PLANTS

Amaranthacae - Amaranth Family
**Amaranthus alubs* - tumbling pigweed

Anacardiaceae - Maple Family
**Schinus molle* - Peruvian pepper tree

Apocynaceae - Dogbane Family
**Nerium oleander* – oleander

Asteraceae - Sunflower Family
Baccharis salicifolia - mulefat
**Centaurea melitensis* - tocalote/malta star thistle
Helianthus annuus – common sunflower
**Salsola kali* - Russian thistle
**Sonchus oleraceus* - sow thistle

Arecaceae - Palm Family
**Washingtonia robusta* - Mexican fan palm

Brassicaceae - Mustard Family
**Hirschfeldia incana* - short-pod mustard
**Raphanus sativus* - wild radish

Boraginaceae - Borage Family
Amsinckia menziesii var. *intermedia* - common fiddleneck

Cyperaceae - Sedge Family
**Cyperus alternifolius* - umbrella sedge

Euphorbiaceae - Spurge Family
**Euphorbia maculate* - spotted spurge
**Ricinus communis* - castor bean

Fabaceae - Pea Family
**Melilotus indicus* - Indian or annual sweetclover

***Geraniaceae* - Geranium Family**
**Erodium cicutarium* - red-stem filaree/ stork's bill

Malvaceae - Mallow Family
Malva parviflora - cheeseweed

Myrtaceae - Mertle Family
**Eucalyptus* sp. - Eucalyptus

Onagraceae - Evening Primrose Family
Epilobium ciliatum - willowherb

Poaceae - Grass Family
**Avena barbata* - slender wild oat
**Avena fatua* - wild oat
**Bromus hordeaceus* - soft chess
**Bromus madritensis* ssp. *rubens* - red brome/foxtail chess
**Cynodon dactylon* - bermuda grass
**Polypogon monspeliensis* - annual beard grass/ rabbits foot grass
**Sorghum halepense* - Johnson grass

Polygonaceae - Buckwheat Family
Polygonum lapathifolium - willow smartweed
**Rumex crispus* - curly dock

Salicaceae - Willow Family
Salix gooddingii - black willow

Saururaceae - Lizard Tail Family
Anemopsis californica - yerba mansa

Simaroubaceae – Ailanthus Family
**Ailanthus altissima* - Chinese tree of heaven

Solanaceae - Night Shade Family
Datura wrightii - sacred datura
**Nicotiana glauca* - tree tobacco
Solanum americanum - common nightshade

Typhaceae - Cattail Family
Typha latifolia - common cattail

Urticaceae - Nettle Family
Urtica dioica - giant creek nettle

Vitaceae – Grape Family
Vitis girdiana – wild grape

Zygophyllaceae – Caltrop Family
Tribulus terrestris – puncture vine

* Non-native species

WILDLIFE

Reptiles
Sceloporus occidentalis - western fence lizard

Birds
Buteo jamaicensis - red-tailed hawk
Carduelis psaltria - lesser goldfinch
Carpodacus mexicanus - house finch
Corvus corax - common raven
Dendroica coronate - yellow-rumped warbler
Eughagus cyanocephalus - Brewer's blackbird
Larus occidentalis - western gull
Sayornis nigricans - black phoebe
Sialia mexicana - western bluebird

Mammals
Canis lupus familiaris - domestic dog
Felis catus – feral cat

Appendix D
Representative Site Photographs

University Wash Channel Stage 3 Project
Appendix D: Representative Site Photographs
All Photographs Taken on 11/4/13

	View of ruderal habitat in central portion of Site looking north from Massachusetts Avenue.
	View of the small debris piles along the north edge of the ruderal habitat (marginal cover and nesting habitat for burrowing owl).

University Wash Channel Stage 3 Project
Appendix D: Representative Site Photographs
All Photographs Taken on 11/4/13

	View of developed land looking northwest from adjacent ruderal habitat.
	View of south end of the University Wash Channel showing existing underground pipe outlet, open water habitat, and cluster of eucalyptus trees.

University Wash Channel Stage 3 Project
Appendix D: Representative Site Photographs
All Photographs Taken on 11/4/13

	View of southern end of the University Wash Channel looking north from bottom of channel.
	View of southern half of the University Wash Channel and adjacent bare/disturbed land looking south from western channel bank.

	View of northern half of the University Wash Channel and adjacent bare/disturbed land looking north from western channel bank.
	View of old eucalyptus and palm tree stumps within northern half of the University Wash Channel.

	View of northern end of the University Wash Channel and adjacent bare/disturbed land looking north from western channel bank.
	View of box culvert at north end of the University Wash Channel.

Appendix E

Delineation of Waters of the United States

And Jurisdictional Analysis

Delineation of Waters of the United States and Jurisdictional Analysis

Riverside County Flood Control and Water Conservation District

University Wash Channel Stage 3 Project

Riverside, California

USGS Riverside East Quadrangle

December 2013

Prepared for:
Riverside County Flood Control and
Water Conservation District
1995 Market Street
Riverside, CA 92501

Prepared by:
TRC Solutions, Inc.
123 Technology Drive West
Irvine, CA 92618

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

1.0 INTRODUCTION

On behalf of the Riverside County Flood Control and Water Conservation District (District), a formal wetland delineation and jurisdiction assessment was conducted by TRC Solutions, Inc. (TRC) for the 8.13-acre University Wash Channel Site (Site), located in Riverside, California (see Figure 1, Vicinity and Site Location). The Site represents the proposed footprint of the District's proposed University Wash Channel Stage 3 Project (Project), which involves the upgrade of the existing University Wash Channel to accommodate 10-year flows. The Project consists of the construction of approximately 2,500 linear feet of underground 90-inch-diameter reinforced concrete storm drain pipe, catch basins, and associated manholes, street paving and grading.

This report presents the results of TRC Solution Inc.'s review of available literature, aerial photographs, soil survey (see Figure 2, Soils Map), and fieldwork on the Site. An initial field survey was conducted in December 2011 with a subsequent survey conducted in November 2013. TRC staff conducted both field surveys and utilized, as appropriate, the technical guidelines provided in the 1987 U.S. Army Corps of Engineers (ACOE) Wetlands Delineation Manual, the Regional Supplement to the ACOE Wetland Delineation Manual: Arid West Region (Version 2.0), and the ACOE's 2008 ordinary high water mark field guide to identify and delineate wetlands and waters that may be subject to regulatory jurisdiction under Section 404 of the Clean Water Act (CWA). Habitat types and land uses within the Site are depicted on Figure 3, Land Uses and Habitat Types, and a delineation map illustrating the potential limits of ACOE jurisdiction within the Site is provided as Figure 4, Wetland Delineation Map.

In addition to conducting a formal wetland delineation, the basis for evaluating the jurisdictional status of the delineated features on the Site was drawn from the guidance provided in the *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States* (ACOE and EPA, 2007) and the revised guidance issued by the agencies on December 2, 2008. This case law is herein referred to as Rapanos. The contact information for the Project Proponent and the TRC contact are included below.

1.1 CONTACT INFORMATION

Project Proponent
Kris Flanigan
Riverside County Flood Control
and Water Conservation District
1995 Market Street
Riverside, CA 92501
(951) 955-8581

Consultant
Joe Stenger
TRC Solutions
2666 Rodman Drive
Los Osos, CA 93402
(805) 528-6868

1.2 JURISDICTION OVERVIEW

The ACOE administers and enforces Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the CWA. Under Section 10, an ACOE permit is required for work or structures in, over, or under navigable "waters of the United States". Under Section 404 of the CWA, an

ACOE permit is required for the discharge of dredged and/or fill material into "waters of the United States".

Typical activities requiring Section 10 permits are:

- *Construction of piers, wharves, bulkheads, dolphins, marinas, ramps, floats intake structures, and cable or pipeline crossings over or under navigable or tidal waters.*
- *Dredging and excavation within navigable or tidal waters.*

Typical activities requiring Section 404 permits are:

- *Addition of fill material in "waters of the U.S." or adjacent wetlands for residential, commercial, or recreational developments.*
- *Construction of bridges, culverts, revetments, groins, breakwaters, levees, dams, dikes, and weirs in "waters of the U.S." or adjacent wetlands.*

Waters of the United States

The term "waters of the United States" is defined at 33 CFR part 328 to include: (i) all navigable waters (including all waters subject to the ebb and flow of the tide), (ii) all interstate waters and wetlands, (iii) all other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use degradation or destruction of which could affect interstate or foreign commerce, (iv) all impoundments of waters mentioned above, (v) all tributaries to waters mentioned above, (vi) the territorial seas, and (vii) all wetlands adjacent to waters mentioned above. Section 404 permits are required for discharges of dredged or fill material placed in these waters. Navigable waters of the United States are defined as waters that have been used in the past, are now used, or are susceptible to use as a means to transport interstate or foreign commerce up to the head of navigation. Section 10 and/or Section 404 permits are required for construction activities in these waters.

Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 CFR §328.3(b)]. Presently, to be a wetland, the feature must exhibit three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the "normal circumstances" for the site.

The lateral extent of non-tidal waters is determined by delineating the ordinary high water mark (OHWM)[33 CFR §328.4(c)(1)]. The OHWM is defined by the ACOE as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 CFR §328.3(e)].

The Solid Waste Agency of Northern Cook County Decision

The definition of "waters of the U.S." was altered by the January 2001 U.S. Supreme Court Decision, *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers et al (SWANCC)*. In the SWANCC decision, the Supreme Court held that the ACOE exceeded its authority by asserting CWA jurisdiction over an abandoned sand and gravel pit, solely because it provided habitat for migratory birds. The SWANCC rule is limited to waters that are non-navigable, isolated and intrastate and clarified that the ACOE staff should no longer rely on the use of waters by migratory birds as the sole basis for asserting jurisdiction.

The Rapanos Decision

In June 2007, the Supreme Court's decision in the consolidated cases Rapanos v. United States and Carabell v. United States, 126 S. Ct. 2208 (2006) was implemented, which addresses the jurisdiction over waters of the United States under the CWA. On June 5, 2007 the U.S. Environmental Protection Agency and ACOE issued a memorandum summarizing Rapanos as follows (the revised guidance issued on December 2, 2008 did not affect the following):

The agencies will assert jurisdiction over the following waters:

- *Traditional navigable waters*
- *Wetlands adjacent to traditional navigable waters*
- *Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)*
- *Wetlands that directly abut such tributaries*

The agencies will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with traditional navigable water:

- *Non-navigable tributaries that are not relatively permanent*
- *Wetlands adjacent to non-navigable tributaries that are not relatively permanent*
- *Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary*

The agencies generally will not assert jurisdiction over the following features:

- *Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)*
- *Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water*

The agencies will apply the significant nexus standard as follows:

- *A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters*
- *Significant nexus includes consideration of hydrologic and ecologic factors*

2.0 METHODS

2.1 JURISDICTIONAL DELINEATION

This delineation utilized the ACOE 1987 Manual (USACOE, 1987) three-parameter (vegetation, hydrology, and soils) methodology to delineate waters of the U.S., focusing specifically on wetlands. The Arid West Supplement (USACOE, 2008a) was also used in conjunction with the 1987 ACOE Manual. Where differences in the two documents occur, the Arid West Supplement took precedence over the ACOE Manual. This methodology requires the collection of data on soils, vegetation, and hydrology at several locations to establish the boundaries of wetlands. The ACOE field guide for identifying the OHWM in the arid west region (USACOE, 2008b) was also used to delineate the lateral limits of non-wetland waters.

Prior to beginning the field delineation, TRC examined aerial photographs of the Project area and the U.S. Geological Survey (USGS) 7.5-minute *Riverside East, California* quadrangle map to determine the potential locations of jurisdictional waters of the U.S., including wetlands and historical blue-line features. The U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (USFWS, 2013) and available Natural Resources Conservation Service (NRCS) soil mapping data for the site were also reviewed.

The initial wetland delineation field survey of the Site was conducted by TRC biologists Travis Kegel and Karyn Sernka on December 16, 2011. The most recent field inspection was conducted by TRC biologist Mike Farmer on November 4, 2013. The entire site was inspected and assessed using the appropriate ACOE guidelines listed above to confirm the lack of wetlands or determine the extent of wetland and non-wetland water boundaries.

