrence in wetland areas, in accordance with the USFWS *National List of Vascular Plant Species That Occur in Wetlands: California (Region 0)* [Reed 1988]. If the majority (greater than 50 percent) of the dominant vegetation on a site is classified as more than 33 percent likely to occur in a wetland, then the site is considered to be dominated by hydrophytic vegetation.

The Dominance Test is supplemented by the Prevalence Index (PI), where applicable. The PI is applied where vegetation fails the Dominance Test, but both soil and hydric indicators are positive. The PI is a weighted-average wetland indicator status of all species within a plot by indicator status category.

As a third and last step in evaluating the vegetation, an assessment of any observed Morphological Adaptations to upland plants is made. If upland plants show adaptations to wet conditions (e.g., adventitious roots), they may be reclassified as a more hydrophytic species, and the PI may be recalculated.

3.1.2 Soils

Hydric soil is defined as a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part [USDA 2003]. Indicators that a hydric soil is present could include soil color (e.g., gleyed soils and soils with bright mottles and/or low matrix chroma), aquic or preaquic moisture regime, reducing soil conditions, sulfidic material (i.e., odor), soils listed on hydric soils list, iron and manganese concretions, organic soils (i.e., Histosols), histic epipedon, high organic content in surface layer in sandy soils, and organic streaking in sandy soils. Applicability of specific soil indicators for hydric soils on the project site are to be determined by using the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* [USACE 2008].

When a wetland is suspected, a soil pit should be excavated to a depth of 20 inches or refusal (i.e., complete resistance to further digging) at each data point to document an indicator or to confirm the absence of indicators. The soil would then be examined for hydric soil indicators, and the matrix color and mottle color (if present) of the soil would be determined using the *Munsell Soil Color Charts* [Munsell Soil Color Charts 2000].

3.1.3 Hydrology

Wetlands, by definition, are seasonally or perennially inundated or saturated at or near (i.e., within 12 inches of) the soil surface. Primary indicators of wetland hydrology include, but are not limited to, visual observation of saturated soils, visual observation of inundation, surface soil cracks, inundation visible on aerial imagery, water-stained leaves, oxidized rhizospheres along living roots, aquatic invertebrates, water marks (i.e., secondary indicator in riverine environments), drift lines (i.e., secondary indicator in riverine environments), and sediment deposits (i.e., secondary indicator in riverine environments). Secondary indicators also include, but are not limited to, drainage patterns, crayfish burrows, FAC-neutral test, and shallow aquitard. The occurrence of one primary indicator is sufficient to conclude that wetland hydrology is present. If no primary indicators are observed, the presence of two or more secondary indicators are required to conclude wetland hydrology is present.

3.2 Regional Water Quality Control Board

RWQCB regulates wastewater discharges into all surface waters and to groundwater. The RWQCB also regulates stormwater discharges from construction, industrial, and municipal activities; discharges from irrigated agriculture; dredge and fill activities; the alteration of any Federal water body under the Federal CWA Section 401 certification program; and several other activities that could degrade water quality. In most cases, a permit from the local RWQCB is required for proposed discharges or activities from a project that could affect California's surface, coastal, or ground waters.

Regulated waters are broad in definition and scope. Regulated waterbodies include any "surface water or groundwater, including saline waters, within the boundaries of the state." The regulations encompass all waters of the U.S., including wetlands, as well as all waters of the State. RWQCB publishes no methodology for determining their jurisdictional boundaries, but rather coordinates with other regulatory agencies and determines their jurisdictional boundaries based on these agency's findings.

3.3 California Department of Fish and Wildlife

CDFW asserts jurisdiction over streambeds and lakes, under the California Fish and Game Code Section 1600 *et seq.* The jurisdictional areas, also known as waters of the State, include the waterbody itself and vegetated areas that are hydrologically connected to the waterbody. Typically, for a streambed, the extent of State jurisdiction would include the streambed itself and the riparian habitat associated with the broader floodplain. For lakes, the jurisdictional limits typically include the high water mark and a band of riparian or wetland vegetation that is supported by the lake water. Limits of State jurisdiction are generally larger than the limits of Federal waters of the U.S., but the two jurisdictions can coincide for smaller drainage features.

Several indicators may render a feature jurisdictional to the State, though the final authority on jurisdiction rests with CDFW. In accordance with Sections 1601/3 of the Fish and Game Code, the indicators for a river or stream are:

- Definable bed, bank, or channel
- Periodic or intermittent flows
- Perennial flows

- Subsurface flows
- Supports fish or other aquatic life
- Supports riparian or hydrophytic vegetation
- Watercourse having a source and/or terminus

CDFW generally considers all natural lakes, streams, and man-made reservoirs to be jurisdictional. Artificial waterways, such as ditches and canals, also may be considered jurisdictional. Generally, jurisdictional areas include all areas that have "acquired the physical attributes of natural stream courses and which have been viewed by the community as natural streamcourses." This includes isolated or intrastate drainage features that have no Federal jurisdiction.

The State has no published methodology for determining jurisdictional status of a waterbody. State jurisdictional limits are normally considered to include the stream, bed, and bank and continue to the outside limits of any riparian (i.e., stream associate) vegetation within a channel corridor. Generally, the presence of the OHWM and/or the three-parameter wetland methodology utilized by USACE is considered valid methodology for identification of streambeds and wetlands (excluding Rapanos and other case considerations).

CDFW regulates projects that propose to:

(1) Divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit;
(2) Use material from the streambeds designated by the department; or
(3) Result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by the department.

For the purposes of this delineation, the limits of waters of the State are considered to be the estimated limits of a greater than 10-year flood event.

4.0 JURISDICTIONAL DELINEATION RESULTS

ECORP wetland delineation specialists, Scott Taylor, Kristina Walker, and Katherine Vienne, conducted the jurisdictional delineation on April 7 and April 16, 2013. Weather conditions and other survey information are provided in Table 1.

Table 1 – Survey Conditions

Type of Survey	Date	Time		Temperature (°F)		Cloud Cover (%)		Wind Speed (mph)	
		start	end	min	max	min	max	min	max
Jurisdictional Delineation	4/7/13	0930	1245	62	77	10	20	5	8
	4/16/13	01030	1545	69	72	50	75	1	3

For this delineation, no new sample points were collected. Soil, hydrology, and vegetation data from previous delineations were examined and verified.

Features described in this report were field verified by Parsons jurisdictional delineation specialist Sean Noonan and Veronica Chan from USACE Los Angeles District Regulatory Division on October 13, 2013.

A detailed description of the results of the delineation follows below.

4.1 Potential Waters of the U.S.

Nineteen (19) features were mapped within the study area, of which five were considered wetlands (Features C [portions of], D [portions of], Features E, H, and M), four were intermittent (Features C [portions of], D [portions of], Features F and G) while fifteen features were considered to be ephemeral (Features A, B, C [portions of], F [portions of], G [portions of], I, J, K, L, N, O, P, Q, R, S). Some of the features in the study area exhibit characteristics that could be classified into more than one hydrologic regime due to the vegetation observed within the feature. A total of 68.4 acres (2,973,718 square feet) and 22,335 linear feet of waters of the U.S. were mapped within the study area (Figure 7, Sheets 1 through 4). All calculations are subject to modification following the USACE verification process. The intermittent streams would be considered RPWs, while all of the ephemeral streams are considered to be non-RPWs.

Santa Ana River (Feature D)

The Santa Ana River is one of the largest streams in southern California. Within the study area, it flows north of SR-91, passing into Prado Basin, a regional flood control basin that collects flows from several sources. Flows out of the dam enter into a concrete channel that conveys them to the west and into the natural Santa Ana River Channel. The area just downstream of the concrete channel is a broad alluvial floodplain of moderately flat topography, where waters spread out and create wetland habitat. Portions of this area are currently under construction for the Santa Ana River Main Stem Flood Risk Management Project. The project is being constructed to armor the river basin along its south banks and to create an improved barrier between the river and adjacent development.

The Santa Ana River is considered an intermittent stream, with portions of it containing wetlands, because it sustains at least seasonal flows. Seasonal flows typically last more than just a day after a storm event. Portions of the Santa Ana River that traverse the more urbanized areas are considered perennial due to a high amount of urban runoff. Within the project area, it appears that the flows are subsurface more often than surface based on the lack of indicators of sustained inundation in the project area. This is due to the current depth of alluvium. Wetland portions of the stream likely contain perennial portions of streambed.

The northern limit of the waters of the U.S. for the Santa Ana River coincided with the location of the OHWM (i.e., outer sandy bank) for the outermost (or easternmost) edge of the main channel. The limit also coincided with scouring and vegetative differences. The area delineated as waters of the U.S. exhibits greater scouring and much lower vegetative density than the area outside of these limits. The western limit of waters of the U.S. was also delineated by the main channel limits.

Vegetation within the river consists primarily of willow, Fremont's cottonwood, and mule fat. All of these plant species account for more than 80 percent of the total estimated cover. None of these plant species are considered to be obligate wetland plant species, although the willows, cottonwood, and mule fat are considered to be hydrophytic.

The soil present within the channel consisted of sand within the low-lying areas and varying sizes of rocks, from sand to gravel and cobbles on aggradational terraces. The morphology is typical of larger, more developed floodplains where active channels are interspersed with relatively inactive sand bars and point bars. The soils were light in color, indicating that they contain little to no organic materials.

Wardlow Wash (Feature F)

South of SR-91, and flowing in a westerly direction, Wardlow Wash begins in the northern Santa Ana Mountain foothills where it consolidates flows from many smaller drainage courses into a main waterbody, southeast of the project area. The wash flows between residential developments, crossing Palisades Drive just south of the project area, and entering the project area via a 15-foot-wide concrete culvert. The flows within the wash are augmented by urban runoff.

Through the project area, Wardlow Wash is a sandy, wide streambed that flows with little meandering towards the Santa Ana River. Along its length within the project area, the banks are vegetated by cottonwoods, willows, mulefat, and oaks. Three small streams enter Wardlow Wash within the project area. Two of these flow from urban development areas to the south and carry urban runoff primarily. A third is an ephemeral feature close to SR-91 that conveys minimal flows. Wardlow Wash is considered an RPW due to its intermittent flows.

Sections 4.1.1, 4.1.2, and 4.1.3 provide detailed descriptions of wetland, intermittent, and ephemeral drainages; a synopsis of the drainage features that were investigated; and a discussion regarding whether they are considered to be waters of the U.S. Section 4.1.3 discusses the basis for the conclusion regarding the absence of wetlands within the project area. Photographs of the features were taken and are provided in Appendix D. Certain features were not photographed due to restricted access.

4.1.1 Wetlands

Four wetland areas were mapped within the study area. These areas were previously mapped as wetland habitat during the Jurisdictional Delineation for the SR-91 Corridor Improvement Project. Wetlands in the area were presumed based on the presence of hydrophytic vegetation and because the Santa Ana River is considered to be a perennial feature. Table 2 summarizes the results for wetlands within the study area.

Table 2 – Potential Wetlands within the Study Area

Feature	Acres	Square Feet	Linear Feet	Width (feet)
Feature C	0.01	349	38	12
Feature D	21.58	939,924	1,948	1,000
Feature E	0.33	14,043	320	20
Feature H	0.25	10,663	232	7
Feature M	37.93	1,652,150	3,076	150
Wetlands Subtotal	***60.10***	***2,617,129***	***5,614***	***N/A***

Other areas with hydrophytic vegetation within the project area either lacked the proper hydrologic regime, lacked apparent indicators of soil or hydrology for wetlands, or were not suspected to contain the three criteria necessary to meet the Federal definition of wetlands. New sample points were not collected within the wetland area because they had been recently collected for these features. The results of the previous delineation of these wetlands, including sample points, were reviewed and confirmed.

Feature E is a wetland that has been determined to be self-contained and isolated from the Santa Ana River mainstem. Previously, this feature held a connection via a small ephemeral drainage. The ongoing flood control project in the area has caused this feature to become topographically isolated. Per a conversation with the USACE Los Angeles District on June 12, 2013, the project is not going to recontour or otherwise reconnect Feature E and the Santa Ana River (Christopher T. Jones, Personal Communication).

There were no new wetlands mapped within the project area. Due to the intermittent and ephemeral nature of the onsite drainages, there were no portions of the project area within the drainage channels where the inundation period was considered sufficient to develop anaerobic conditions.

4.1.2 Intermittent Streams

A stream is considered to be an intermittent stream when it flows seasonally (i.e., more than just immediately following precipitation events). Seasonal is usually considered a 3-month timeframe. Intermittent streams are generally dry for most of the year. Flow indicators and the extent of jurisdiction within an intermittent stream reflect the degree of runoff during an average year. The OHWM boundaries of the intermittent streams are formed by the regular scouring of storm flows. An intermittent stream is generally considered to be an RPW (see Section 3.1). The two primary intermittent streams within the study area are the Santa Ana River and Wardlow Wash. Table 3 summarizes the results for intermittent streams within the study area.

Table 3 – Potential Intermittent Streams within the Study Area

Feature	Acres	Square Feet	Linear Feet	Width (feet)
Feature C	0.26	10,590	192	12
Feature D	3.68	160,024	2,067	45
Feature F	2.48	108,036	5,576	20
Feature G	0.09	3,829	260	10
Intermittent Subtotal	***6.51***	***282,479***	***8,095***	***N/A***

The functions that intermittent streams provide are variable, including wildlife habitat, groundwater recharge, floodwater storage, and sediment transport. During exceptionally dry years, these streams can be dry all year. Intermittent streams are located above the water table year-round, meaning that groundwater is not a significant source of water.

4.1.3 Ephemeral Streams

An ephemeral stream supports flowing water only during and for a short duration after precipitation events. Their primary function is to convey and direct storm flows into larger drainages. Ephemeral streambeds are located above the water table year-round. Flow indicators and the extent of jurisdiction within an ephemeral stream reflect the degree of runoff during an average year or the regular scouring of storm flows. The mapping of the drainages in the project area was based on the location of the OHWM, as indicated by the presence of bed and bank, scouring, and vegetative differences. Table 4 summarizes the results for ephemeral streams within the study area.

Table 4 – Potential Ephemeral Streams within the Study Area

Feature	Acres	Square Feet	Linear Feet	Width (feet)
Feature A	0.26	10,971	776	5
Feature B	0.04	1,425	104	12
Feature C	0.02	520	116	12
Feature F	0.03	1,230	181	20
Feature G	0.01	465	464	10
Feature I	0.24	10,124	1,175	5
Feature J	0.14	5,881	1,082	6
Feature K	0.08	2,662	608	5
Feature L	0.04	1,683	160	5
Feature N	0.11	4,632	645	5
Feature O	0.20	8,430	990	15
Feature P	0.33	14,012	1,400	10
Feature Q	0.04	1,404	414	3
Feature R	0.05	2,057	212	10
Feature S	0.20	8,614	299	3
Ephemeral Subtotal	***1.79***	***74,110***	***8,626***	***N/A***

There were several ephemeral streams identified within the project. Biological values associated with these ephemeral drainages are limited due to the lack of vegetation present, amount of water flows carried, and position in the landscape. Vegetation is sparse or lacking in these streams. Because flows are ephemeral in nature, water is only present after storm events.

SR-91/71 Interchange Project

Figure 7
USACE- Jurisdictional Delineation Exhibits
Sheet 1 of 10

0 75 150 300 Feet

1 inch = 125 feet

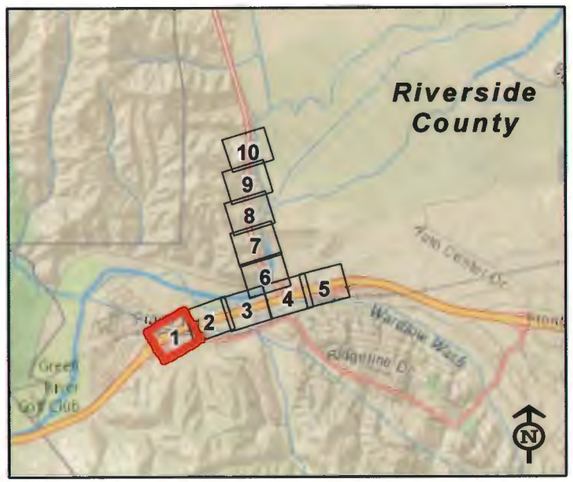
Legend

- USACE - Wetland
- USACE - Non-Wetland
- USACE - Reach 9, Phase 2A Project

FEATURE SUMMARY[1]

	Acreage	Square Ft.	Linear Ft.
Total Wetland	60.10	2,617,129	5,614
Total Non-Wetland	8.30	356,589	16,721
Total	**68.40**	**2,973,718**	**22,335**

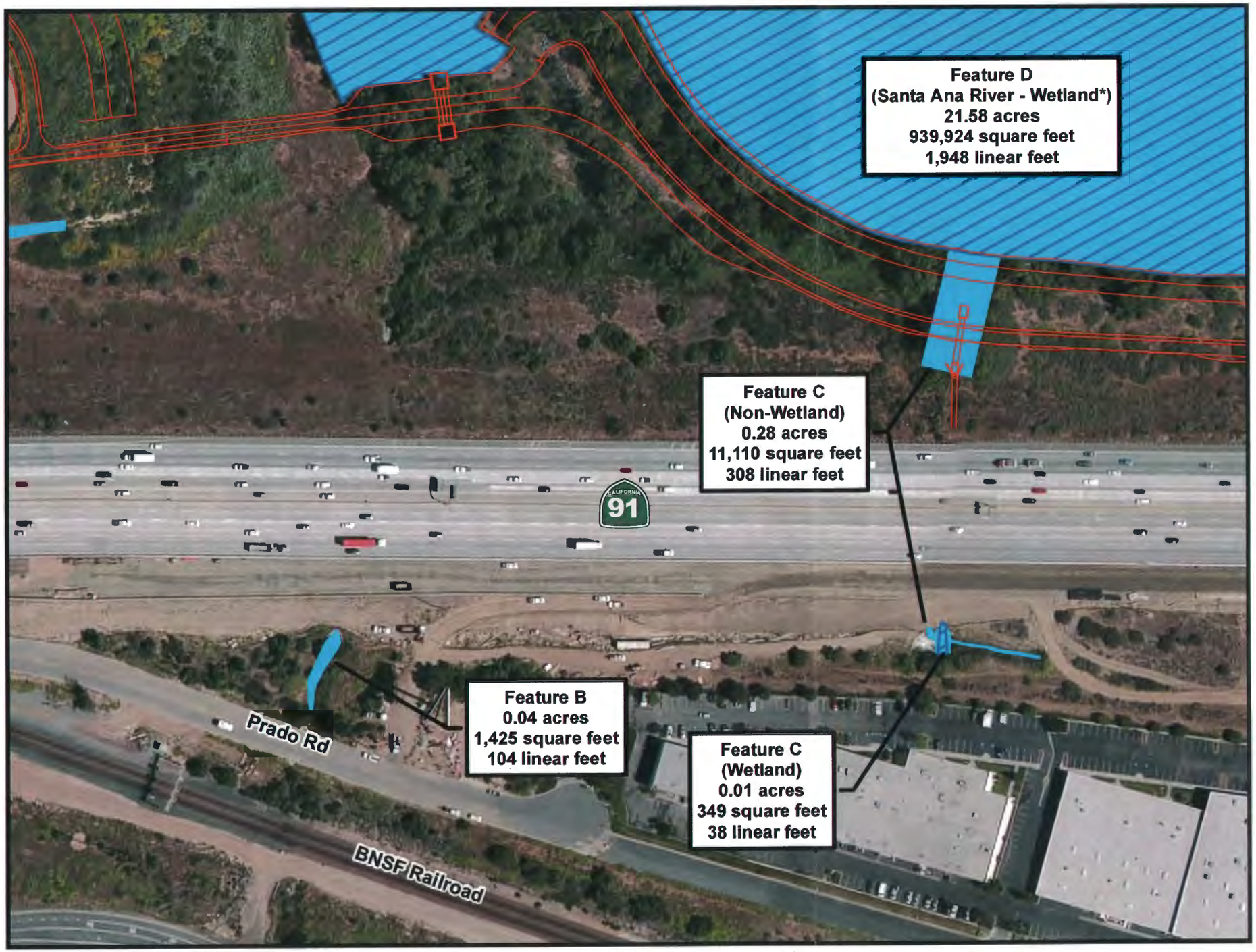
1. All mapped features have been clipped to survey area boundary and represent existing acreage.
*Calculations are based on feature measurements within the entire study area.



Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

SR-91/71 Interchange Project

Figure 7
USACE- Jurisdictional Delineation Exhibits
Sheet 2 of 10



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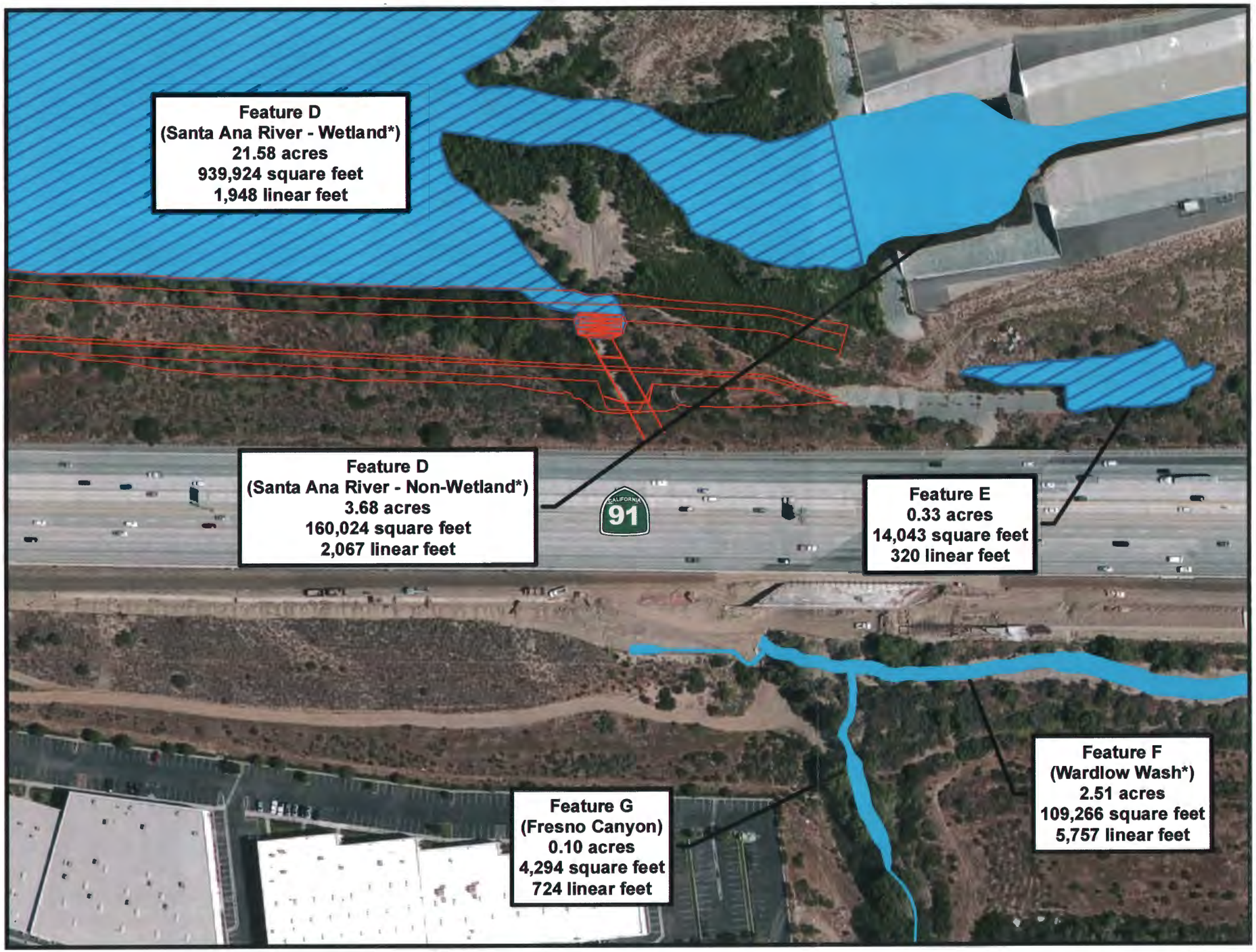
SR-91/71 Interchange Project

Figure 7
USACE- Jurisdictional Delineation Exhibits
Sheet 3 of 10



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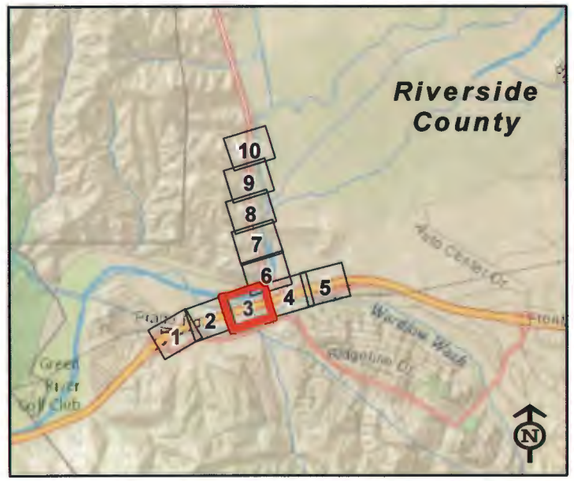

Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

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SR-91/71 Interchange Project