2.2 GPS DATA INTEGRATION

All boundaries for wetlands and other waters of the U.S. within the Site were mapped with a Trimble Global Positioning System (GPS) hand-held unit and/or hand-drawn onto an aerial photograph of the site and digitized using Geographic Information System (GIS) software. The GPS unit is capable of real-time differential correction and sub-meter accuracy. The GPS data were downloaded from the unit and differentially corrected utilizing Trimble Pathfinder Office software and appropriate base station data, and then converted to an ESRI shape file format. The data were exported to GIS software in the State Plane coordinate system (NAD 83) with units in survey feet. Within GIS, data were edited as appropriate to represent field conditions. Linear

features were built into polygons using recorded width information or OHWM limits and acreages were calculated. All wetland shape files were merged to create a single wetland file with acreages for each feature. Figure 4 depicts the results of the data integration.

3.0 RESULTS

3.1 SITE LOCATION AND DESCRIPTION

The 8.13-acre Site is located south of the intersection of State Highway 91 and State Highway 60, and generally bound by Spruce Street to the north, Chicago Avenue to the east, Massachusetts Avenue to the south, and Kansas Avenue to the west (see Figure 1). The Site occurs in Section 24, Township 2 South, and Range 5 West of the U.S. Geological Survey (USGS) 7.5-minute *Riverside East, California* quadrangle. The Site is surrounded by industrial and commercial land uses and other disturbed land.

The Site is irregularly shaped and encompasses a variety of land uses and vegetation communities such as paved roads, disturbed/developed land, ruderal (weedy) and ornamental vegetation, and the existing University Wash Channel, which supports its own assortment of upland and wetland vegetation.

3.2 TOPOGRAPHY AND HYDROLOGY

Elevations on the Site range from approximately 880 feet to 920 feet (265 to 280 meters) above mean sea level. Overall, the Site is gently sloped from the southeast down to the northwest. Each parcel encompassed by the Site is relatively flat with a few discernible elevation changes along property lines. Surface water runoff associated with the paved portions of the Site appears to enter the underground storm drain system associated with the onsite University Wash Channel. Storm water on the unpaved portions of the Site runs off to storm drain systems and the University Wash Channel or percolates into the soil or fill.

3.3 SOILS

The NRCS Soil Survey identifies two native soil series within the Site: Arlington fine sandy loam, deep, 2-8 percent slopes and Hanford coarse sandy loam, 2-8 percent slopes (see Figure 2). Neither soil is mapped as being hydric. General characteristics associated with each soil are described below. Native soils on most of the Site have been graded over and surfaced.

- The Arlington fine sandy loam series are well drained and composed of sandy loam and fine sandy loam. Parent materials consist of weakly cemented alluvium derived from granite. These soils occur on alluvial fans at 400 to 2,000 feet in elevation.

- The Hanford coarse sandy loam series are well drained and composed of stratified coarse sandy loam and fine sandy loam. The parent material is composed of alluvium derived from granite. These soils occur on alluvial fans at 150 to 900 feet in elevation.

3.4 HABITAT TYPES AND LAND USES

The 8.13-acre site is comprised of five habitat types and one land use designation (see Figure 3, Habitat Types and Land Uses). Table 1 lists the acreage for each category followed by a description of each habitat type and land use. A list of all plant species observed on the Site during the field surveys is provided in Appendix A, Plants Species Observed on the Site, of this report. Site photographs are included as Appendix B, Representative Site Photographs, of this report.

Table 1 — Summary of Habitat Types and Land Uses

Habitat/Land Use	Acres
Bare/Disturbed	2.43
Developed	3.74
Disturbed Riverine	0.72
Open Water	0.03
Ornamental	0.14
Ruderal	1.34
Total	**8.40***

***Total acreage exceeds the acreage of the site because of overlapping habitats**

Bare/Disturbed

Bare/disturbed areas typically develop on sites with heavily compacted soils, following intense levels of disturbance, such as grading or other ground disturbances. These areas are composed entirely, or predominately, of unvegetated ground and/or disturbed weedy vegetation and may support isolated individuals of native species. Scattered weedy plants within this vegetation group on the Site include Russian thistle (*Salsola kali*), short-pod mustard (*Hirschfeldia incana*), tumbling pigweed (*Amaranthus alubs*), and spotted spurge (*Euphorbia maculata*).

A total of 2.43 acres of bare/disturbed area is located on the Site, east and west of the University Wash Channel. The area east of the channel is currently used for the storage of wrecked and dismantled automobiles. The area west of the channel is comprised of a small strip of mostly bare ground comprised all or mostly of fill with evidence of periodic ground disturbances and vegetation removal.

Developed

A total of 3.74 acres of developed land are located on the Site and comprised almost entirely of paved roads.

Disturbed Riverine (University Wash Channel)

Disturbed riverine is found along the bed and banks of disturbed rivers, streams, or other linear drainages and is often found in watercourses that have been modified by human activity. This habitat is commonly found in areas that receive artificially consistent water from urban run-off along with significant water volumes and velocities during storm events. The typical hydrologic regime in these habitats provides sufficient amounts of water to support the hydrophytic (water dependent) plant species that can quickly colonize within the banks of these riverine features. Based on the distance between the top of each bank, the University Wash Channel represents a total of 0.72 acre of disturbed riverine habitat. This feature is described in more detail below in Section 3.5.

Open Water

Open water habitat consists of large areas with standing water that are primarily unvegetated, but may support a few hydrophytic species and filamentous algae. The perimeter of open water habitat may be vegetated with wetland or riparian plant species.

A total of 0.03 acre of open water habitat occurs at the southern end (upstream end) of the University Wash Channel where the bed of the channel has been deeply scoured by large volumes of water flowing out of the culvert at high rates of speed.

Ornamental

Ornamental habitats are generally composed of residential landscaped areas or undeveloped land that has been colonized by non-native ornamental species by the natural dispersal of seeds. These areas can include a variety of species, including occasional native trees and shrubs, or monocultures of one non-native invasive species. Ornamental occurs most commonly within and adjacent to residential and commercial land uses.

A total of 0.14 acre of ornamental habitat is located throughout the Site and is generally comprised of individual or clusters of non-native tree species widely scattered throughout the Site. The mapped ornamental areas within the Site are in locations that historically have received the least amount of disturbance such as areas along the University Wash Channel, fence lines, and the land immediately adjacent to buildings and other structures. Dominant ornamental species identified on the Site include eucalyptus (*Eucalyptus* sp.), Mexican fan palm (*Washingtonia robusta*), tree of heaven (*Ailanthus altissima*), and Peruvian peppertree (*Schinus molle*).

Ruderal

Ruderal habitat is dominated by non-native weedy species in areas that have been significantly disturbed by agriculture, construction, or other land-clearing activities. Ruderal communities generally occupy waste areas, often on vacant lots and roadsides with heavily compacted soils and little available oxygen.

A total of 1.34 acres of ruderal habitat are located within the central portion of the Site. During the 2013 field survey, the land showed evidence of disking and minor grading. Dominant species observed in this area during the surveys include horseweed (*Conyza canadensis*), non-native brome grasses (*Bromus* spp.), red-stem filaree (*Erodium cicutarium*), sacred datura (*Datura wrightii*), common sunflower (*Helianthus annuus*), puncture vine (*Tribulus terrestris*), and tree tobacco (*Nicotiana glauca*).

3.5 CLASSIFICATION OF DELINEATED FEATURES

The classification of delineated features is based on characteristics such as topography, vegetation, soils, and hydrologic regime. The only water feature mapped on the Site consists of the University Wash Channel.

University Wash Channel

Based on the distance between the top of each bank, the University Wash Channel represents a total of 0.72 acre; however, the wetland delineation field surveys revealed that the height of the OHWM within the channel remains below the midpoint of the bank heights. The OHWM was identified during the field surveys using drift deposits (plant matter or debris entangled in fixed objects) and sediment deposits throughout the length of the channel. Using the identified OHWM within the channel, the potential limits of ACOE jurisdiction amount to 0.25 acre.

The University Wash Channel flows from south to north through the Site. Storm water flows into the channel from surface runoff and from a ±48-inch-diameter concrete pipe and flows under Spruce Street and off the Site through a ±96-inch-square box culvert. The banks of the channel are lined with various forms of concrete such as building blocks and broken slabs. During the November 2013 survey, a small amount of stagnant to slow-moving water was present in the channel. After flowing off the Site under Spruce Street, water flows through a series of concrete-lined channels and underground pipes before flowing into Lake Evans and eventually the Santa Ana River, roughly 2.75 stream miles from the site.

The bed of the channel are fairly well-vegetated with species such as Bermuda grass (*Cynodon dactylon*), common cattail (*Typha latifolia*), umbrella sedge (*Cyperus alternifolius*), and willow smartweed (*Polygonum lapathifolium*). The banks of the channel supported sparse to moderate amounts of vegetation including castor bean (*Ricinus communis*), Johnson grass (*Sorghum halepense*), and wild grape (*Vitis girdiana*) growing between the pieces of concrete. Evidence of vegetation trimming was apparent during the most recent field survey. Tree species in proximity to the channel are limited to a cluster of mature eucalyptus trees around the southern end of the channel along with an individual mature eucalyptus tree and small cluster of mature Mexican fan palms along the northern half of the channel. The 2013 field inspection revealed that several palm trees and eucalyptus trees were removed sometime between the 2011 and 2013 site inspections.

4.0 CONCLUSIONS

Water features mapped as part of the wetland delineation field surveys for the Site are limited to the University Wash Channel. The remainder of the Site supports a variety of land uses and vegetation communities such as paved roads, disturbed/developed land, and ruderal vegetation and lacks any of the three wetland parameters (wetland vegetation, wetland hydrology, and wetland soils).

Under the Rapanos guidance, the ACOE will likely consider the channel to be a "non-navigable tributary of a traditional navigable water that is relatively permanent". As previously mentioned, the ACOE will typically assert jurisdiction over non-navigable tributaries of traditional navigable waters that are relatively permanent (i.e., have continuous flow for at least three consecutive months). As defined in the Rapanos guidance, a "tributary" is a natural, man-altered, or man-made water body that carries flow directly or indirectly into traditional navigable waters (e.g., Santa Ana River). For these reasons, the University Wash Channel appears to be subject to ACOE jurisdiction.

To help expedite the permitting process with the ACOE for project activities within the channel, it is recommended that a Preliminary Jurisdictional Determination form be submitted to the ACOE as part of the application package. The form essentially grants jurisdiction of University Wash Channel to the ACOE and avoids any extensive jurisdictional analysis by the ACOE.

The total acreage and length of potentially jurisdictional waters of the U.S. on the Site are provided in Table 1 and depicted on Figure 4.