Figure 7
USACE- Jurisdictional Delineation Exhibits
Sheet 4 of 10

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SR-91/71 Interchange Project

Figure 7
USACE- Jurisdictional Delineation Exhibits
Sheet 5 of 10

Legend

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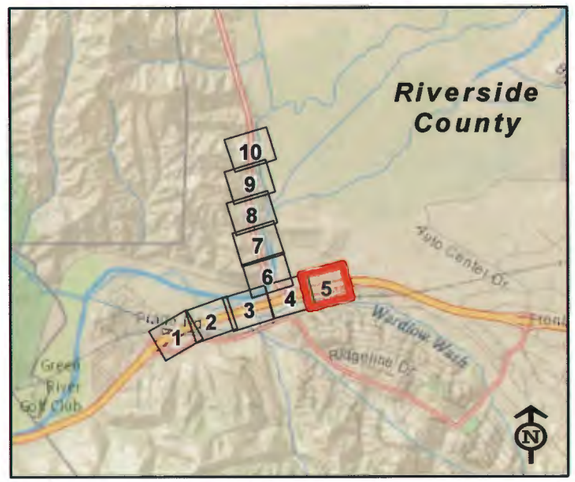

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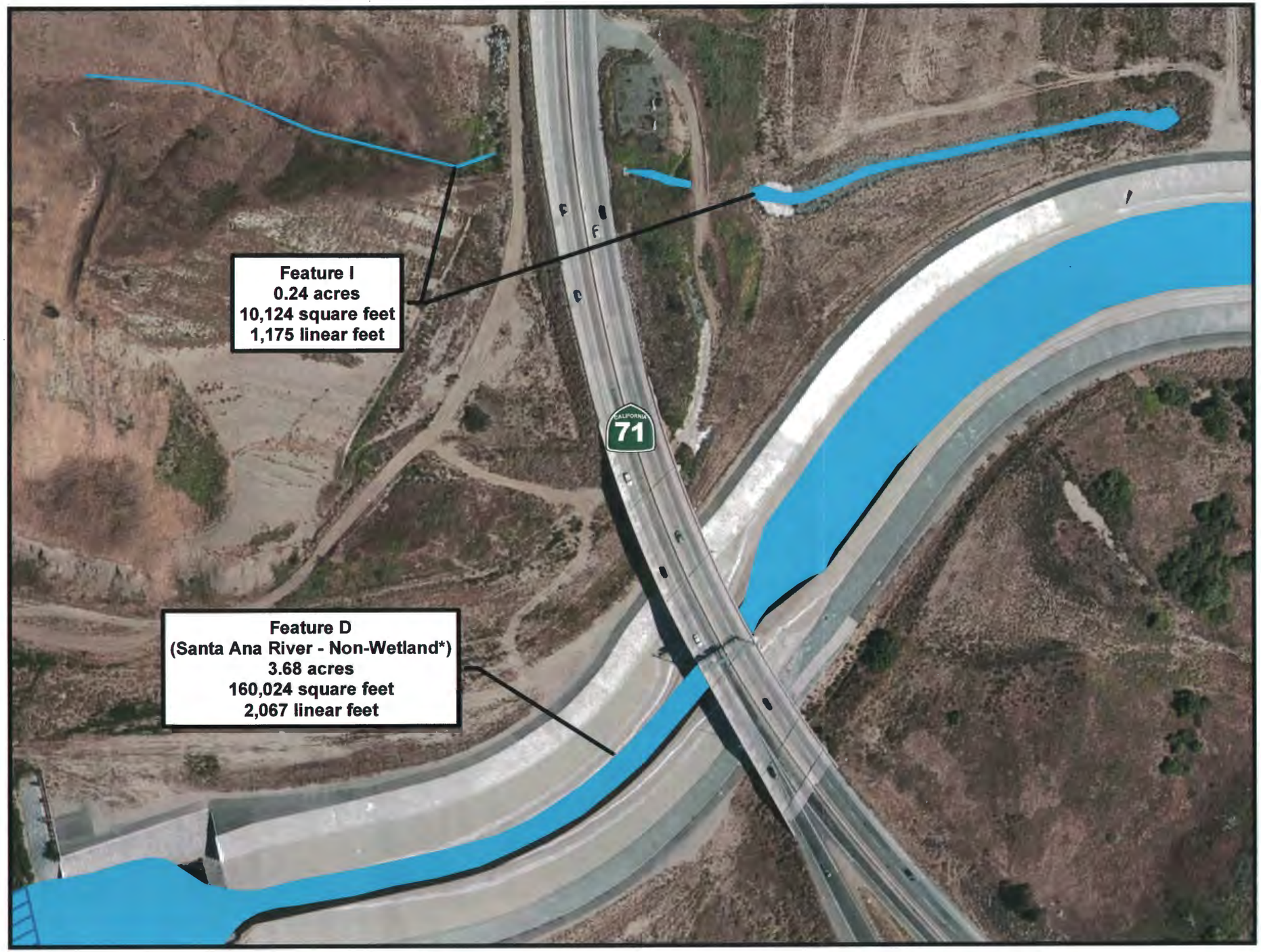
SR-91/71 Interchange Project

Figure 7
USACE- Jurisdictional Delineation Exhibits
Sheet 6 of 10



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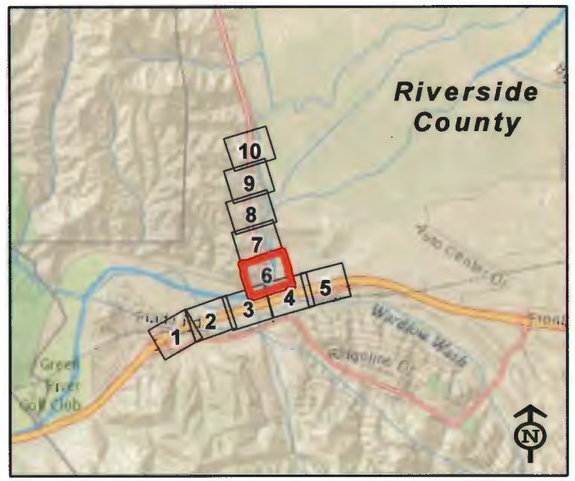

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Figure 7
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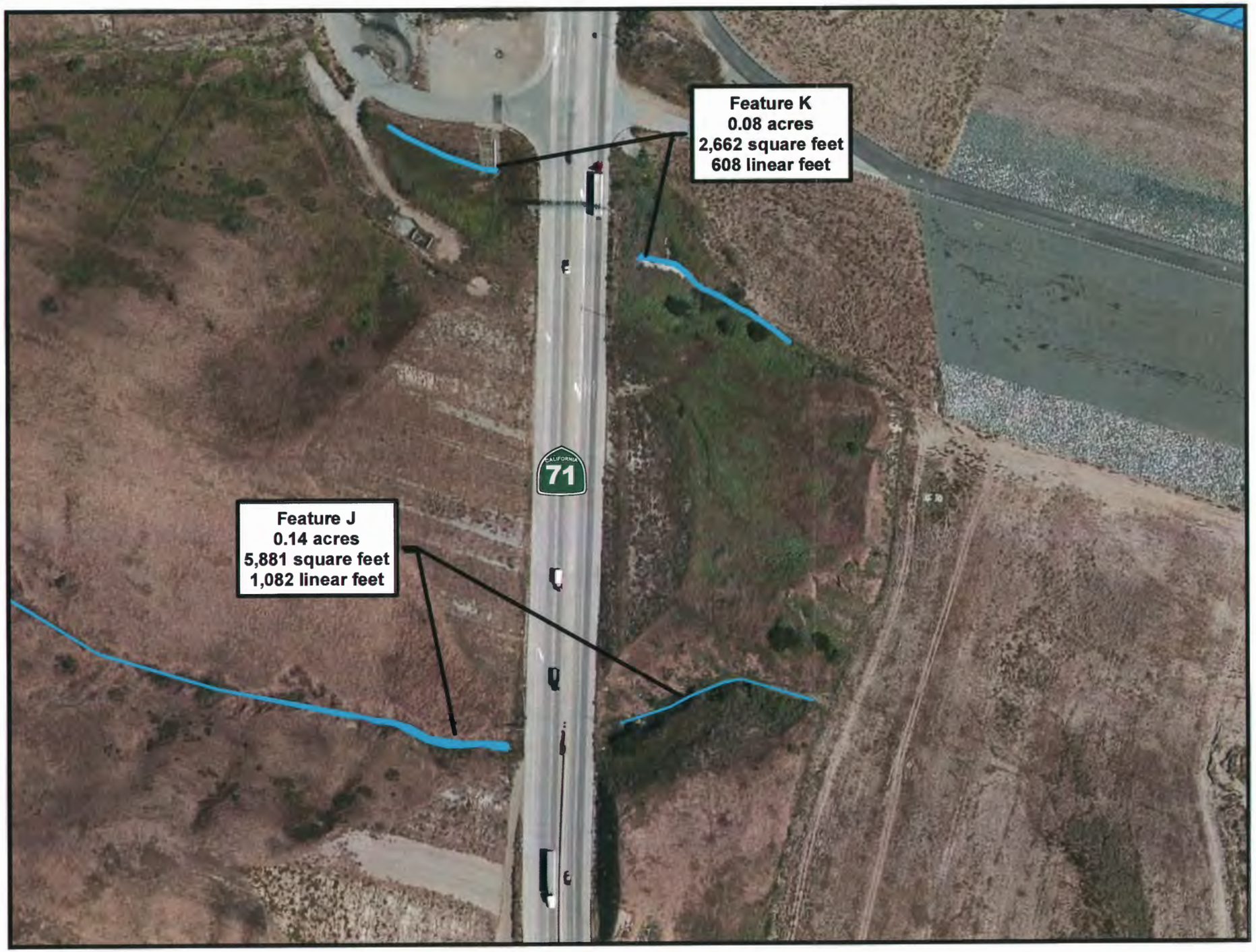
Sheet 7 of 10



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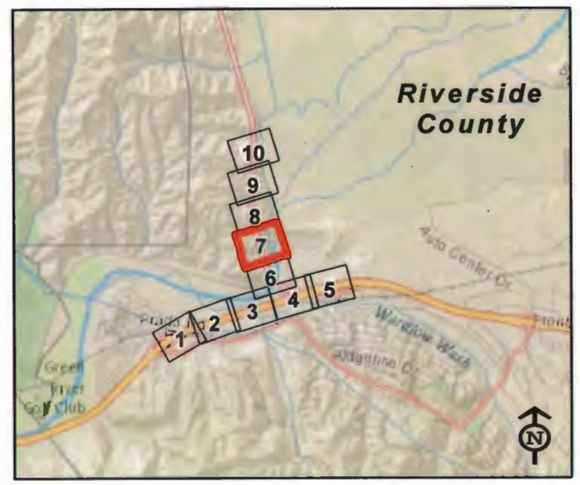
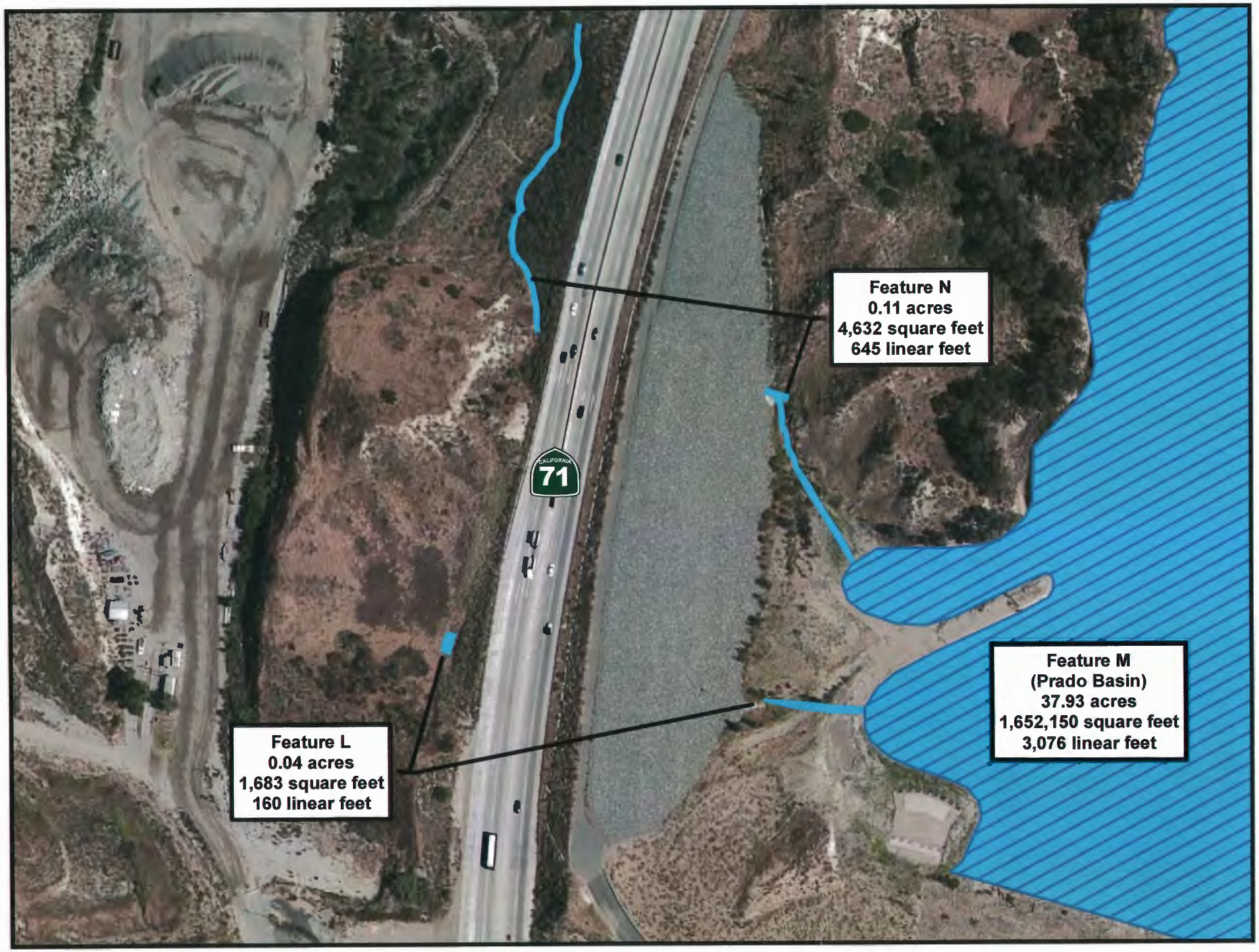


Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

SR-91/71 Interchange Project

Figure 7
USACE- Jurisdictional Delineation Exhibits
Sheet 8 of 10



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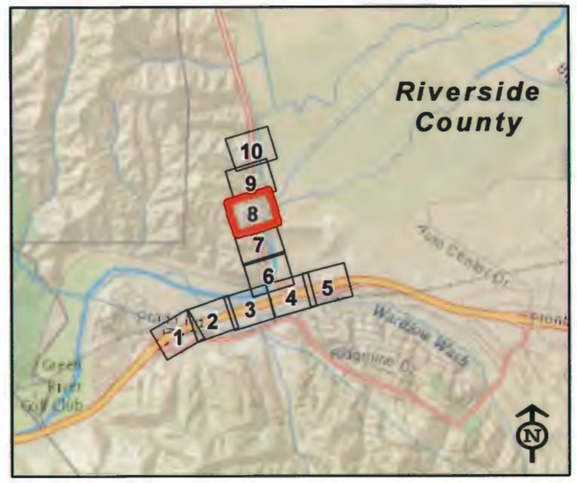

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SR-91/71 Interchange Project

Figure 7
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Sheet 9 of 10

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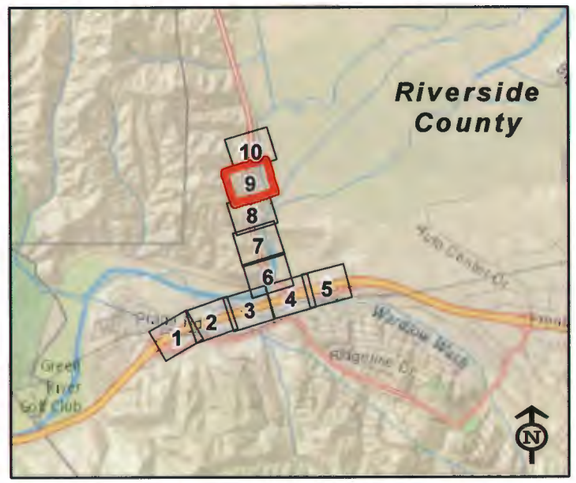
Total	**68.40**	**2,973,718**	**22,335**

1. All mapped features have been clipped to survey area boundary and represent existing acreage.
*Calculations are based on feature measurements within the entire study area.



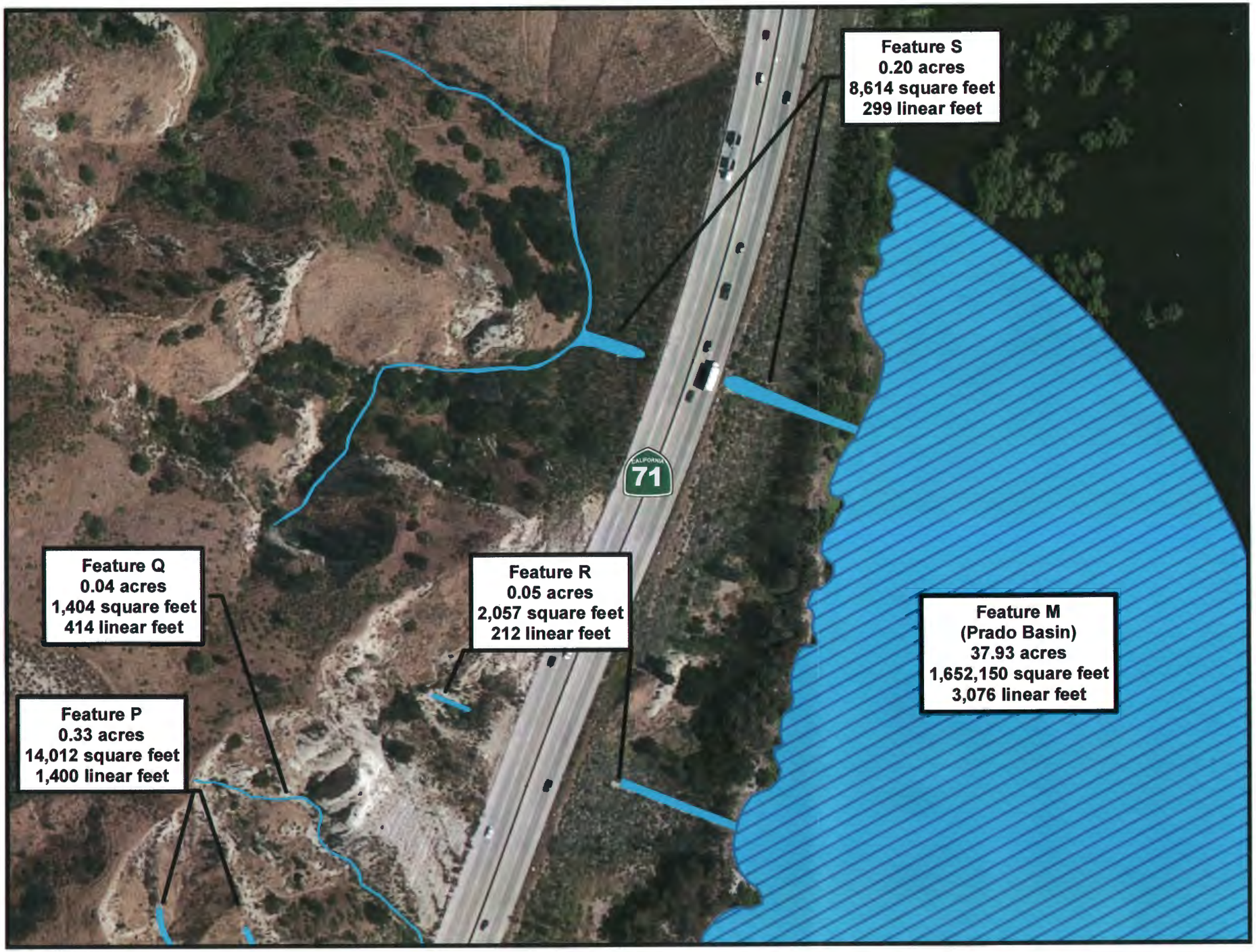
Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

0 75 150 300 Feet

1 inch = 125 feet

SR-91/71 Interchange Project

Figure 7
USACE- Jurisdictional Delineation Exhibits
Sheet 10 of 10



Legend

- USACE - Wetland
- USACE - Non-Wetland
- USACE - Reach 9, Phase 2A Project

FEATURE SUMMARY[1]

	Acreage	Square Ft.	Linear Ft.
Total Wetland	60.10	2,617,129	5,614
Total Non-Wetland	8.30	356,589	16,721
Total	68.40	2,973,718	22,335

1. All mapped features have been clipped to survey area boundary and represent existing acreage.
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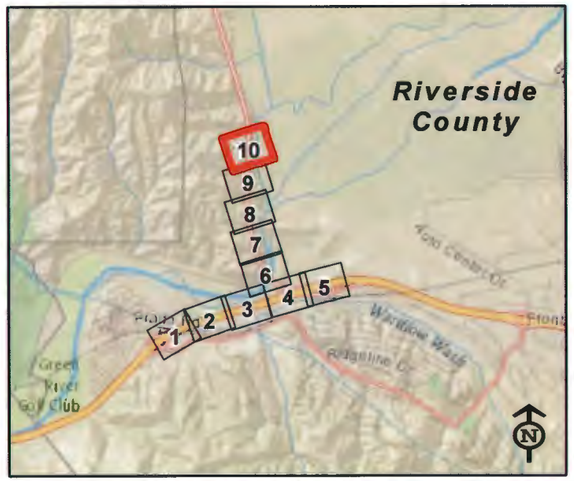


Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

0 75 150 300 Feet

1 inch = 125 feet

4.2 Potential RWQCB Jurisdiction

RWQCB jurisdiction overlaps completely with the waters of the U.S. areas within the project area. Portions of the CDFW jurisdictional streambed areas would likely also be considered jurisdictional to RWQCB. CDFW jurisdictional areas that are not generally a part of RWQCB jurisdiction include the vegetation communities that are hydrophytically connected to waterbodies.

4.3 Potential CDFW Jurisdiction

CDFW jurisdiction includes all waters of the U.S. and streambed areas that are outside of the normal limits of OHWM within the drainage features. CDFW also takes jurisdiction over hydrophytic vegetation extents, where such vegetation is associated with a lake or streambed. Table 5 summarizes the results for CDFW jurisdiction within the study area. CDFW jurisdictional areas are depicted on Figure 8 (Sheets 1 through 4).

Typically, for a streambed, the extent of State jurisdiction would include the streambed itself and the riparian habitat associated with the broader floodplain. Within the study area, there are two riparian plant communities that are associated with either lake or streambed habitat and would likely be considered jurisdictional to CDFW: mulefat thickets and Fremont cottonwood forest. Each of these plant communities is described above under Section 2, Existing Conditions.

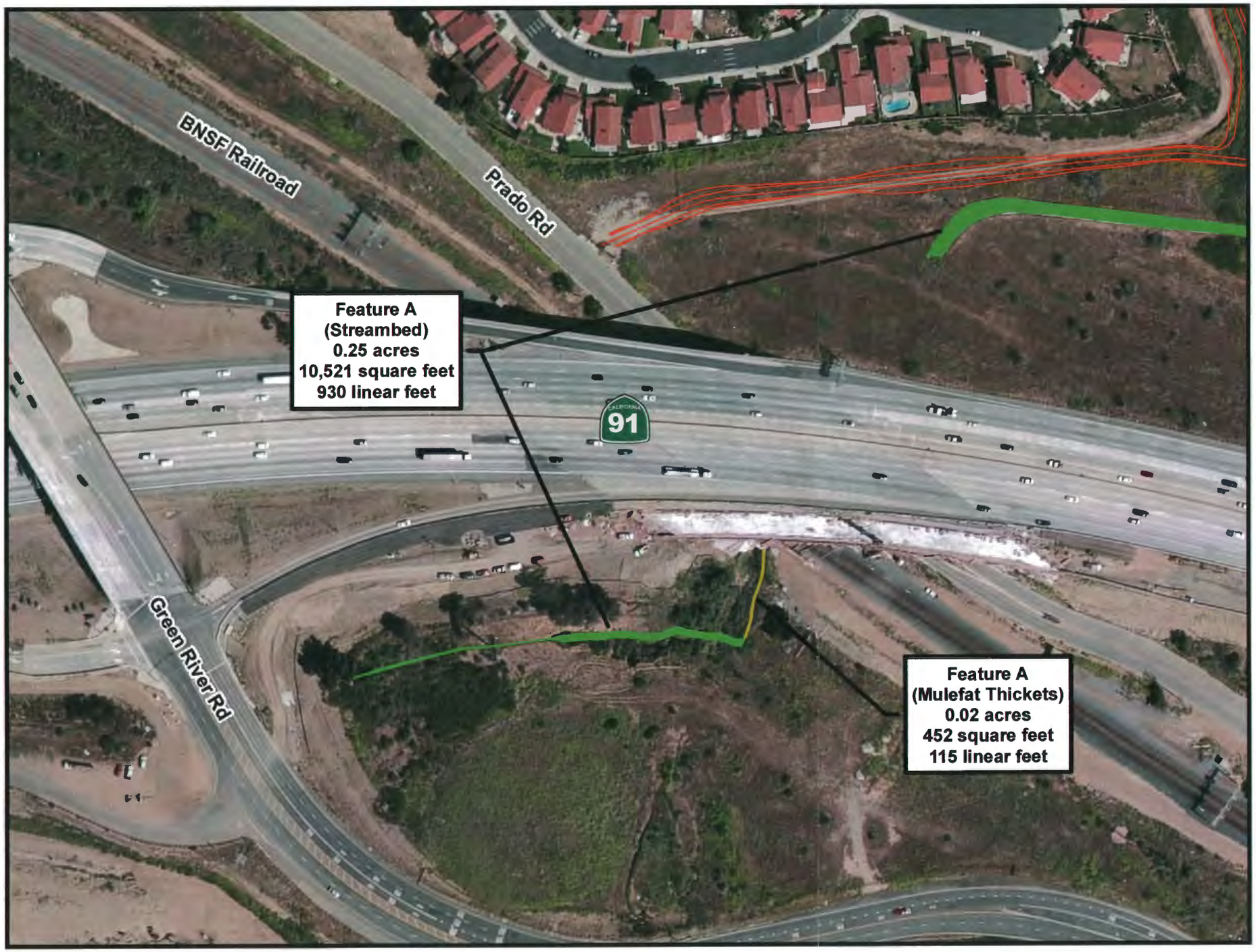
Feature E contains wetlands areas that are considered to be isolated from the mainstem of the Santa Ana River. Isolated wetlands are not considered to be subject to State jurisdiction, generally because they are not directly associated with lake or streambed areas. The wetland area supports riparian habitat that may be considered to be jurisdictional.

Table 5 – Potential CDFW Jurisdiction within the Study Area

Classification	Acreage	Square Feet	Width (feet)
Streambed			
Feature A	0.25	10,521	5
Feature B	0.04	1,425	12
Feature C	0.24	10,106	12
Feature D	3.68	160,191	170
Feature F	7.59	330,374	25-235
Feature G	0.02	465	5
Feature I	0.24	10,124	5
Feature J	0.14	5,881	6
Feature K	0.04	1,604	5
Feature L	0.04	1,683	5
Feature N	0.14	5,809	8-10
Feature O	0.05	2,045	3-8
Feature P	0.13	5,479	6-10
Feature Q	0.04	1,404	3-5
Feature R	0.05	2,058	6-12
Feature S	0.21	8,614	3-20
Streambed Subtotal	**12.90**	**557,783**	**N/A**
Mulefat Thickets			
Feature A	0.02	452	5
Feature F	0.58	25,196	5-55
Feature O	0.35	15,240	8-40
Feature P	0.40	17,010	7-45
Mulefat Subtotal	**1.35**	**57,898**	**N/A**
Fremont Cottonwood Forest			
Feature C	0.05	1,354	5-30
Feature D	21.58	939,924	60-700
Feature E	0.71	30,513	20-100
Feature F	4.98	216,596	5-80
Feature G	0.29	12,291	20-70
Feature H	0.31	13,132	50-70
Feature M	37.93	1,652,150	380-745
Feature P	0.16	6,830	27-65
Cottonwood Subtotal	**66.01**	**2,872,790**	**N/A**
Grand Total	**80.26**	**3,488,471**	**N/A**

SR-91/71 Interchange Project

Figure 7
CDFW - Jurisdictional Delineation Exhibits
Sheet 1 of 10



Legend

- Mulefat Thickets
- Fremont Cottonwood Forest
- Streambed
- USACE - Reach 9, Phase 2A Project

FEATURE SUMMARY[1]

	Acreage	Square Ft.
Total Mulefat Thickets	1.35	57,898
Total Freemont Cotonwo od for es tl	66.01	2,872,790
Total Streambed	12.90	557,783
Total	80.26	3,488,471

1. All mapped features have been clipped to survey area boundary and represent existing acreage.

*Calculations are based on feature measurements within the entire study area.

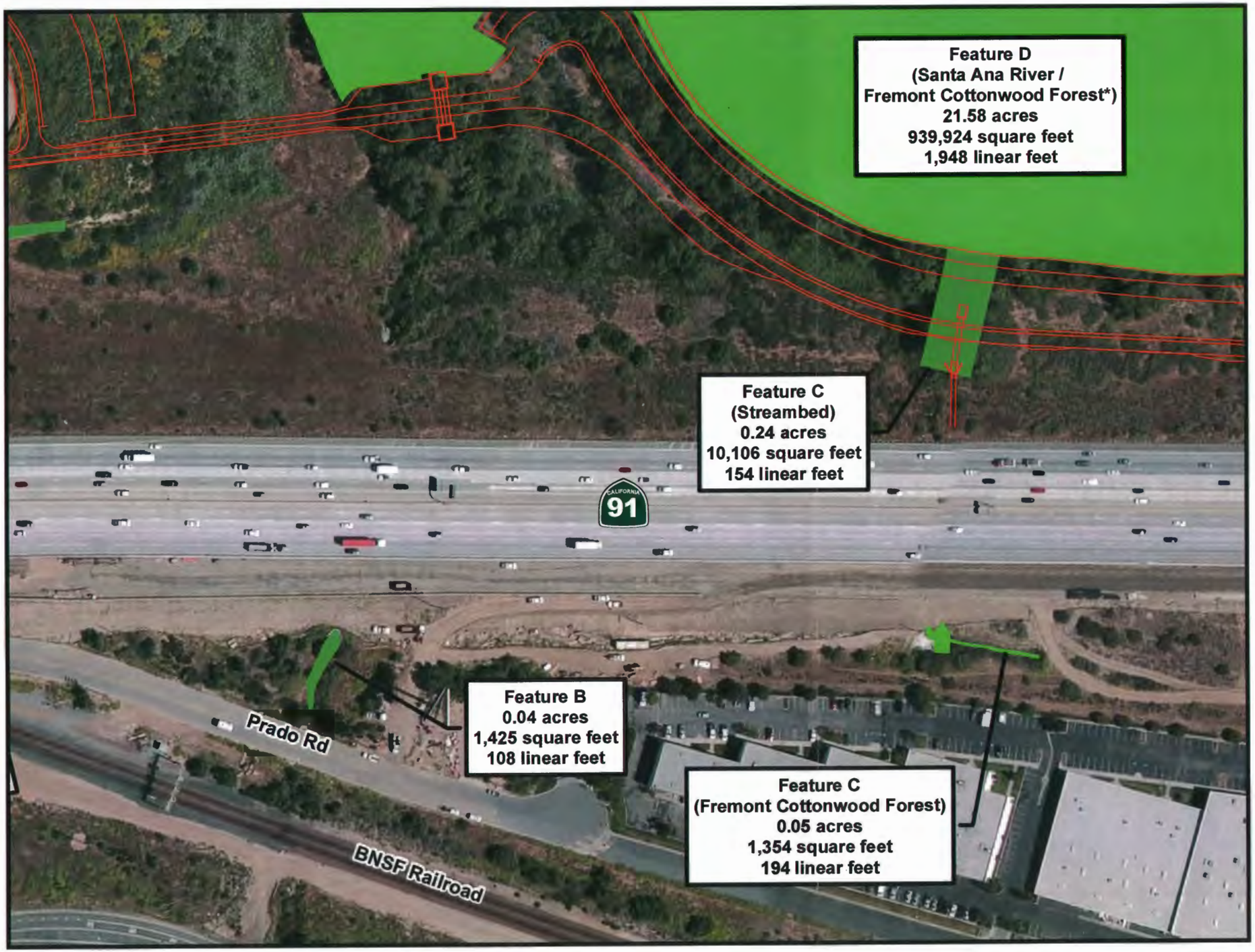
Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

0 75 150 300 Feet

1 inch = 125 feet

SR-91/71 Interchange Project

Figure 7
CDFW - Jurisdictional Delineation Exhibits
Sheet 2 of 10



Legend

- Mulefat Thickets
- Fremont Cottonwood Forest
- Streambed
- USACE - Reach 9, Phase 2A Project

FEATURE SUMMARY[1]

	Acreage	Square Ft.
Total Mulefat Thickets	1.35	57,898
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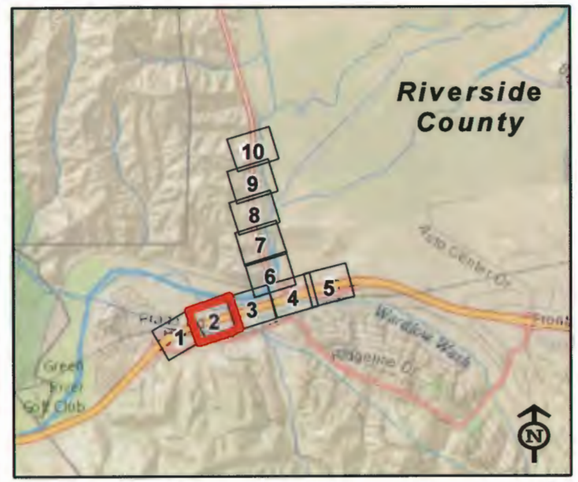

Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

N

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1 inch = 125 feet

SR-91/71 Interchange Project

Figure 7
CDFW - Jurisdictional Delineation Exhibits
Sheet 3 of 10

Feature D
(Santa Ana River / Fremont Cottonwood Forest*)
21.58 acres
939,924 square feet
1,948 linear feet

Feature D
(Santa Ana River / Streambed*)
3.68 acres
160,191 square feet
2,067 linear feet

Feature E
0.71 acres
30,513 square feet
571 linear feet

Feature F
(Wardlow Wash / Fremont Cottonwood Forest*)
4.98 acres
216,596 square feet
3,250 linear feet

Feature G
(Fresno Canyon / Fremont Cottonwood Forest)
0.29 acres
12,291 square feet
252 linear feet

Feature F
(Wardlow Wash / Streambed*)
7.59 acres
330,374 square feet
5,757 linear feet

0 75 150 300 Feet

1 inch = 125 feet

Legend

- Mulefat Thickets
- Fremont Cottonwood Forest
- Streambed
- USACE - Reach 9, Phase 2A Project

FEATURE SUMMARY[1]

	Acreage	Square Ft.
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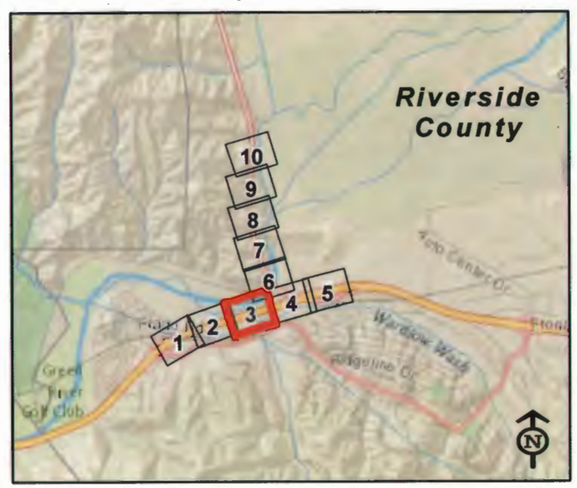
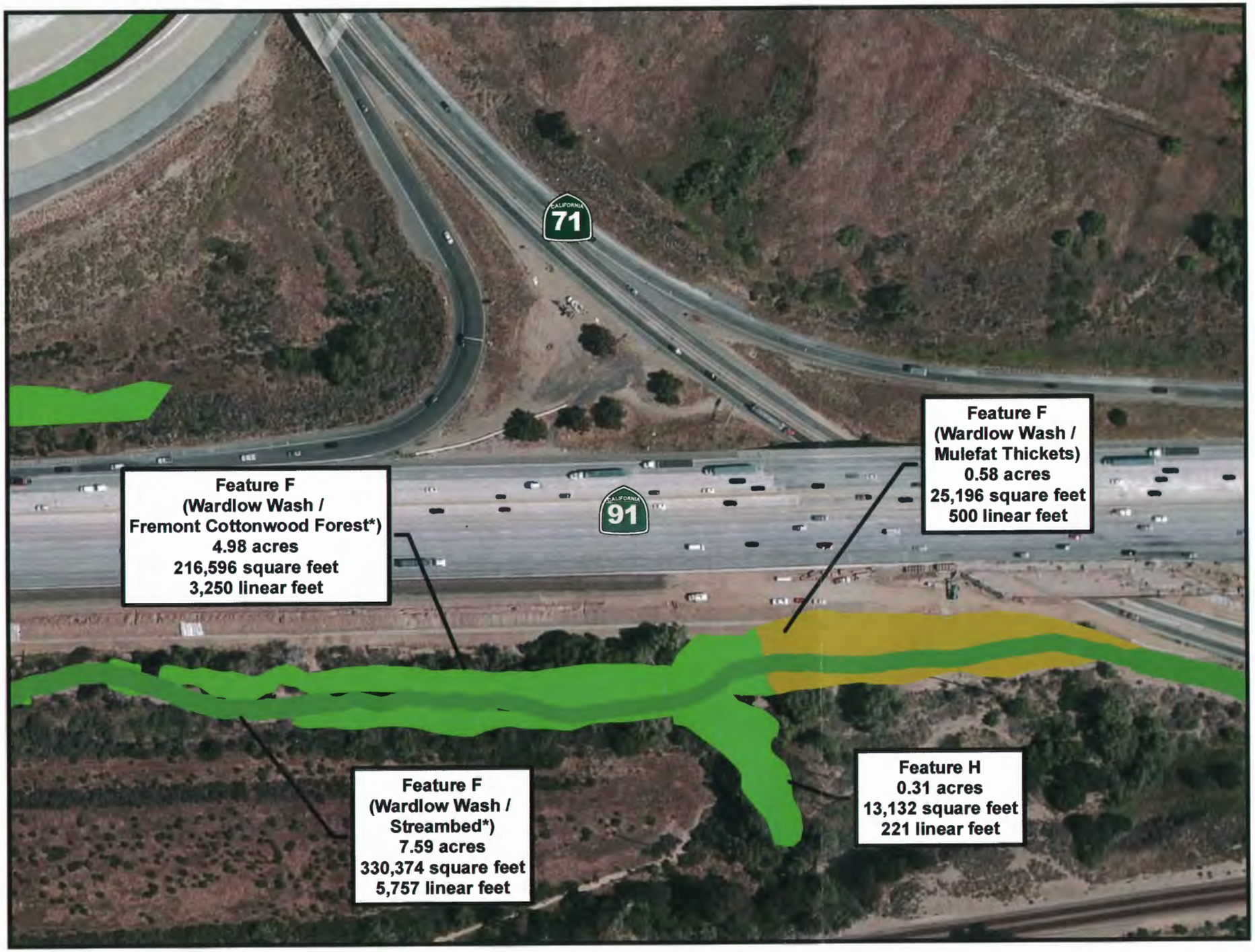


Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

SR-91/71 Interchange Project

Figure 7
CDFW - Jurisdictional Delineation Exhibits
Sheet 4 of 10



Legend

- Mulefat Thickets
- Fremont Cottonwood Forest
- Streambed
- USACE - Reach 9, Phase 2A Project

FEATURE SUMMARY[1]

	Acreage	Square Ft.
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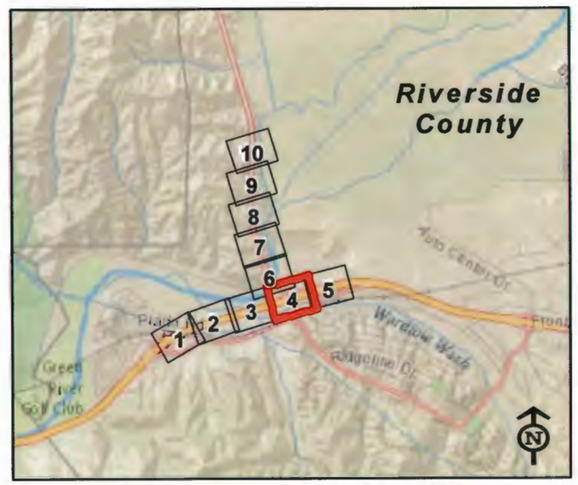

Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

0 75 150 300 Feet

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SR-91/71 Interchange Project

Figure 7
CDFW - Jurisdictional Delineation Exhibits
Sheet 5 of 10

Legend

- Mulefat Thickets
- Fremont Cottonwood Forest
- Streambed
- USACE - Reach 9, Phase 2A Project

FEATURE SUMMARY[1]

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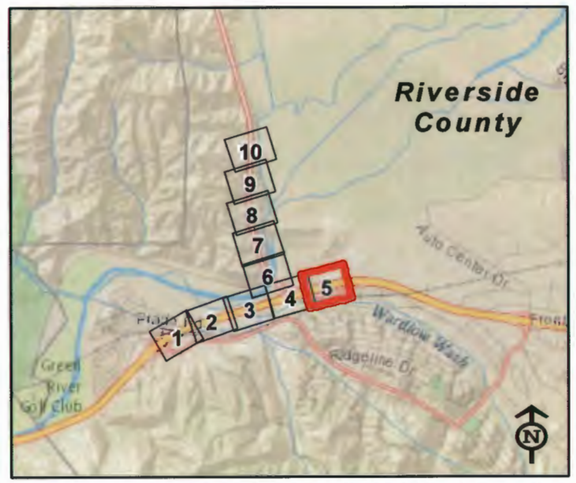

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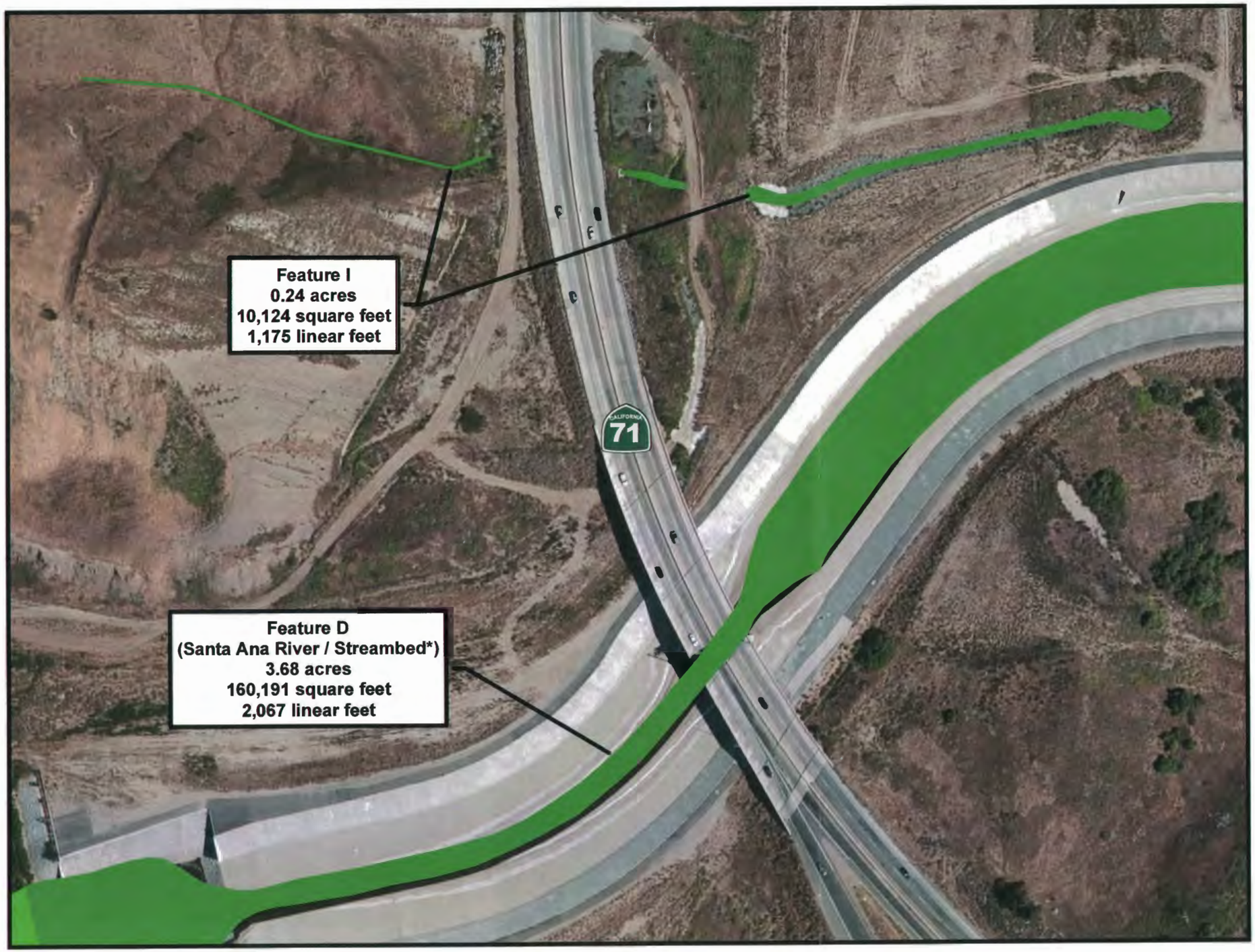
SR-91/71 Interchange Project

Figure 7
CDFW - Jurisdictional Delineation Exhibits
Sheet 6 of 10



Legend

- Mulefat Thickets
- Fremont Cottonwood Forest
- Streambed
- USACE - Reach 9, Phase 2A Project

FEATURE SUMMARY[1]

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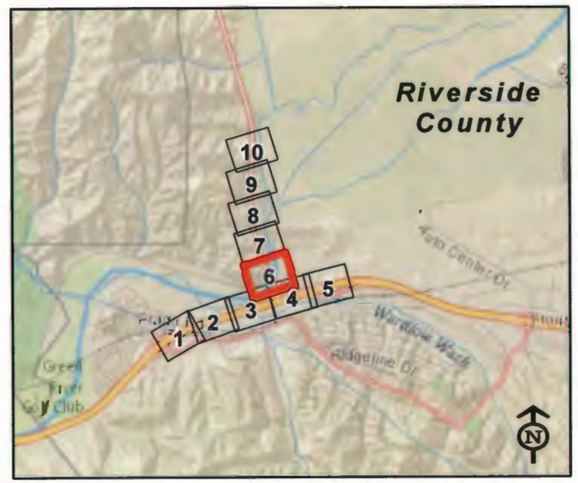

Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

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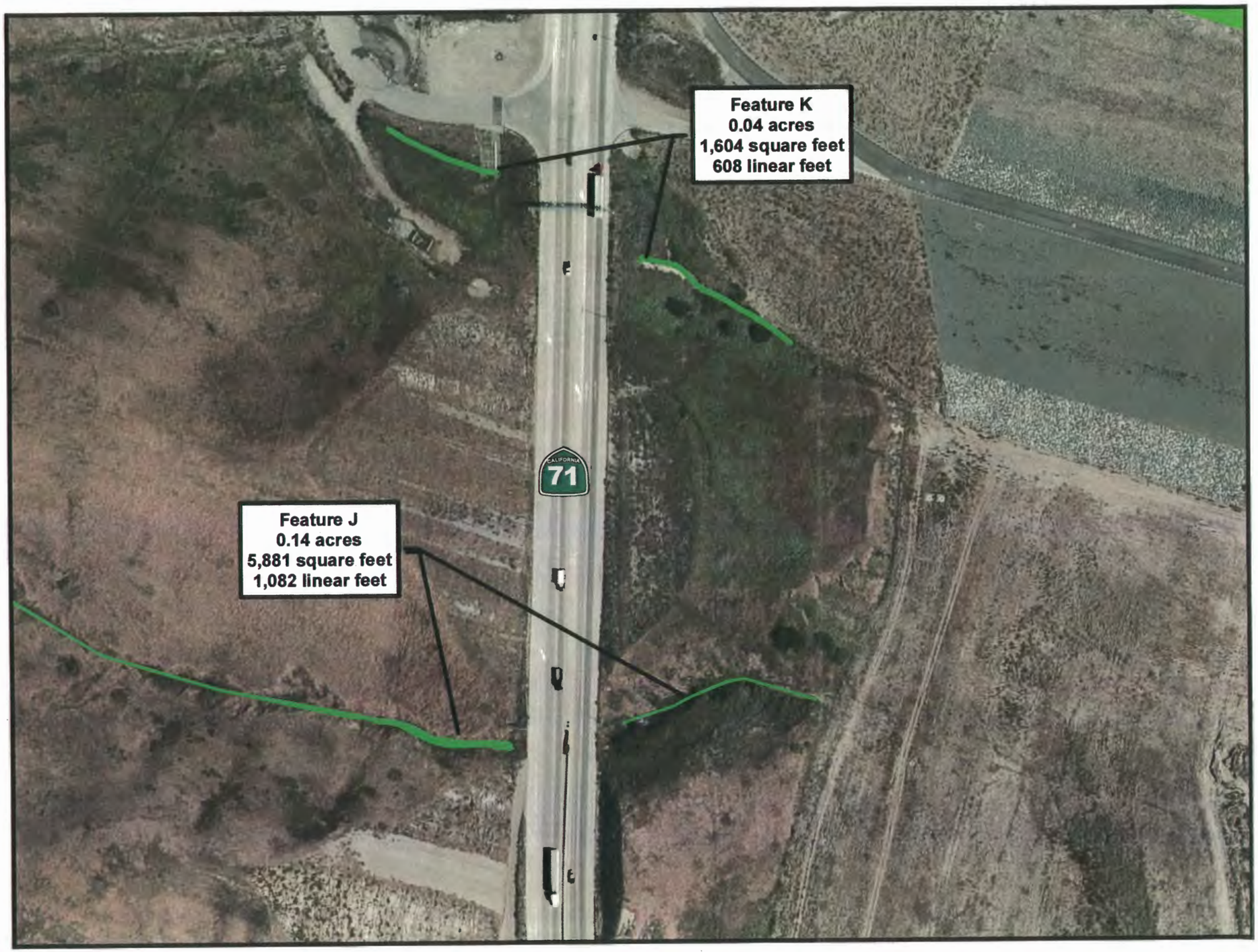
SR-91/71 Interchange Project