Table 2 — Potential Waters of the U.S. Acreages

Drainage Name	Acres	Linear Feet
University Wash Channel	**0.25**	**825**

5.0 REFERENCES

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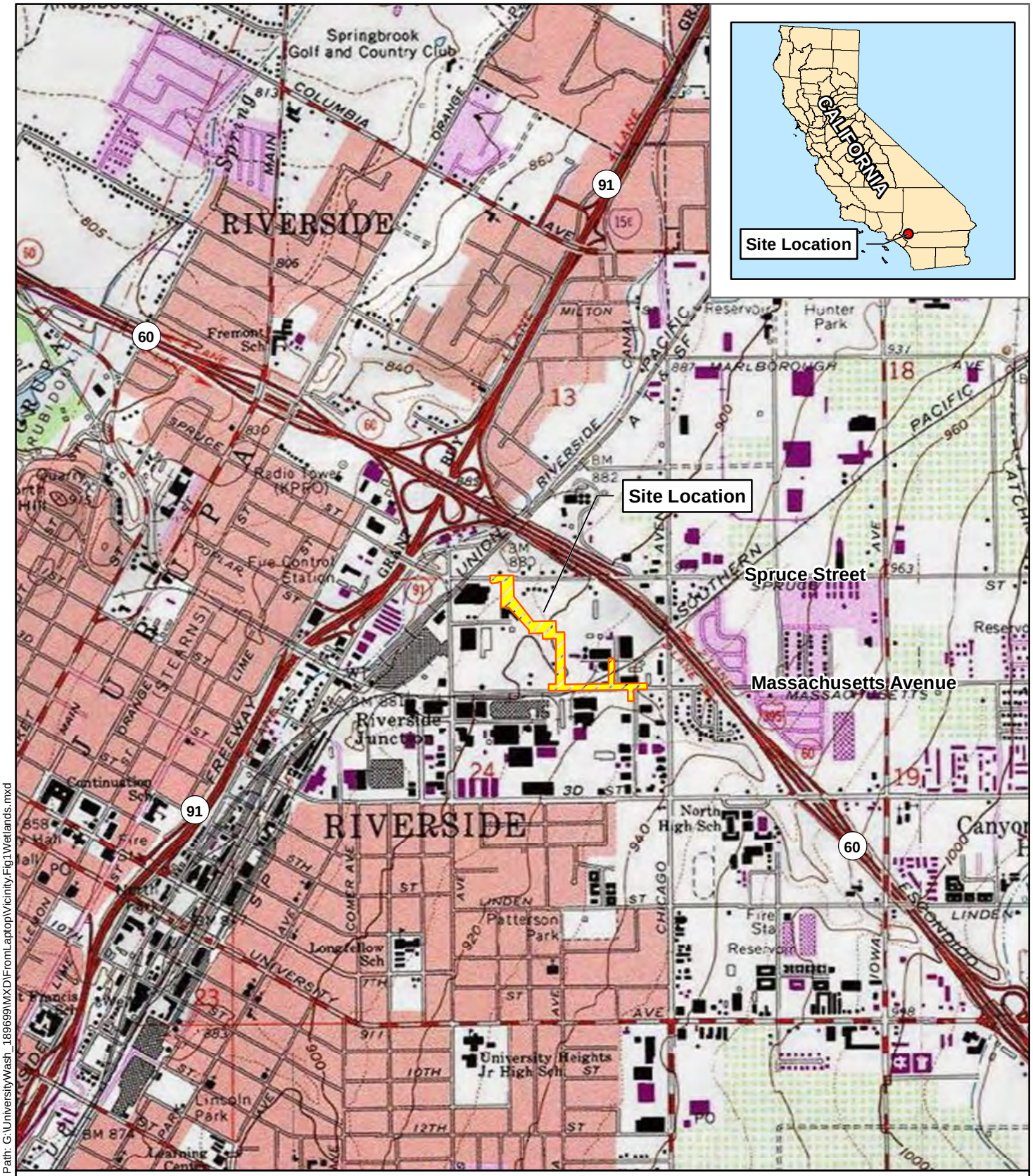

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University Wash Channel Stage 3 Project

Vicinity and Site Location

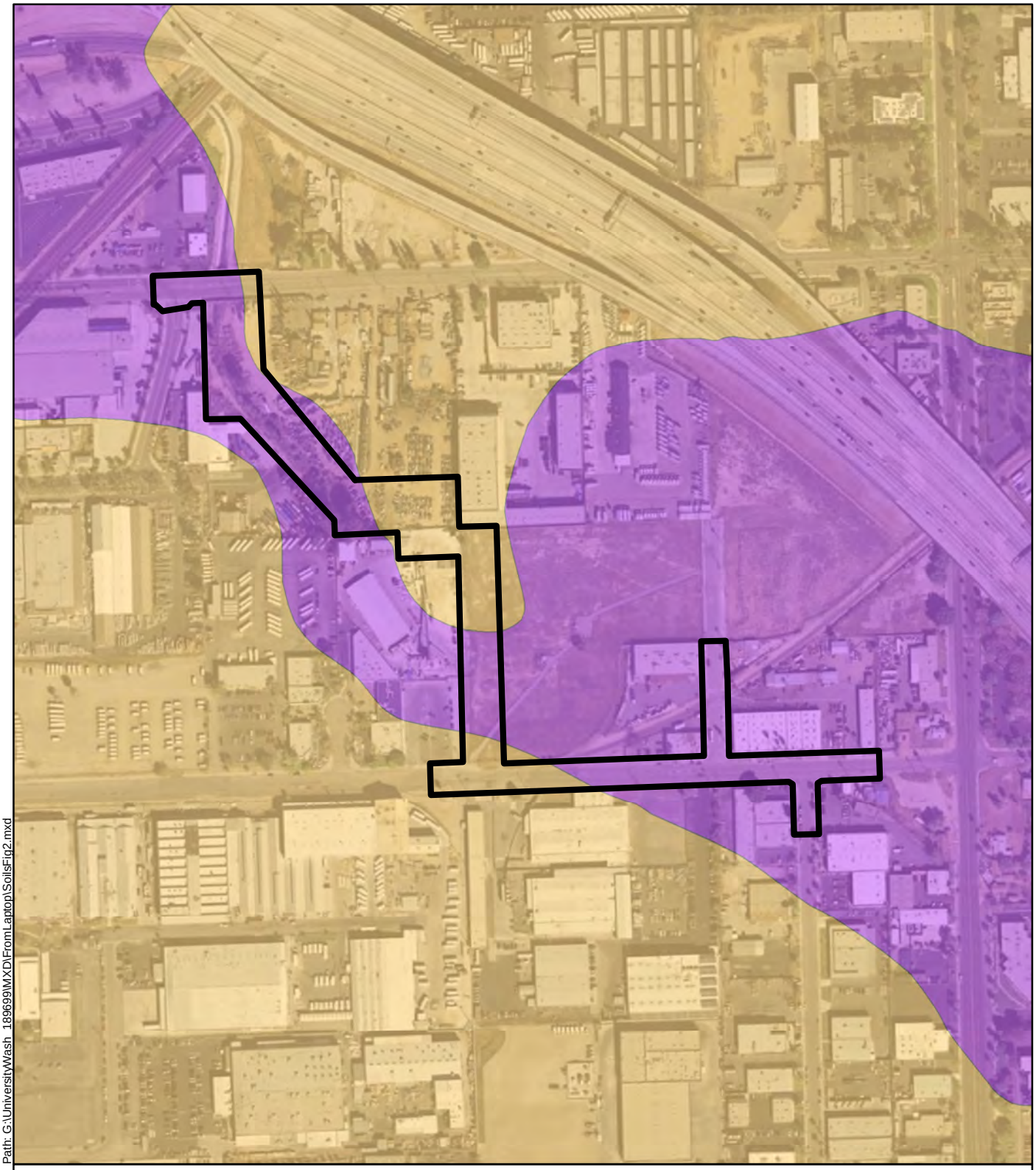
Figure 1

Datum: WGS84
Latitude: 33.988°
Longitude: -117.353°

Riverside East Quadrangle
T02S R05W Sec 24

Project Boundary

TRC



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Project Site Soils

- Arlington fine sandy loam, deep, 2-8 percent slopes
- Hanford coarse sandy loam, 2-8 percent slopes
- Project Boundary

University Wash Channel Stage 3 Project

Soils Map

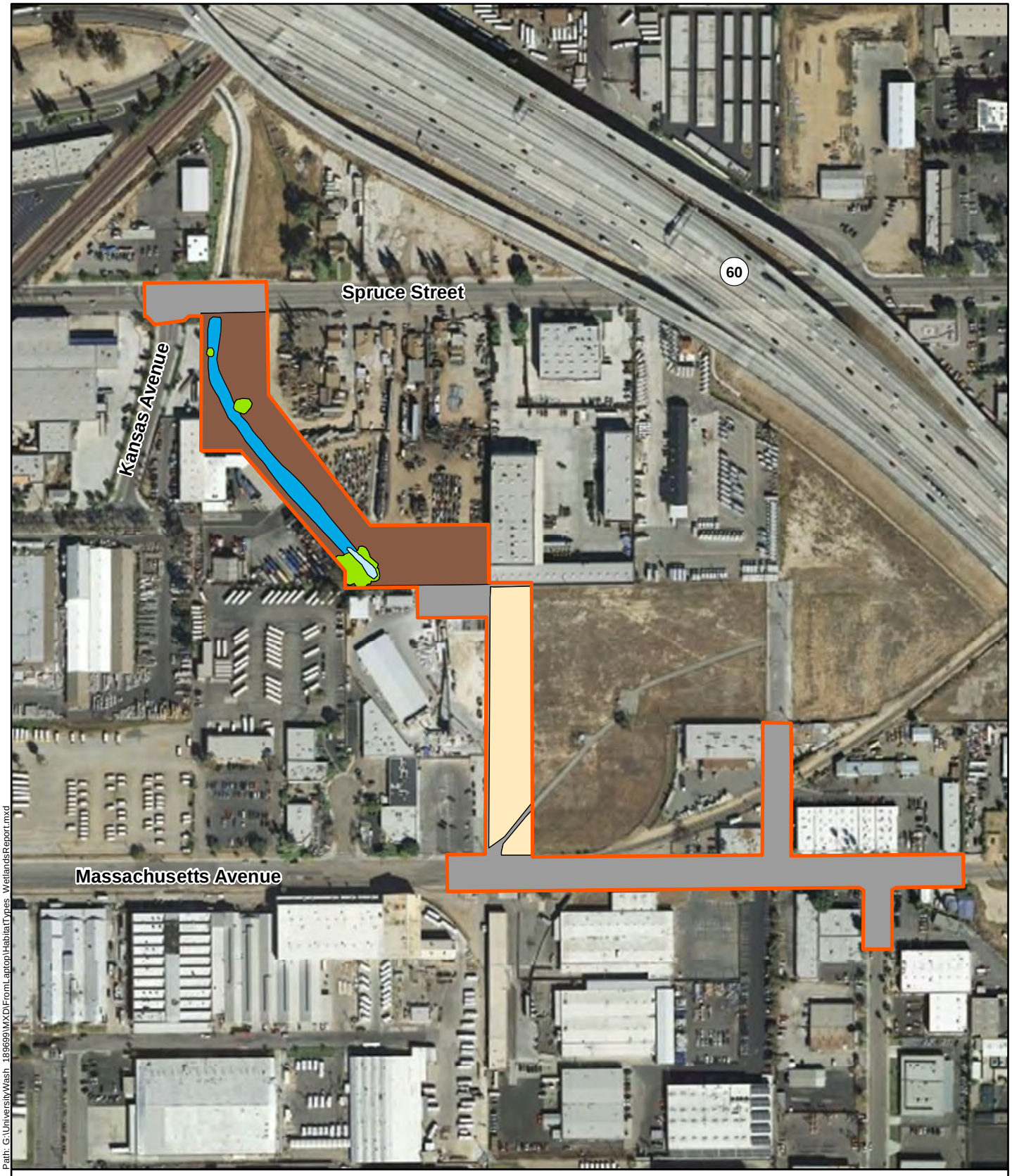
Figure 2

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 300 600 900 Feet

N

TRC



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University Wash Channel Stage 3 Project

Habitat Types and Land Uses Map

Figure 3

- Site Boundary
- Bare/Disturbed (2.43 acres)
- Developed (3.74 acres)
- Disturbed Riverine (0.72 acre)
- Open Water (0.03 acre)
- Ornamental (0.14 acre)
- Ruderal (1.34 acres)

0 300 600 900 Feet

N

TRC

TRC, 2013; Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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University Wash Channel Stage 3 Project

Wetland Delineation Map

Figure 4

Site Boundary

Potential Waters of the U.S.	Acres
University Wash Channel	0.25
Total	0.25

TRC, 2013; Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 100 200 300 Feet

N

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Appendix A — Plant Species Observed on the Site

University Wash Channel Stage 3 Project
Appendix A: Plant Species Observed on the Site

Scientific Name	Common Name	Indicator Status*
Ailanthus altissima	Chinese tree of heaven	FACU
Amaranthus alubs	Tumbling pigweed	FACU
Amsinckia menziesii var. *intermedia*	Common fiddleneck	UPL
Anemopsis californica	Yerba mansa	OBL
Avena barbata	Slender wild oat	UPL
Avena fatua	Wild oat	UPL
Baccharis salicifolia	Mulefat	FAC
Bromus hordeaceus	Soft chess	FACU
Bromus madritensis ssp. *rubens*	Red brome/foxtail chess	UPL
Centaurea melitensis	Tocalote/malta star thistle	UPL
Cynodon dactylon	Bermuda grass	FACU
Cyperus alternifolius	Umbrella sedge	FACW
Datura wrightii	Sacred datura	UPL
Epilobium ciliatum	Willowherb	FACW
Erodium cicutarium	Red-stem filaree/stork's bill	UPL
Eucalyptus sp.	Eucalyptus	FAC
Euphorbia maculate	Spotted spurge	UPL
Helianthus annuus	Common sunflower	FACU
Hirschfeldia incana	Short-pod mustard	UPL
Malva parviflora	Cheeseweed	UPL
Melilotus indicus	Indian or annual sweetclover	FACU
Nerium oleander	Oleander	UPL
Nicotiana glauca	Tree tobacco	FAC
Polygonum lapathifolium	Willow smartweed	FACW
Polypogon monspeliensis	Annual beard grass/ rabbits foot grass	FACW
Raphanus sativus	Wild radish	UPL
Ricinus communis	Castor bean	FACU
Rumex crispus	Curly dock	FAC
Salix gooddingii	Black willow	FACW
Salsola kali	Russian thistle	FACU
Schinus molle	Peruvian pepper tree	FACU
Solanum americanum	Common nightshade	FACU
Sonchus oleraceus	Sow thistle	UPL
Sorghum halepense	Johnson grass	FACU
Tribulus terrestris	Puncture vine	UPL

Typha latifolia	Common cattail	OBL
Urtica dioica	Giant creek nettle	FAC
Vitis girdiana	Wild grape	FAC
Washingtonia robusta	Mexican fan palm	FACW

*Indicator status based on the Corps' 2013 National Wetland Plant List for the Arid West Region, but the species' ability to exist in aquatic features based on TRC field experience was also considered.