Figure 7
CDFW - Jurisdictional Delineation Exhibits
Sheet 7 of 10



Legend

- Mulefat Thickets
- Fremont Cottonwood Forest
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FEATURE SUMMARY[1]

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SR-91/71 Interchange Project

Figure 7
CDFW - Jurisdictional Delineation Exhibits
Sheet 8 of 10

Legend

- Mulefat Thickets
- Fremont Cottonwood Forest
- Streambed
- USACE - Reach 9, Phase 2A Project

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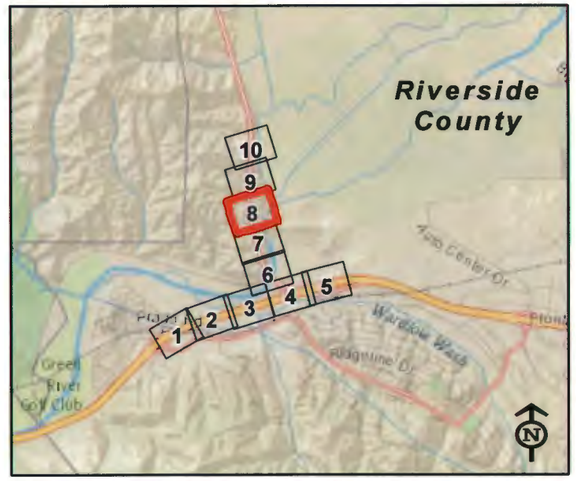

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SR-91/71 Interchange Project

Figure 7
CDFW - Jurisdictional Delineation Exhibits
Sheet 9 of 10

Legend

- Mulefat Thickets
- Fremont Cottonwood Forest
- Streambed
- USACE - Reach 9, Phase 2A Project

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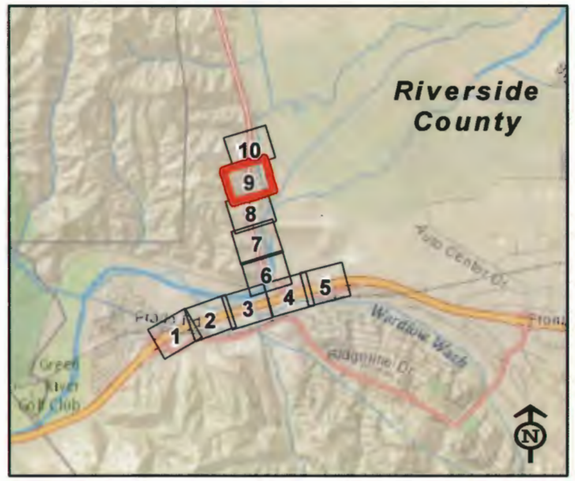

Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

SR-91/71 Interchange Project

Figure 7
CDFW - Jurisdictional Delineation Exhibits
Sheet 10 of 10

Legend

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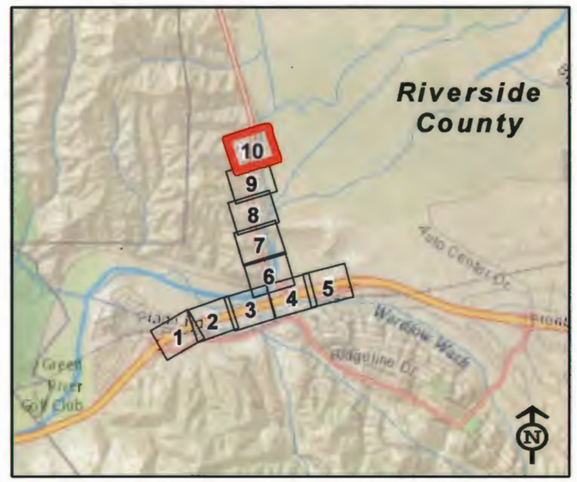

Sources: GeoEye Aerial Imagery (2012); Cal-Atlas (2011); Parsons (2013).

N

0 75 150 300 Feet

1 inch = 125 feet

5.0 CONCLUSIONS

Based on the data and analysis provided in this report, it has been determined that there are 19 drainage features totaling 68.4 acres within the study area that fall under the jurisdiction of USACE pursuant to Section 404 of the CWA. Correspondence with USACE will need to occur for the final determination of jurisdiction for these features. RWQCB jurisdictional areas overlap with waters of the U.S. with a total of 68.4 acres within the project area. CDFW jurisdictional areas within the project area total approximately 80.26 acres.

Prior to construction of the project, the Applicant will be required to quantify and document the potential effects on the jurisdictional drainages and obtain a CWA Section 404 permit for the project. USACE approval of the Section 404 permit would be contingent upon receipt of a CWA Section 401 Water Quality Certification from the Santa Ana RWQCB. In addition to obtaining Section 404 and a 401 Water Quality Certification, the project will obtain a 1602 Streambed Alteration Agreement with CDFW. Coordination with CDFW, USACE and RWQCB will continue throughout the project development process.

6.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Fieldwork conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a nondisclosure or consultant confidentiality agreement with the project applicant or the applicant's representative and that I have no financial interest in the project.

DATE: July 26, 2013 SIGNED:_____
Mr. Scott Taylor (ECORP)

DATE: December 12, 2013 SIGNED:_____
Mr. Sean Noonan (Parsons)

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APPENDIX A

Botanical Compendium

Scientific Name	Common Name
VASCULAR PLANTS	
GYMNOSPERMS	
PINACEAE	**PINE FAMILY**
*Pinus jeffreyi**	jeffery pine
AMARANTHACEAE	**AMARANTH FAMILY**
*Amaranthus retroflexus**	rough pigweed
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**
Malosma laurina	laurel sumac
Rhus trilobata	basketbush
*Schinus molle**	Peruvian pepper tree
*Schinus terebinthfolius**	Brazilian pepper tree
Toxicodendron diversilobum	Pacific poison oak
APIACEAE	**CARROT FAMILY**
*Conium maculatum**	poison hemlock
*Foeniculum vulgare**	sweet fennel
ASTERACEAE	**SUNFLOWER FAMILY**
Acourtia microcephala	sacapellote
Ambrosia psilostachya	Western ragweed
Artemisia californica	coastal sagebrush
Artemisia douglasiana	mugwort
Artemisia dracunculus	tarragon
Baccharis pilularis	coyote brush
Baccharis salicifolia	mule fat
Brickellia californica	California brickellbush
*Carduus pychocephalus**	Italian thistle
*Centaurea melitensis**	tocalote
Cirsium occidentale var. *californicum*	California thistle
Cynara cardunculus	artichoke thistle
Encelia californica	California brittlebush
Encelia farinosa	brittlebush
Ericameria teretifolia	green rabbitbrush
Eriophyllum conferiflorum	golden yarrow
Helianthus annuus	common sunflower
Heterotheca grandiflora	telegraph weed
Isocoma menziesii	Menzies' goldenbush
*Lactuca serriola**	prickly lettuce
Lasthenia sp.	goldfields
Lepidospartum squamatum	scalebroom
*Logfia gallica** (=*Filago g.*)	narrowleaf cottonrose
Malacothrix saxatilis	cliff desert dandelion
*Picris echioides**	bristly ox tongue
Pseudognaphalium californicum	ladies' tobacco
Pseudognaphalium canescens	fragrant everlasting

Scientific Name	Common Name
*Pseudognaphalium luteoalbum**	Jersey cudweed
*Pulicaria paludosa**	Spanish sunflower
*Sonchus asper**	spiny sowthistle
*Sonchus oleraceus**	common sowthistle
Stephanomeria exigua	small wire-lettuce
BORAGINACEAE	**BORAGE FAMILY**
Amsinckia menziesii var. *intermedia*	common fiddleneck
Heliotropium curassavicum	salt heliotrope
Pectocarya sp.	combseed
BRASSICACEAE	**MUSTARD FAMILY**
*Brassica nigra**	black mustard
*Hirschfeldia incana**	shortpod mustard
*Sisymbrium orientale**	Oriental hedge mustard
CACTACEAE	**CACTUS FAMILY**
Cylindropuntia californica var. *parkeri (=Opuntia parryi)*	valley cholla
Cylindropuntia prolifera	coastal cholla
Opuntia littoralis	coastal prickly pear
CAPRIFOLIACEAE	**HONEYSUCKLE FAMILY**
Sambucus nigra ssp. *caerulea (= S. mexicana)*	blue elderberry
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Atriplex canescens	four-wing saltbush
*Chenopodium album**	white goosefoot
*Salsola tragus**	tumbleweed
CONVOLVULACEAE	**MORNING GLORY FAMILY**
Convolvulus arvensis	bindweed
CRASSULACEAE	**STONECROP FAMILY**
Dudleya lanceolata	coastal dudleya
CURCURBITACEAE	**GOURD FAMILY**
Cucurbita foetidissima	Missouri gourd
Marah macrocarpus	Cucamonga manroot
CUSCUTACEAE	**DODDER FAMILY**
Cuscuta sp.	dodder
EUPHORBIACEAE	**SPURGE FAMILY**
Chamaesyce albomarginata	rattlesnake weed
Croton californicus	croton
Croton setigerus (=Eremocarpus s.)	doveweed
*Ricinus communis**	castor bean
FABACEAE	**LEGUME FAMILY**
Acmispon scoparius (= Lotus s.)	common deerweed
Astragalus sp.	milkvetch
Lupinus bicolor	miniature lupine
*Medicago polymorpha**	burclover
*Melilotus alba**	white sweetclover
*Melilotus indicus**	annual yellow sweetclover

Scientific Name	Common Name
*Melilotus officinalis**	yellow sweetclover
FAGACEAE	**OAK FAMILY**
Quercus agrifolia	California live oak
Quercus berberidifolia	scrub oak
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	red-stemmed filaree
GROSSULARIACEAE	**GOOSEBERRY FAMILY**
HYDROPHYLLACEAE	**WATERLEAF FAMILY**
Eriodictyon crassifolium	thickleaf yerba santa
Eucrypta chrysanthemifolia	common eucryta
Phacelia cicutaria	caterpillar phacelia
Phacelia distans	wild heliotrope
Phacelia minor	California bluebells
Phacelia ramosissima	branching phacelia
LAMIACEAE	**MINT FAMILY**
*Marrubium vulgare**	horehound
Salvia apiana	white sage
Salvia mellifera	black sage
MALVACEAE	**MALLOW FAMILY**
*Malva parviflora**	cheeseweed
MYRTACEAE	**MYRTLE FAMILY**
Eucalyptus sp. *	gum tree
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
Mirabilis laevis	wishbone bush
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Epilobium ciliatum	green willow herb
PAPAVERACEAE	**POPPY FAMILY**
Eschscholzia californica	California poppy
PLATANACEAE	**PLANE TREE FAMILY**
Platanus racemosa	western sycamore
POLEMONIACEAE	**PHLOX FAMILY**
Gilia sp.	gilia
POLYGONACEAE	**BUCKWHEAT FAMILY**
Eriogonum fasciculatum	California buckwheat
Rumex sp.	dock
PRIMULACEAE	**PRIMROSE FAMILY**
*Anagallis arvensis**	scarlet pimpernel
ROSACEAE	**ROSE FAMILY**
Adenostoma fasciculatum	chamise
Cercocarpus betuloides	mountain mahogany
Heteromeles arbutifolia	toyon
RUBIACEAE	**MADDER FAMILY**
Galium angustifolium	narrow-leaved bedstraw
SALICACEAE	**WILLOW FAMILY**