Appendix B — Representative Site Photographs

University Wash Channel Stage 3 Project
Appendix B: Representative Site Photographs
All Photographs Taken on 11/4/13

	View of ruderal habitat in central portion of Site looking north from Massachusetts Avenue.
	View from northern end of ruderal habitat looking south. Adjacent developed land use to the west.

University Wash Channel Stage 3 Project
Appendix B: Representative Site Photographs
All Photographs Taken on 11/4/13

	View of developed land looking northwest from adjacent ruderal habitat.
	View of south end of the University Wash Channel showing existing underground pipe outlet, open water habitat, and cluster of eucalyptus trees.

University Wash Channel Stage 3 Project
Appendix B: Representative Site Photographs
All Photographs Taken on 11/4/13

	View of southern end of the University Wash Channel looking north from bottom of channel.
	View of southern half of the University Wash Channel and adjacent bare/disturbed land looking south from western channel bank.

	View of northern half of the University Wash Channel and adjacent bare/disturbed land looking north from western channel bank.
	View of old eucalyptus and palm tree stumps within northern half of the University Wash Channel.

	View of northern end of the University Wash Channel and adjacent bare/disturbed land looking north from western channel bank.
	View of box culvert at north end of the University Wash Channel.

Appendix F

Determination of Biologically Equivalent

Or Superior Preservation

Determination of Biologically Equivalent or Superior Preservation

Riverside County Flood Control and Water Conservation District

University Wash Channel Stage 3 Project

Riverside, California

USGS Riverside East Quadrangle

December 2013

Prepared for:
Riverside County Flood Control and
Water Conservation District
1995 Market Street
Riverside, CA 92501

Prepared by:
TRC Solutions, Inc.
123 Technology Drive West
Irvine, CA 92618

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

1.0 INTRODUCTION

The proposed University Wash Channel Stage 3 project is subject to compliance with the avoidance and minimization requirements identified for riparian/riverine areas pursuant to Section 6.1.2 of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP, 2003). Since the proposed project will impact a riparian/riverine area, a Determination of Biologically Equivalent or Superior Preservation (DBESP) analysis is required pursuant to the MSHCP. All projects within the MSHCP area are required to prepare a DBESP when project alternatives that would avoid sensitive riparian/riverine resources are not feasible. The goal of the DBESP is to demonstrate that, with the implementation of the proposed project's design features and mitigation measures, the proposed project will result in an alternative that is biologically equivalent or superior to the impacted riparian/riverine resources, and to ensure that any lost functions and values of habitat for species covered by the MSHCP are replaced.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

The 8.13-acre University Wash Channel Site (Site) is located south of the intersection of State Highway 91 and State Highway 60, and generally bound by Spruce Street to the north, Chicago Avenue to the east, Massachusetts Avenue to the south, and Kansas Avenue to the west (see Figure 1, Vicinity and Site Location). The Site occurs in Section 24, Township 2 South, and Range 5 West of the U.S. Geological Survey (USGS) 7.5-minute *Riverside East, California* quadrangle. The Site is surrounded by industrial and commercial land uses and other disturbed land. Elevations on the Site range from approximately 880 feet to 920 feet (265 to 280 meters) above mean sea level.

The Site is irregularly shaped and encompasses a variety of land uses and vegetation communities such as paved roads, disturbed/developed land, ruderal (weedy) and ornamental vegetation, and the existing University Wash Channel, which supports its own assortment of upland and wetland vegetation.

The Site is not within any Criteria Cells, Narrow Endemic Plant Species Survey Areas, or proposed Conservation Areas (refer to Figure 2, MSHCP Cells and Survey Areas); therefore it is not subject to the focused species surveys associated with those areas.

2.2 PROJECT DESCRIPTION

Riverside County Flood Control and Water Conservation District (District) proposes to upgrade the existing University Wash Channel to accommodate 10-year flows. The University Wash Channel Stage 3 Project (Project) consists of the construction of approximately 2,500 linear feet of underground 90-inch-diameter reinforced concrete storm drain pipe, catch basins, and associated manholes, street paving and grading.

2.3 WHY AVOIDANCE ALTERNATIVE IS NOT FEASIBLE

In order to meet the goal and purpose of the Project, the riparian/riverine area known as the University Wash Channel will be removed and replaced with underground 90-inch-diameter concrete storm drain pipe. Therefore, complete avoidance of the riparian/riverine resource is not feasible.

3.0 BIOLOGICAL DATA COLLECTION

This section summarizes the methods used to prepare the Project's Biological Resources Assessment and Delineation of Waters of the United States and Jurisdictional Analysis. Both documents have been prepared as standalone documents and are provided under separate cover.

3.1 METHODS

Literature Review

Prior to performing the biological field surveys, documentation relevant to the Site and surrounding area was reviewed and a special-status species list was prepared for the Site. The special-status species list includes species identified from record searches for the USGS 7.5-minute *Riverside East, California* quadrangle. Special-status species include all federally and state-listed endangered and threatened species, candidates for listing, species proposed for listing, FP species, state SSC, species ranked by CNPS, and Covered Species that are identified in the MSHCP as potentially requiring additional surveys for the Site. A sensitive species was considered a potential inhabitant of the Site if its known geographical distribution either encompassed part of the Site or was within the vicinity of the Site (within approximately 3 miles), or its general habitat requirements (e.g., roosting, nesting, or foraging habitat, specific soil type, permanent water source) were present on the Site. The USFWS Critical Habitat database was also reviewed to determine if critical habitats overlap the site. All references reviewed for this assessment are listed in the References section of this document.

Sources of information that were used to compile the species list included the CNDDB (CDFW, 2013), the CNPS online inventory (CNPS, 2013), and the MSHCP, including the Covered Species list (MSHCP Table 2-2) and Sections 6.1.2, 6.1.3 and 6.3.2 (MSHCP, 2003).

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) online 2005 Soil Survey of the Western Riverside Area (NRCS, 2013) was reviewed to identify mapped soils on the Site. The soils mapped within Site boundaries are depicted on Figure 3, Soils Map.

The potential presence of drainages and other water resources was assessed by reviewing the *Riverside East, California* quadrangle map to identify any blue-line streams, searching the USFWS National Wetlands Inventory (NWI) (USFWS, 2013), and by reviewing recent aerial images of the Site (Google Earth, 2013).

Field Surveys

The initial biological survey for the Site was conducted by TRC biologists Travis Kegel and Karyn Sernka on December 16, 2011. The most recent biological survey was conducted by TRC biologist Mike Farmer on November 4, 2013 between the hours of 11:00 a.m. and 3:00 p.m.

Weather conditions during the 2013 survey included overcast to partly cloudy skies, winds less than 5 MPH, and temperatures between 60 and 65°F. During both survey dates, the Site was systematically surveyed on foot to identify all sensitive habitats (including riparian/riverine features and vernal pools) and to determine the potential for the Site to support each special-status species identified from the record searches based on the presence or absence of each species' general habitat requirements (nesting or foraging habitat, specific soil type, permanent water source, etc.).

During the field surveys, all biological communities and land uses were characterized and the observed plant and wildlife species were recorded. The vegetation communities were mapped based upon descriptions provided by Sawyer and Keeler-Wolf (1995 and 2009) and Holland (1986). Resources were mapped using a Trimble Global Positioning System (GPS) hand-held unit or hand-drawn onto aerial photographs of the site and digitized using GIS software.

As part of both field surveys, a formal wetland delineation was performed to delineate potential jurisdictional waters of the U.S. The field surveys utilized the Army Corps of Engineers (ACOE) field guide for identifying the ordinary high water mark (OHWM) in the arid west region (USACOE, 2008) to delineate the lateral limits of non-wetland waters.

Due to the lack of riparian habitat on the Site, CDFW jurisdictional boundaries were determined based on the distance between the top of each channel bank.

4.0 RIPARIAN/RIVERINE AREAS AND VERNAL POOLS ASSESSMENT REQUIREMENT

Although the Site is not located within any Criteria Cells, Narrow Endemic Plant Species Survey Areas, or proposed Conservation Areas, and not subject to the focused species surveys associated with those areas, all projects within the MSHCP Area are required to evaluate potential impacts on riparian/riverine areas and vernal pools, and the protected species associated with those habitats. Riparian/riverine areas and vernal pools are defined in the MSHCP as follows:

- **Riparian/Riverine Areas** include lands that contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year.

- **Vernal Pools** are seasonal wetlands that occur in depression areas that have wetland indicators of all three parameters (soils, vegetation and hydrology) during the wetter portion of the growing season but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetland plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season.

When a site supports suitable riparian/riverine areas and/or vernal pool habitats for the wildlife species covered by the MSHCP listed below, focused surveys are required to determine their presence or absence from the site.

Riparian Birds

- least Bell's vireo (*Vireo bellii pusillus*)
- southwestern willow flycatcher (*Empidonax traillii extimus*)
- western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)

Vernal Pool Invertebrates

- Riverside fairy shrimp (*Streptocephalus woottoni*)
- Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*)
- vernal pool fairy shrimp (*Branchinecta lynchi*)

5.0 EXISTING CONDITIONS

5.1 TOPOGRAPHY AND HYDROLOGY

Elevations on the Site range from approximately 880 feet to 920 feet (265 to 280 meters) above mean sea level. Overall, the Site is gently sloped from the southeast down to the northwest. Each parcel encompassed by the Site is relatively flat with a few discernible elevation changes along property lines. Surface water runoff associated with the paved portions of the Site appears to enter the underground storm drain system associated with the onsite University Wash Channel. Storm water on the unpaved portions of the Site runs off to storm drain systems and the University Wash Channel or percolates into the soil.

5.2 SOILS

The NRCS Soil Survey identifies two native soil series within the Site: Arlington fine sandy loam, deep, 2-8 percent slopes and Hanford coarse sandy loam, 2-8 percent slopes (see Figure 3). Neither soil is mapped as being hydric. General characteristics associated with each soil are described below. Native soils on most of the Site have been graded over and surfaced.

- The Arlington fine sandy loam series are well drained and composed of sandy loam and fine sandy loam. Parent materials consist of weakly cemented alluvium derived from granite. These soils occur on alluvial fans at 400 to 2,000 feet in elevation.
- The Hanford coarse sandy loam series are well drained and composed of stratified coarse sandy loam and fine sandy loam. The parent material is composed of alluvium derived from granite. These soils occur on alluvial fans at 150 to 900 feet in elevation.

5.3 HABITAT TYPES AND LAND USES

The 8.13-acre site is comprised of five habitat types and one land use designation (see Figure 4, Habitat Types and Land Uses). A list of all plant species observed on the Site during the field surveys is provided in Appendix A, Plants and Wildlife Observed on the Site, of this report. Table 1 lists the acreage for each category followed by a description of each habitat type and land use. Site photographs are included as Appendix B, Representative Site Photographs, of this report.

Table 1 — Summary of Habitat Types and Land Uses

Habitat/Land Use	Acres
Bare/Disturbed	2.43
Developed	3.74
Disturbed Riverine	0.72
Open Water	0.03
Ornamental	0.14
Ruderal	1.34
Total	**8.40***

***Total acreage exceeds the acreage of the site because of overlapping habitats**

Bare/Disturbed (Holland 11300)

Bare/disturbed areas typically develop on sites with heavily compacted soils, following intense levels of disturbance, such as grading or other ground disturbances. These areas are composed entirely, or predominately, of unvegetated ground and/or disturbed weedy vegetation and may support isolated individuals of native species. Scattered weedy plants within this vegetation group on the Site include Russian thistle (*Salsola kali*), short-pod mustard (*Hirschfeldia incana*), tumbling pigweed (*Amaranthus alubs*), and spotted spurge (*Euphorbia maculata*).

A total of 2.43 acres of bare/disturbed area is located on the Site, east and west of the University Wash Channel. The area east of the channel is currently used for the storage of wrecked and dismantled automobiles. The area west of the channel is comprised of a small strip of mostly bare ground comprised all or mostly of fill with evidence of periodic ground disturbances and vegetation removal.

Developed (Holland 12000)

A total of 3.74 acres of developed land are located on the Site and comprised almost entirely of paved roads.

Disturbed Riverine

Disturbed riverine is found along the bed and banks of disturbed rivers, streams, or other linear drainages and is often found in watercourses that have been modified by human activity. This habitat is commonly found in areas that receive artificially consistent water from urban run-off along with significant water volumes and velocities during storm events. The typical hydrologic regime in these habitats provides sufficient amounts of water to support the hydrophytic (water dependent) plant species that can quickly colonize within the banks of these riverine features.

The University Wash Channel represents a total of 0.72 acre of disturbed riverine habitat. A detailed description of the channel is provided in Section 6.1 of this report.

Open Water

Open water habitat consists of large areas with standing water that are primarily unvegetated, but may support a few hydrophytic species and filamentous algae. The perimeter of open water habitat may be vegetated with wetland or riparian plant species.

A total of 0.03 acre of open water habitat occurs at the southern end (upstream end) of the University Wash Channel where the bed of the channel has been deeply scoured by large volumes of water flowing out of the culvert at high rates of speed.

Ornamental

Ornamental habitats are generally composed of residential landscaped areas or undeveloped land that has been colonized by non-native ornamental species by the natural dispersal of seeds. These areas can include a variety of species, including occasional native trees and shrubs, or monocultures of one non-native invasive species. Ornamental occurs most commonly within and adjacent to residential and commercial land uses.

A total of 0.14 acre of ornamental habitat is located throughout the Site and is generally comprised of individual or clusters of non-native tree species widely scattered throughout the Site. The mapped ornamental areas within the Site are in locations that historically have received the least amount of disturbance such as areas along the University Wash Channel, fence lines, and the land immediately adjacent to buildings and other structures. Dominant ornamental species identified on the Site include eucalyptus (*Eucalyptus* sp.), Mexican fan palm (*Washingtonia robusta*), tree of heaven (*Ailanthus altissima*), and Peruvian peppertree (*Schinus molle*).

Ruderal

Ruderal habitat is dominated by non-native weedy species in areas that have been significantly disturbed by agriculture, construction, or other land-clearing activities. Ruderal communities generally occupy waste areas, often on vacant lots and roadsides with heavily compacted soils and little available oxygen.

A total of 1.34 acres of ruderal habitat are located within the central portion of the Site. During the 2013 field survey, the land showed evidence of disking and minor grading. Dominant species observed in this area during the surveys include horseweed (*Conyza canadensis*), non-native brome grasses (*Bromus* spp.), red-stem filaree (*Erodium cicutarium*), sacred datura

(*Datura wrightii*), common sunflower (*Helianthus annuus*), puncture vine (*Tribulus terrestris*), and tree tobacco (*Nicotiana glauca*).

6.0 RIVERINE/RIPARIAN AREAS AND VERNAL POOL HABITAT

6.1 UNIVERSITY WASH CHANNEL

The University Wash Channel meets the MSHCP definition of a riparian/riverine feature only because it receives fresh water flow during all or a portion of the year. The channel lacks any semblance of riparian vegetation structure typically provided by riparian tree species such as cottonwoods (*Populus* sp.), valley oak (*Quercus lobata*), sycamore (*Platanus racemosa*), and willows (*Salix* spp.). No additional riparian/riverine areas or vernal pools were identified on the Site during the field surveys.

The University Wash Channel flows from south to north through the Site. Storm water flows into the channel from surface runoff and from a ±48-inch-diameter concrete pipe and flows under Spruce Street and off the Site through a ±96-inch-square box culvert. The banks of the channel are lined with various forms of concrete such as building blocks and broken slabs. During the November 2013 survey, a small amount of stagnant to slow-moving water was present in the channel.

The bed of the channel was fairly well vegetated with species such as Bermuda grass (*Cynodon dactylon*), common cattail (*Typha latifolia*), umbrella sedge (*Cyperus alternifolius*), and willow smartweed (*Polygonum lapathifolium*). The banks of the channel supported sparse to moderate amounts of vegetation including castor bean (*Ricinus communis*), Johnson grass (*Sorghum halepense*), and wild grape (*Vitis girdiana*) growing between the pieces of concrete. Evidence of vegetation trimming was apparent during the most recent field survey. Tree species in proximity to the channel are limited to a cluster of mature eucalyptus trees around the southern end of the channel along with an individual mature eucalyptus tree and small cluster of mature Mexican fan palms along the northern half of the channel. The 2013 field inspection revealed that several palm trees and eucalyptus trees were removed sometime between the 2011 and 2013 site inspections.

During the field surveys, a habitat assessment was conducted for the required MSHCP riparian/riverine wildlife species. As mentioned above, the channel lacks a riparian vegetation component and does not support suitable habitat for least Bell's vireo, southwestern willow flycatcher, or western yellow-billed cuckoo. Due to the absence of suitable habitat, no focused surveys were required for these avian species. Additionally, the Site does not support vernal pool or other seasonal wetland habitats. Therefore focused surveys for Riverside fairy shrimp, Santa Rosa Plateau fairy shrimp, and vernal pool fairy shrimp also were not required.

The wildlife species observed on the Site during the field surveys are provided below and listed in Appendix A, Plants and Wildlife Observed on the Site, of this report.

- Avifauna observed included red-tailed hawk (*Buteo jamaicensis*), lesser goldfinch (*Carduelis psaltria*), house finch (*Carpodacus mexicanus*), common raven (*Corvus corax*), yellow-rumped warbler (*Dendroica coronate*), Brewer's blackbird (*Eughagus*

cyanocephalus), western gull (*Larus occidentalis*), black phoebe (*Sayornis nigricans*), and western bluebird (*Sialia mexicana*).

- Reptiles observed were limited to western fence lizard (*Sceloporus occidentalis*).
- Mammals observed, or deduced through diagnostic sign, included domestic dog (*Canis lupus familiaris*) and feral cat (*Felis catus*).

6.2 ACOE JURISDICTION

Potential ACOE jurisdiction associated with the University Wash Channel amounts to 0.25 acre and is based on the extent of the OHWM (see Figure 5, ACOE Delineation Map). The OHWM was identified using drift deposits (plant matter or debris entangled in fixed objects) and sediment deposits throughout the length of the channel. Based on the field surveys, the OHWM remains below the midpoint of the bank heights. No wetlands or vernal pools were identified adjacent to the channel or in other portions of the Site. The acreage of all potential ACOE jurisdiction mapped during the field surveys is summarized in Table 2.

Table 2 — Summary of Potential ACOE Jurisdiction

Drainage Name	ACOE Jurisdictional Waters (Acres)	Linear Feet
University Wash Channel	0.25	825

6.3 CDFW JURISDICTION

The total CDFW jurisdiction within the Site amounts to 0.72 acre and is based on the distance between the top of each bank. Due to the lack of riparian or wetland habitat beyond the banks, CDFW jurisdiction terminates at the top of each bank (see Figure 6, CDFW Delineation Map). The acreage of all CDFW jurisdiction mapped during the field surveys is summarized in Table 3.

Table 3 — Summary of CDFW Jurisdiction

Drainage Name	CDFW Jurisdictional Streambed (Acres)	Linear Feet
University Wash Channel	0.72	825

7.0 UNAVOIDABLE IMPACTS TO RIPARIAN/RIVERINE AREAS

The Project will permanently impact the entire University Wash Channel. While the channel meets the definition of a riparian/riverine area according to the MSHCP, the channel lacks a riparian vegetation component and does not support suitable habitat for least Bell's vireo, southwestern willow flycatcher, or western yellow-billed cuckoo. Additionally, the Site does not support vernal pool or other seasonal wetland habitats. Therefore, the Project will have no impact on Riverside fairy shrimp, Santa Rosa Plateau fairy shrimp, and vernal pool fairy shrimp.

8.0 PROPOSED MITIGATION

Since there are no feasible avoidance alternatives available, the MSHCP requires the Project to provide compensatory mitigation to ensure the replacement of any lost functions and values of habitat as it relates to the plant and wildlife species covered by the MSHCP.

To mitigate for permanent impacts to the 0.72-acre University Wash Channel, the District proposes to pay into the Riverside Corona Resource Conservation District in-lieu fee program at a ratio of 1 to 1. In general, in-lieu fee programs provide funding for future programs or projects designed to enhance, restore, establish, and/or preserve aquatic habitats. Unlike the University Wash Channel, these aquatic resource projects typically include large pieces of land with contiguous wetland habitats and natural upland buffers that provide many of the habitat components required by the MSHCP Covered Species. Although the Project is unable to avoid impacts to the University Wash Channel, the Project's proposed mitigation would represent a biologically equivalent or superior preservation alternative to avoidance of the University Wash Channel since the in-lieu mitigation fee would be expected to result in the establishment or preservation of the same amount of habitat but of higher value compared to what the project would disturb.

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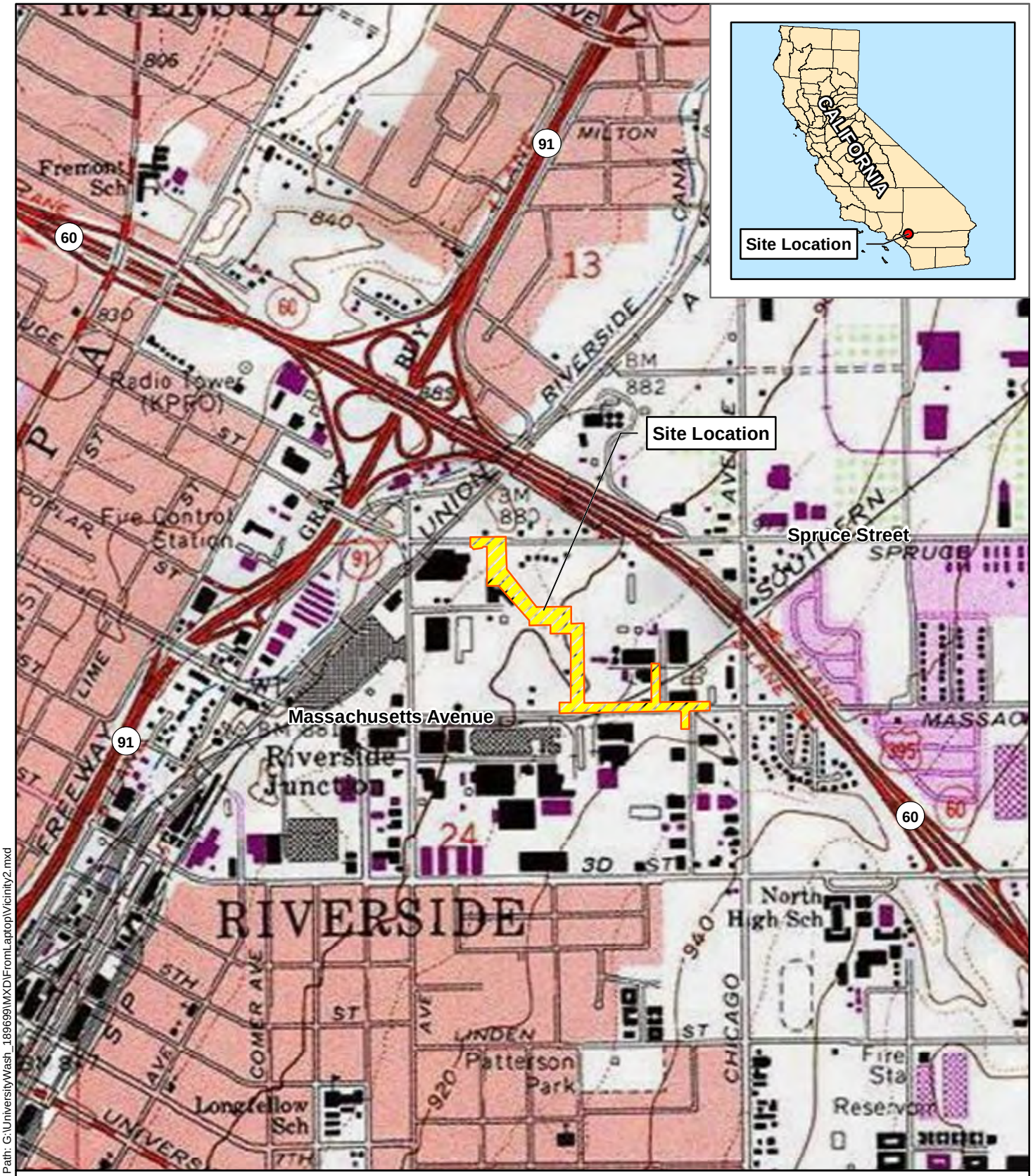