Scientific Name	Common Name
Populus fremontii	Fremont cottonwood
Salix exigua	narrowleaf willow
Salix gooddingii	Goodding's willow
Salix lasiolepis	arroyo willow
SCROPHULARIACEAE	**FIGWORT FAMILY**
Diplacus aurantiacus (= Mimulus a.)	orange bush monkeyflower
Keckiella antirrhinoides	yellow-bush penstemon
Scrophularia californica	California figwort
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	jimson weed
*Nicotiana glauca**	tree tobacco
Solanum douglasii	Douglas nightshade
TAMARICACEAE	**TAMARISK FAMILY**
*Tamarix ramosissima**	saltcedar
URTICACEAE	**NETTLE FAMILY**
*Urtica dioica**	stinging nettle
ANGIOSPERMS (MONOCOTYLEDONS)	
POACEAE	**GRASS FAMILY**
*Avena fatua**	wild oat
*Bromus diandrus**	ripgut brome
*Bromus madritensis**	foxtail brome
Bromus madritensis ssp. *rubens**	red brome
*Cynodon dactylon**	bermuda grass
*Ehrharta calycina**	perennial veldtgrass
Elymus condensatus	giant wildrye
Vulpia microstachys	small fescue
*Festuca myuros** (= *Vulpia myuros*)	rattail sixweeks grass
Nassella pulchra	purple needlegrass
*Phalaris canariensis**	annual canarygrass
*Piptatherum miliaceum**	smilo grass
*Polypogon monspeliensis**	rabbitsfoot grass
*Schismus arabicus**	schismus
*Schismus barbatus**	mediterranean schismus
TYPHACEAE	**CATTAIL FAMILY**
Typha domingensis	southern cattail
* non-native species	

APPENDIX B

Preliminary Jurisdictional Determination Form Summary

Drainage Name	County	Latitude	Longitude	Linear Feet	Hydrologic Regime	Likely Jurisdictional Status	Potential Non-Wetland Waters	Potential Deepwater Aquatic Non-Wetland Waters	Potential Wetland Waters (acres)	Cowardin Class	Section 10 Water	Approximate Distance to RPW (miles)	Flow Route to RPW	Width (feet)	Depth Estimate (feet)	Side Slope Estimate	Primary Substrate	Hydrologic Indicators	Chemical Characteristics	Biological Characteristics
Feature A	Riverside	33.880271	-117.654855	776	Ephemeral Stream	Jurisdictional	0.26	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	5	1	2:1	Sand	Water marks; Bed and bank	Unknown	Riparian Vegetation
Feature B	Riverside	33.880053	-117.652363	104	Ephemeral Stream	Jurisdictional	0.04	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	12	1	4:1	Sand	Water marks; Bed and bank	Unknown	Upland Vegetation
Feature C	Riverside	33.880765	-117.649939	116	Ephemeral Stream	Jurisdictional	0.02	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	12	1	4:1	Sand	Water marks; Bed and bank	Unknown	Upland Vegetation
Feature C	Riverside	33.880765	-117.649939	192	Intermittent Stream	Jurisdictional	0.26	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	12	1	4:1	Sand	Water marks; Bed and bank	Unknown	Upland Vegetation
Feature C	Riverside	33.880760	-117.649923	38	Wetland	Jurisdictional	0.00	0.00	0.01	Freshwater Forested/ Shrub Wetland	No	<1	Natural Drainage Above Ground	12	1	4:1	Sand	Water marks; Bed and bank	Unknown	Riparian Vegetation
Feature D	Riverside	33.885377	-117.643956	2,067	Intermittent Stream	Jurisdictional	3.68	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	45	15	4:1	Sand	Water marks; Bed and bank	Unknown	Riparian Vegetation
Feature D	Riverside	33.882995	-117.650190	1,948	Wetland	Jurisdictional	0.00	0.00	21.58	Freshwater Forested/ Shrub Wetland	No	<1	Natural Drainage Above Ground	1,000	15	5:1	Sand	Water marks; Bed and bank; Wrack	Unknown	Riparian Vegetation
Feature E	Riverside	33.882948	-117.645044	320	Wetland	Jurisdictional	0.00	0.00	0.33	Riverine	No	<1	Natural Drainage Above Ground	20	5	5:1	Sand	Water marks; Bed and bank	Unknown	Riparian Vegetation
Feature F	Riverside	33.882533	-117.636735	181	Ephemeral Stream	Jurisdictional	0.03	0.00	0.00	Freshwater Forested/ Shrub Wetland and Riverine	No	<1	Natural Drainage Above Ground	20	1	4:1	Sand and Cobbles	Water marks; Bed and bank; Wrack	Unknown	Riparian and Upland Vegetation
Feature F	Riverside	33.882533	-117.636735	5,576	Intermittent Stream	Jurisdictional	2.48	0.00	0.00	Freshwater Forested/ Shrub Wetland and Riverine	No	<1	Natural Drainage Above Ground	20	1	4:1	Sand and Cobbles	Water marks; Bed and bank; Wrack	Unknown	Riparian and Upland Vegetation
Feature G	Riverside	33.880976	-117.645190	464	Ephemeral Stream	Jurisdictional	0.01	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	10	1	4:1	Sand	Water marks; Bed and bank	Unknown	Riparian and Upland Vegetation
Feature G	Riverside	33.880976	-117.645190	260	Intermittent Stream	Jurisdictional	0.09	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	10	1	4:1	Sand	Water marks; Bed and bank	Unknown	Riparian and Upland Vegetation
Feature H	Riverside	33.882514	-117.641064	232	Wetland	Jurisdictional	0.00	0.00	0.25	Freshwater Forested/ Shrub Wetland	No	<1	Natural Drainage Above Ground	7	1	4:1	Sand and Cobbles	Water marks; Bed and bank	Unknown	Riparian Vegetation
Feature I	Riverside	33.886740	-117.644306	1,175	Ephemeral Stream	Jurisdictional	0.24	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	5	1	2:1	Sand	Water marks; Bed and bank	Unknown	Upland Vegetation
Feature J	Riverside	33.887645	-117.646587	1,082	Ephemeral Stream	Jurisdictional	0.14	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	6	1	2:1	Sand	Water marks; Bed and bank	Unknown	Upland Vegetation
Feature K	Riverside	33.889307	-117.645446	378	Ephemeral Stream	Jurisdictional	0.08	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	5	1	2:1	Sand	Water marks; Bed and bank	Unknown	Riparian Vegetation

Drainage Name	County	Latitude	Longitude	Linear Feet	Hydrologic Regime	Likely Jurisdictional Status	Potential Non-Wetland Waters	Potential Deepwater Aquatic Non-Wetland Waters	Potential Wetland Waters (acres)	Cowardin Class	Section 10 Water	Approximate Distance to RPW (miles)	Flow Route to RPW	Width (feet)	Depth Estimate (feet)	Side Slope Estimate	Primary Substrate	Hydrologic Indicators	Chemical Characteristics	Biological Characteristics
Feature L	Riverside	33.891155	-117.645423	160	Ephemeral Stream	Jurisdictional	0.04	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	5	1	2:1	Sand	Water marks; Bed and Bank	Unknown	Upland Vegetation
Feature M	Riverside	33.895251	-117.644434	3,076	Wetland	Jurisdictional	0.00	0.00	37.93	Freshwater Forested/ Shrub Wetland	No	<1	Natural Drainage Above Ground	150	30	5:1	Sand	Water marks; Bed and bank; Wrack	Unknown	Riparian Vegetation
Feature N	Riverside	33.892636	-117.647154	645	Ephemeral Stream	Jurisdictional	0.14	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	5	1	2:1	Sand	Water marks; Bed and Bank	Unknown	Upland Vegetation
Feature O	Riverside	33.894722	-117.645530	990	Ephemeral Stream	Jurisdictional	0.20	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	15	1	2:1	Sand	Water marks; Bed and bank	Unknown	Riparian Vegetation
Feature P	Riverside	33.895626	-117.646567	1,400	Ephemeral Stream	Jurisdictional	0.33	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	10	1	2:1	Sand	Water marks; Bed and Bank	Unknown	Riparian Vegetation
Feature Q	Riverside	33.8966338	-117.647375	414	Ephemeral Stream	Jurisdictional	0.04	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	3	1	2:1	Sand	Water marks; Bed and bank	Unknown	Riparian Vegetation
Feature R	Riverside	33.8971304	-117.64602	212	Ephemeral Stream	Jurisdictional	0.05	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	10	1	2:01	Sand	Water marks; Bed and bank	Unknown	Riparian Vegetation
Feature S	Riverside	33.8985693	-117.646083	299	Ephemeral Stream	Jurisdictional	0.20	0.00	0.00	Riverine	No	<1	Natural Drainage Above Ground	3	1	2:1	Sand	Water marks; Bed and bank	Unknown	Riparian Vegetation

APPENDIX C

Precipitation Data

MONTHLY RAINFALL RECORDS 2010-2012		
Santa Ana (SNA) STATION		
Date	***Inches of Rain***	***Cumulative Rainfall for the Season***
7/2010	0	0
8/2012	0.00	0.02
9/2010	0.00	0.02
10/2010	2.66	2.68
11/2010	1.36	4.04
12/2010	10.10	14.14
1/2011	1.02	15.16
2/2011	1.91	17.07
3/2011	1.81	18.88
4/2011	0.00	18.88
5/2011	0.45	19.33
6/2011	0.03	19.36
7/2011	0.00	0.00
8/2011	0.00	0.00
9/2011	0.06	0.06
10/2011	0.85	0.91
11/2011	1.67	2.58
12/2011	0.63	3.21
1/2012	1.30	4.51
2/2012	0.78	5.29
3/2012	1.51	6.8
4/2012	3.09	9.89
5/2012	0.00	9.89
6/2012	0.00	9.89

APPENDIX D

Drainage Photo Points

SR-91/SR-71 Interchange Improvement Project
Photo Locations and Direction

Map Features

- Photo Locations
- Biological Study Area
- Potentially Jurisdictional Waters

0 1.25 2.5 5 Miles

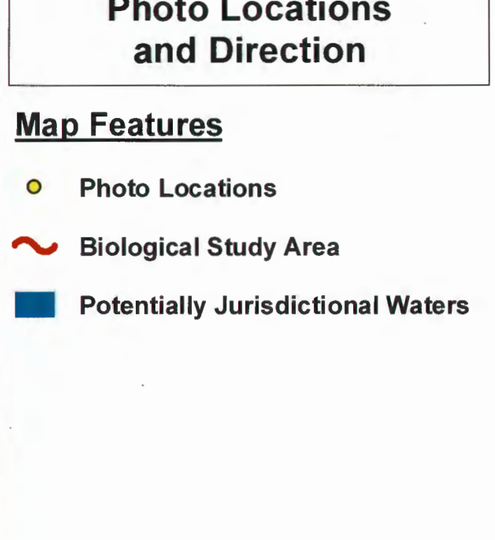

Photo 1. Feature A – Looking northeast down drainage course

Photo 2. Feature B – Looking southwest down the feature

Photo 3. Feature C – Looking west across the feature

Photo 4. Feature C – Looking southeast at the culvert crossing for this feature

Photo 5. Feature D – Looking west down the feature

Photo 6. Feature E – Looking east up the feature

Photo 7. Feature F and G – Looking northeast down drainage course

Photo 8. Feature F – Looking east from the south side of the crossing under SR-91

Photo 9. Feature F – Looking west from the eastern end of the feature

Photo 10. Feature F – Mid point of feature, looking west

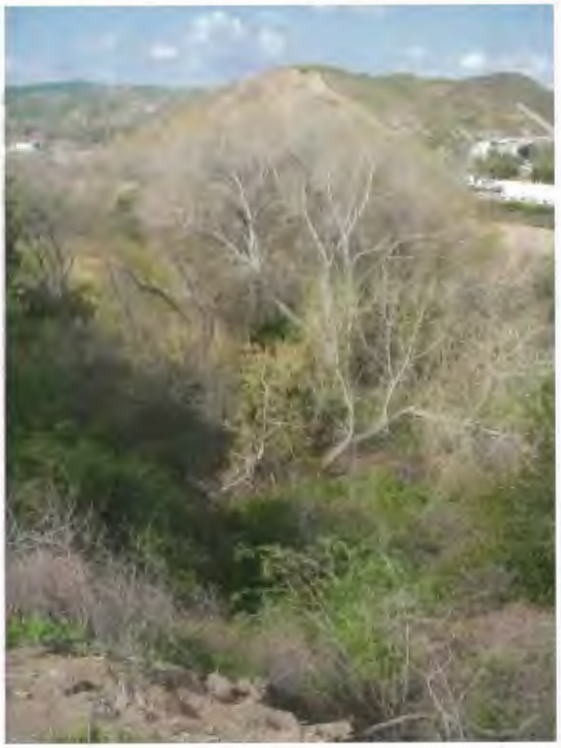

Photo 11. Feature H – Looking northwest from the sound end of the feature

Photo 12. Feature I – Looking southeast down the feature

Photo 13. Feature J – Looking northeast at the upper part of the feature

Photo 14. Feature K – Looking east at feature

Photo 15. Feature L – Looking west at upstream portion of the feature

Photo 16. Feature N – Looking west at feature

Photo 17. Feature O – Looking west at the main segment of this feature

Photo 18. Feature P – Looking northwest at the upper part of the feature

Photo 19. Feature Q – Looking west at feature

Photo 20. Feature R – Looking west at feature

Photo 21. Feature S – Looking west at upper part of feature