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University Wash Channel Stage 3 Project

Vicinity and Site Location

Figure 1

Project Boundary

0 1,000 2,000 3,000 Feet

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University Wash Channel Stage 3 Project

MSHCP Cells and Survey Areas

Figure 2

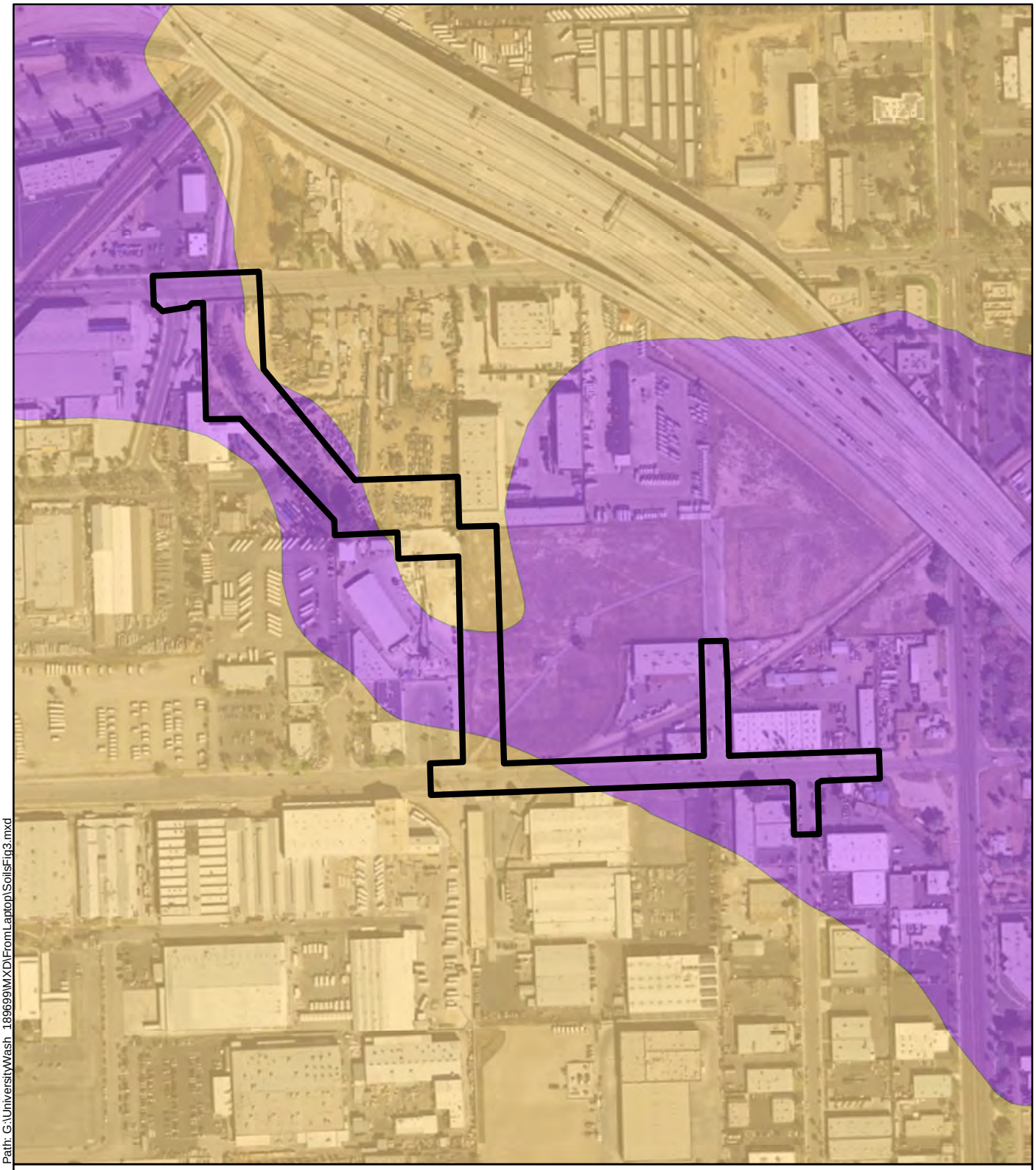
- Site Boundary
- # MSHCP Criteria Cell
- Narrow Endemic Plant Survey Area
- Burrowing Owl Survey Area

0 2,000 4,000 6,000 Feet

N

TRC

Source: TRC, 2013; Esri, DeLorme, NAVTEQ, USGS, Intermap, 2012



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Project Site Soils

- Arlington fine sandy loam, deep, 2-8 percent slopes
- Hanford coarse sandy loam, 2-8 percent slopes
- Project Boundary

University Wash Channel Stage 3 Project

Soils Map

Figure 3

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 300 600 900 Feet

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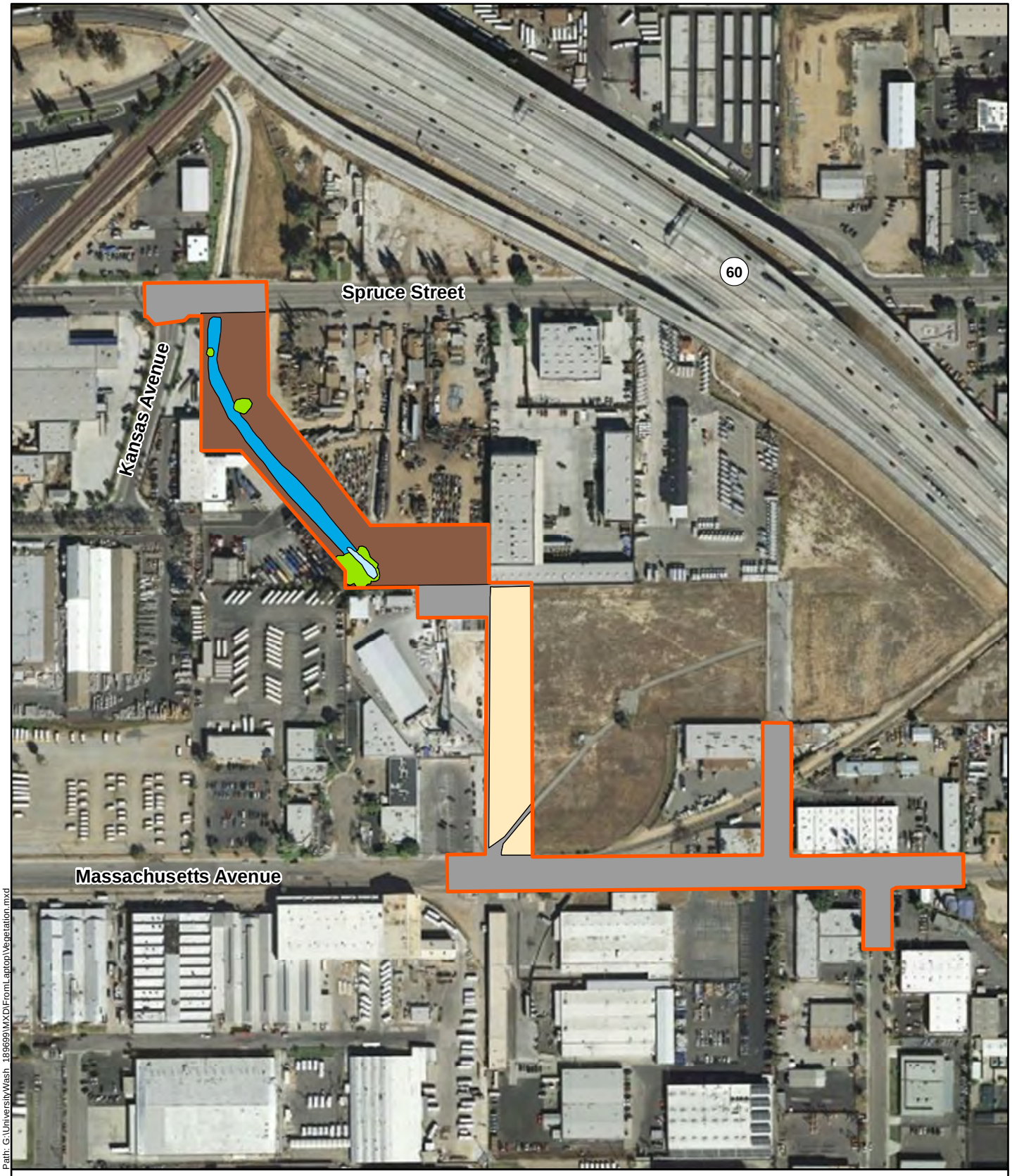

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University Wash Channel Stage 3 Project

Habitat Types and Land Uses Map

Figure 4

- Site Boundary
- Bare/Disturbed (2.43 acres)
- Developed (3.74 acres)
- Disturbed Riverine (0.72 acre)
- Open Water (0.03 acre)
- Ornamental (0.14 acre)
- Ruderal (1.34 acres)

TRC, 2013; Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 300 600 900 Feet

N

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Site Boundary

ACOE Jurisdiction (0.25 acre)

University Wash Channel Stage 3 Project

ACOE Delineation Map

Figure 5

TRC, 2013; Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 100 200 300 Feet

N

TRC

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University Wash Channel Stage 3 Project

CDFW Delineation Map

Figure 6

Site Boundary

CDFW Jurisdiction (0.72 acre)

TRC, 2013; Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 100 200 300 Feet

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TRC

Appendix A — Plants and Wildlife Observed on the Site

University Wash Channel Stage 3 Project
Appendix A: Plants and Wildlife Observed on the Site

PLANTS

Amaranthacae - Amaranth Family
**Amaranthus alubs* - tumbling pigweed

Anacardiaceae - Maple Family
**Schinus molle* - Peruvian pepper tree

Apocynaceae - Dogbane Family
**Nerium oleander* – oleander

Asteraceae - Sunflower Family
Baccharis salicifolia - mulefat
**Centaurea melitensis* - tocalote/malta star thistle
Helianthus annuus – common sunflower
**Salsola kali* - Russian thistle
**Sonchus oleraceus* - sow thistle

Arecaceae - Palm Family
**Washingtonia robusta* - Mexican fan palm

Brassicaceae - Mustard Family
**Hirschfeldia incana* - short-pod mustard
**Raphanus sativus* - wild radish

Boraginaceae - Borage Family
Amsinckia menziesii var. *intermedia* - common fiddleneck

Cyperaceae - Sedge Family
**Cyperus alternifolius* - umbrella sedge

Euphorbiaceae - Spurge Family
**Euphorbia maculate* - spotted spurge
**Ricinus communis* - castor bean

Fabaceae - Pea Family
**Melilotus indicus* - Indian or annual sweetclover

***Geraniaceae* - Geranium Family**
**Erodium cicutarium* - red-stem filaree/ stork's bill

Malvaceae - Mallow Family
Malva parviflora - cheeseweed

Myrtaceae - Mertle Family
**Eucalyptus* sp. - Eucalyptus

Onagraceae - Evening Primrose Family
Epilobium ciliatum - willowherb

Poaceae - Grass Family
**Avena barbata* - slender wild oat
**Avena fatua* - wild oat
**Bromus hordeaceus* - soft chess
**Bromus madritensis* ssp. *rubens* - red brome/foxtail chess
**Cynodon dactylon* - bermuda grass
**Polypogon monspeliensis* - annual beard grass/ rabbits foot grass
**Sorghum halepense* - Johnson grass

Polygonaceae - Buckwheat Family
Polygonum lapathifolium - willow smartweed
**Rumex crispus* - curly dock

Salicaceae - Willow Family
Salix gooddingii - black willow

Saururaceae - Lizard Tail Family
Anemopsis californica - yerba mansa

Simaroubaceae – Ailanthus Family
**Ailanthus altissima* - Chinese tree of heaven

Solanaceae - Night Shade Family
Datura wrightii - sacred datura
**Nicotiana glauca* - tree tobacco
Solanum americanum - common nightshade

Typhaceae - Cattail Family
Typha latifolia - common cattail

Urticaceae - Nettle Family
Urtica dioica - giant creek nettle

Vitaceae – Grape Family
Vitis girdiana – wild grape

Zygophyllaceae – Caltrop Family
Tribulus terrestris – puncture vine

* Non-native species

WILDLIFE

Reptiles
Sceloporus occidentalis - western fence lizard

Birds
Buteo jamaicensis - red-tailed hawk
Carduelis psaltria - lesser goldfinch
Carpodacus mexicanus - house finch
Corvus corax - common raven
Dendroica coronate - yellow-rumped warbler
Eughagus cyanocephalus - Brewer's blackbird
Larus occidentalis - western gull
Sayornis nigricans - black phoebe
Sialia mexicana - western bluebird

Mammals
Canis lupus familiaris - domestic dog
Felis catus – feral cat

Appendix B — Representative Site Photographs

University Wash Channel Stage 3 Project
Appendix B: Representative Site Photographs
All Photographs Taken on 11/4/13

	View of ruderal habitat in central portion of Site looking north from Massachusetts Avenue.
	View from northern end of ruderal habitat looking south. Adjacent developed land use to the west.

University Wash Channel Stage 3 Project
Appendix B: Representative Site Photographs
All Photographs Taken on 11/4/13

	View of developed land looking northwest from adjacent ruderal habitat.
	View of south end of the University Wash Channel showing existing underground pipe outlet, open water habitat, and cluster of eucalyptus trees.

	View of southern end of the University Wash Channel looking north from bottom of channel.
	View of southern half of the University Wash Channel and adjacent bare/disturbed land looking south from western channel bank.

	View of northern half of the University Wash Channel and adjacent bare/disturbed land looking north from western channel bank.
	View of old eucalyptus and palm tree stumps within northern half of the University Wash Channel.

	View of northern end of the University Wash Channel and adjacent bare/disturbed land looking north from western channel bank.
	View of box culvert at north end of the University Wash Channel.

Appendix G

Cultural Survey Report

Cultural Survey Report for the University Wash Channel Stage 3 Project

December 2013

Prepared for:
Riverside County Flood Control and
Water Conservation District
1995 Market Street
Riverside, CA 92501

Prepared by:
TRC
123 Technology Dr.
Irvine, CA 92618

Cultural Survey Report for the University Wash Channel Stage 3 Project

December 2013

Prepared for:
Riverside County Flood Control and
Water Conservation District
1995 Market Street
Riverside, CA 92501

Prepared by:
TRC
123 Technology Dr.
Irvine, CA 92618

National Archaeological Data Base Information:
Type of Study: Survey
Project Area: Approximately 8.13 Acres
U.S. Geological Survey (USGS) 7.5' Quadrangle: Riverside East
Key Words: Records Search, Negative, Survey.

Author:
Susan Underbrink, M.A., RPA
Principal Investigator

EXECUTIVE SUMMARY

TITLE:	Cultural Resource Survey for the University Wash Channel Stage 3 Project Riverside County, California
AUTHOR:	Susan Underbrink, M.A., RPA
DATE:	December 2013
SOURCE OF COPIES:	Eastern Information Center University of California Riverside Department of Anthropology Riverside, CA 92521-0418
DATE OF FIELD SURVEY:	November 4, 2013
TOTAL ACRES SURVEYED:	Approximately 8.13 Acre

ABSTRACT:
This report provides the results of the University Wash Channel Stage 3 Project Cultural Resource Survey in Riverside County, California for the Riverside County Flood Control and Water Reclamation District. This study was conducted in compliance with the County of Riverside and National Historic Preservation Act Section 106 guidelines. Site records, literature, and Sacred Lands File searches were conducted, and Native American consultations were initiated. The survey resulted in no new cultural resources, and there are no known cultural resources within the Project, so no further work is recommended.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

On behalf of the Riverside County Flood Control and Water Conservation District (District), a cultural resource survey was conducted by TRC Solutions, Inc. (TRC) to identify the presence or absence of cultural resources within the boundaries of the proposed University Wash Channel Stage 3 Project (Project) Area. The Project is located in the City of Riverside in Riverside County (see Figure 1, Vicinity and Site Location). A records search and literature review of land within a one-mile radius of the Project Study Area was completed on January 6, 2011, by the Eastern Information Center housed at the University of California, Riverside. A Native American Heritage Commission sacred land search was conducted. This survey report was prepared in compliance with the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA) to determine the potential, for impacts to significant cultural resources during project development.

2.0 PROJECT DESCRIPTION

The District plans to improve the existing University Wash Channel drainage capacity between Spruce Street and Massachusetts Avenue to carry the 10 year flow, the proposed project area represents the preferred footprint for the improvement. The proposed project consists of the construction of approximately 2,500 linear feet of underground 90-inch-diameter reinforced concrete storm drain pipe, catch basins, and associated manholes, street paving and grading.

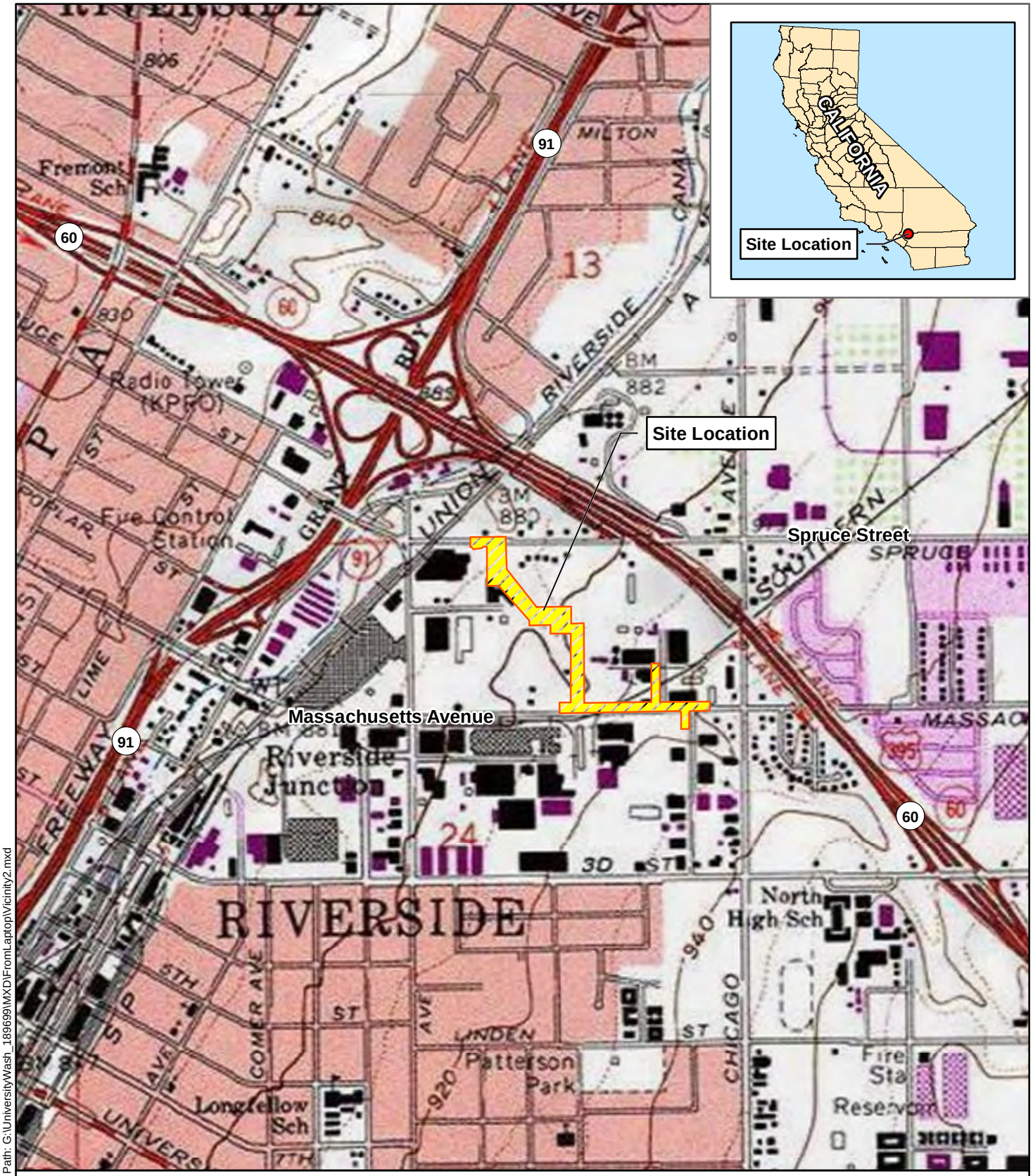
The 8.13-acre Project area is located south of the intersection of State Highway 91 and State Highway 60, and generally bound by Spruce Street to the north, Chicago Avenue to the east, Massachusetts Avenue to the south, and Kansas Avenue to the west (refer to Figure 1). The Project occurs in Section 24, Township 2 South, and Range 5 West of the U.S. Geological Survey (USGS) 7.5-minute *Riverside East, California* quadrangle. Irregularly shaped, the Project is surrounded by industrial and commercial land uses and other disturbed land. Elevations on the Site range from approximately 880 feet to 920 feet (265 to 280 meters) above mean sea level (msl).

3.0 REGULATORY SETTING

Cultural resources in the State of California are recognized as non-renewable resources that require management to assure their benefit to present and future Californians. Therefore, cultural resources management work conducted as part of any proposed undertaking must comply with applicable federal, state, and/or local regulations designed to protect the cultural heritage within the proposed project.

3.1 FEDERAL REGULATIONS

Enacted in 1966, the NHPA has become the foundation and framework for historic preservation in the United States. The NHPA authorizes the Secretary of the Interior to expand and maintain a National Register of Historic Places (NRHP), establishes an Advisory Council on Historic Preservation as an independent federal entity, requires federal agencies to take into account the



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University Wash Channel Stage 3 Project

Vicinity and Site Location

Figure 1

Project Boundary

0 1,000 2,000 3,000 Feet

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TRC

effects of their undertakings on historic properties, affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on any undertaking that may affect historic properties listed, or eligible for listing in, the NHRP, and makes the heads of all federal agencies responsible for the preservation of historic properties owned or controlled by their agencies.

Section 106 of the NHPA governs federal regulations for cultural resources. The goal of the Section 106 process is to offer a measure of protection to sites that are determined eligible for listing on the National Register of Historic Places (NRHP). The criteria for determining National Register eligibility are found in 36 Code of Federal Regulations Part 60.

3.2 STATE REGULATIONS

Discretionary actions undertaken by state or local governments in California, unless otherwise exempted, must comply with the *California Environmental Quality Act* (*CEQA) Guidelines* (California, 2013). Enacted in 1971, CEQA directs lead agencies to first determine whether a cultural resource is a "historically significant" cultural resource. In the protection and management of the cultural environment, *CEQA Guidelines* provide definitions and standards for cultural resources management. The term "historical resource" is defined as follows:

(1) A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in, the California Register of Historical Resources.

(2) A resource included in a local register of historical resources or identified as significant in a historical resource survey shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

(3) Any object, building, structure, site area, record, or manuscript, which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a cultural resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources, including the following:

- *a. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;*
- *b. Is associated with the lives of persons important in our past;*
- *c. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or*
- *d. Has yielded, or may be likely to yield, information important in prehistory or history.*

The fact that a resource is not listed in, or determined to be eligible for listing in, the California Register of Historical Resources, not included in a local register of historical resources, or identified in a historical resources survey does not preclude a lead agency from determining that the resource may be a historical resource [Title 14 California Code of Regulations (CCR) Section 15064.5(1) (California, 2013)].

A project with an effect that may cause a substantial adverse change in the significance of a historical resource or unique archaeological resource is a project that may have a significant effect on the environment (California, 2013).

As defined in Section 15064.5(1) of the *CEQA Guidelines*, a "unique archaeological resource" is:

> *An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:*
>
> *(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.*
> *(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.*
> *(3) Is directly associated with a scientifically recognized important prehistoric or historical event or person [Public Resources Code Section 21083.2(g)].*

A project with an effect that may cause a substantial adverse change in the significance of a historical resource or unique archaeological resource is a project that may have a significant effect on the environment (California, 2013). Effects on cultural properties that qualify as historical resources or unique archaeological resources can be considered adverse if they involve physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired.

The statutes and guidelines cited above specify how cultural resources are to be managed in the context of projects subject to CEQA. Briefly, archival and field surveys must be conducted, and identified cultural resources must be inventoried and evaluated in prescribed ways (California, 2013).

Prehistoric and historical resources deemed "historically significant" must be considered in project planning and development. As well, any proposed undertaking that may affect "historically significant" cultural resources must be submitted to the State Historic Preservation Officer for review and comment prior to project approval by the responsible agency and prior to construction. The *CEQA Guidelines* detail methods by which significant effects may be mitigated, and discuss procedures for treatment of human remains discovered in the course of project development. Therefore, the objective of the Project's cultural resource assessment was to determine whether archaeological resources exist within the project area, and if so, whether these cultural resources could be considered "historically significant".

The California Office of Historic Preservation administers the California Register program, the California Register of Historical Landmarks, and California Points of Local Historical Interest programs. The State Historic Preservation Officer enforces the designation and protection process and is the head of the Office of Historic Preservation. The Office of Historic Preservation ensures that the state has a qualified historic preservation review commission, maintains a system for surveys and inventories, and provides for adequate public participation in its activities. The Office of Historic Preservation also administers the Certified Local Government program for the State of California.

3.3 LOCAL REGULATIONS

3.3.1 County of Riverside

The Riverside County regulations and policies pertaining to cultural resources can be found in the Land Use (LU) Element of the *County of Riverside General Plan* and the Multipurpose Open Space (OS) Element. The Land Use Element and the Multipurpose-Open Space Element were both adopted on October 7, 2003.

The Land Use Element includes two policies that deal with historic preservation. The land use element policy LU 4.3 encourages the creation of programs that acknowledge the importance of historic preservation, and policy LU 4.4 states, "Permit historically significant buildings to vary from building and zoning codes in order to maintain the historical character of the County; providing that the variations do not endanger human life and buildings comply with the State Historical Code".

The Multipurpose Open Space Element (County of Riverside, 2003) includes the following policies:

- Review all proposed projects for the possibility of archaeological sensitivity (OS 19.2).
- Employ procedures to protect the confidentiality and prevent inappropriate public exposure of sensitive archaeological resources when soliciting the assistance of public and volunteer organizations (OS 19.3).
- Require a Native American Statement as part of the environmental review process on projects with identified cultural resources (OS 19.4).

3.3.2 City of Riverside

The *City of Riverside General Plan* provides guidance and policies relative to cultural resources in the Historic Preservation Element which was adopted in 2003, states that the City of Riverside is fully committed to integrate the consideration of cultural resources as a major aspect of the City of Riverside's planning, permitting, and development activities. The City of Riverside has approved the following goals:

- Goal 1: To use historic preservation principles as an equal component in the planning and development process.

- Goal 2: To continue an active program to identify, interpret and designate the City of Riverside's cultural resources.
- Goal 3: To promote the City's cultural resources as a means to enhance the City of Riverside's cultural resources as a means to enhance the City's identity as an important center of Southern California history.
- Goal 4: To fully integrate the consideration of cultural resource as a major aspect of the City of Riverside's planning, permitting and development activities.
- Goal 5: To ensure compatibility between new development and existing cultural resources.
- Goal 6: To actively pursue funding for a first-class historic preservation program, including money needed for educational materials, studies, surveys, staffing, and incentives for preservation by private property owners.
- Goal 7: To encourage both public and private stewardship of the City of Riverside's cultural resources.

Local Title 20 Cultural Resources Ordinance of the *City of Riverside Municipal Code* is the primary body of local historic preservation laws. This Ordinance incorporates the goals from the *City of Riverside General Plan* and provides a framework for the identification, protection, enhancement, perpetuation and use of structures, objects, features, sites, areas, districts and significant permanent landscaping that have a special historical, archaeological, cultural, architectural, community, aesthetic or artistic value to the City.

4.0 CULTURAL SETTING

4.1 CULTURAL HISTORY

It is generally believed that human occupation of southern California dates back to 10,000 years before present. The most widely utilized chronology for southern California includes four periods; the Early Archaic, Millingstone, Intermediate, and Late Prehistoric (Moratto, 1984).

The Early Archaic period sites typically include large well-made projectile points, but lack grinding implements (Wallace, 1955).

The Millingstone period sites feature an adaptation focused on collection and processing of small plant seeds indicated by the predominance of grinding implements such as handstones (manos) and grinding slabs (metates). Hunting probably included a variety of small and medium sized game animals and the exploitation of the local shellfish, as indicated by the presence of shell middens and fish remains. Ornamental objects become more pronounced with the occurrence of charmstones. Settlement is thought to have consisted of small bands moving in a seasonal round from the coast to the interior.

The Intermediate period sites show advancing strategy in hunting and maritime activities, along with a broader use of plants, especially the exploitation of acorns (mortars and pestles usage).

Acorns could be harvested and stored for later use, and were widely available. This exploitation of acorns could allow for greater sedentism.

The Late Prehistoric period is marked by the introduction of the bow and arrow, which in turn made hunting, especially deer, more efficient. Acorns are still an important food resource with the continued use of mortars, pestles, manos, and metates. Small finely worked projectile points are prevalent along with the widespread use of shell beads and ornaments. Pottery begins to appear, and there is evidence of trade (steatite, obsidian) and an increase in art objects during the Late Prehistoric period.

4.2 ETHNOGRAPHY

The Project area lies in the area recorded as Cahuilla, using the boundary lines that were defined by Kroeber using his anthropological fieldwork (Kroeber, 1925).

Cahuilla

The Cahuilla occupied a territory ranging from the San Bernardino Mountains in the north to the Chocolate Mountains and Borrego Springs in the south, and from the Colorado Desert in the east to Palomar Mountain in the west, including the City of Riverside. Cahuilla villages were located in canyons or on alluvial fans near sufficient sources of water and food materials, where strong prevailing winds provided a natural defense. Villages were immediately surrounded by areas held in common by the lineage, while other lands were divided into tracts owned by clans, families, and individuals. A network of trails used for hunting, trading, and social visiting interconnected villages. Village houses were positioned close to water sources and in areas of privacy. Buildings varied in size from brush shelters to dome-shaped or rectangular houses of 15 to 20 feet long, depending on the individual family's needs.

Hunting and gathering were typical subsistence techniques employed by the Cahuilla. Hunting involved various refined techniques, including bow and arrow, nets, snares, and traps. Butchering and skinning was done by the men and cooking was done by the women. Preparation of vegetable foodstuff involved the use of mortars, parching, grinding, baking, sun-drying, and pine-pitching (Bean 1978). Flora was abundant and included hundreds of species used for food, construction material, or medicine.

Cahuilla's technology consisted of baskets and ceramics used for a variety of storage and cooking functions. A variety of stone fixtures were used for hunting practices and ceremonial purposes. Women wore skirts made of mesquite bark, skins, and tules with sandals, created of mescal fibers. Men usually wore a loincloth with shoes or sandals. Warmth was provided by blankets or rabbitskin strips woven together. Games had an important place in Cahuilla society. Men engaged in foot races, demonstrated their skill with bow and arrow, and played the guessing game "hiding each other." Women played foot races, juggling, guessing games, cat's cradle, top spinning, jackstones, and balancing objects. Music technology included flutes, whistles, pan-pipes, flageolets, and rattles.

Spanish influence began to affect the Cahuilla in 1819 when several asistencias were established near the Cahuilla area (San Bernardino, Santa Ysabel, and Pala). As a result, they became somewhat involved with the Spanish, adopting some Spanish cultural forms, such as cattle, agriculture, operations, trade, wage labor, clothing, language, and religion. Reservations were established in 1877. After 1891, much of Cahuilla economic, political, and social life on the reservation was institutionalized by government programs.

4.3 HISTORY

The first Europeans to explore future California were in the 1542 expedition of Juan Rodriguez Cabrillo. Portions of the interior are thought to have been visited in 1769 by Gaspar de Portola as he led a 62-person expedition from San Diego to Monterey. The first Europeans to visit near the Project area comes from the diary account of the 1774 expedition of Lt. Colonel Juan Bautista de Anza. In 1776, De Anza led a group of colonists through the San Jacinto Valley. In 1797, a Franciscan priest, Juan Norberto de Santiago, left Mission San Juan Capistrano seeking sites for a new mission and traveled through the Temecula Valley (City of Temecula, 2011).

Hispanic Period (1822-1848)

After an initial period of exploration, the Spanish concentrated on the founding of presidios, missions, and secular towns with the land held by the Crown (1769-1821). In contrast, the later Mexican policy stressed individual ownership of the land.

American Period (1848-Present)

The signing of the Treaty of Guadalupe Hidalgo in 1848 ended the Mexican-American War and California became a territory of the United States. The discovery of gold at Sutter's Mill in 1848 influenced the history of the State and the nation. Thousands of settlers and immigrants poured into the State, particularly after the completion of the transcontinental railroad in 1869. Primarily due to the Gold Rush, California became the 31st state in 1850.

Riverside County

Riverside County was formed in 1893 by taking a portion of land from San Bernardino County and a larger portion of land from San Diego County. One of the early Riverside County settlers, Judge John Wesley North, encouraged groups of investors to southern California and helped found Riverside from what was once the Jurupa Rancho. Over time, agriculture became the predominant economy with the planting of the navel orange. Transportation, agriculture, and the control of water have been major themes in the development and growth of Riverside County (Robinson, 1979).

City of Riverside

The City of Riverside was founded in 1870 by a group of investors, which included John North. In 1871, the first orange trees were planted, but the citrus industry really started to expand once the Brazilian navel orange trees that Eliza Tibbets planted became popular. With the citrus industry quickly expanding rapidly, came packing houses, and the development of refrigerated

railcars, and innovative irrigation systems, the City of Riverside soon became one of the wealthiest cities. By 1882 the city and surrounding areas had approximately 250,000 citrus trees. Agriculture and the importance of water systems have remained important features in the development of the City of Riverside.

5.0 RECORDS SEARCH RESULTS

The California Historic Resources Information System (CHRIS) maintains regional offices that manage site records for known cultural resource locations and related technical studies. Information was obtained from the Eastern Information Center on January 6, 2012, regarding cultural resource studies and archaeological sites were compiled using a one-mile radius around the Project Area.

Sources reviewed include all known and recorded archaeological and historic sites and cultural resource reports. Additional resources that were consulted for relevant information included the California Register of Historical Resources, the National Register of Historic Places, the *California Inventory of Historic Resources*, California Points of Historical Interest, and California Historical Landmarks.

The records search (see Appendix A) resulted in the identification of 133 previously recorded prehistoric or historic cultural resources within a one-mile of the Project Area, but none of these resources fall within the Project Area (see Appendix A). Of the 133 known cultural resources, 125 are historic structures, of which many are part of the Heritage Square Historic District approximately one-half mile from the Project Area. See Table 1 for a description of the remaining eight cultural resources. A total of 41 cultural resource studies have been completed within a one-mile radius of the Project Area.

Table 1: Cultural Resources Located within a One-Mile Radius of the Project area*

Primary No./Trinomial	Brief Description of Resource	Recorder, Date
33-004299/CA-RIV-4299	Historic wall and foundation	Jertberg, 1991
33-004495/CA-RIV-4495	Upper Riverside Canal	D. Ballester, 2009; A. Gustafson and M. McGrath, 2001; R. Starzak, M. Fitzgerald, 1996; R. Wlodarski, D. Larson, 1992; P. Jertberg, 1991
33-004791/CA-RIV-4791	Lower Riverside Canal	J. McKenna, 2005; E. Chandler, 2002; A. Gustafson, 2001; R. Wlodarski, 1992
33-008754/CA-RIV-6238	Pacific Electric Railway car barn site	B. Love, 1999
33-008755/CA-RIV-6239	Concrete features	B. Love, 1999
33-009775/CA-RIV-6504	Single milling slick, not relocated in 2009	J Howard, 2009; D Ballester, 2002; S Ashkar, 1999

Table 1 (cont): Cultural Resources Located within a One-Mile Radius of the Project area*

Primary No./Trinomial	Brief Description of Resource	Recorder, Date
33-013941/CA-RIV-7631	Historic trash scatter within John North Park site	L Shaker, 2004
33-019936/CA-RIV-10128	Historic trash scatter	R Cunningham, 2010
*Site records are on file at Eastern Information Center, University of California, Riverside		

5.1 NATIONAL/CALIFORNIA REGISTER OF HISTORIC PLACES

The National Register of Historic Properties was reviewed and seven National Register Properties lie within a one-mile radius of the Project Area. None of the National Register Properties lie within the Project Area.

5.2 HISTORIC MAPS

The following historic maps were also consulted: 1901 USGS Elsinore 30 minute quadrangle, 1901 USGS Riverside 15 minute quadrangle, and the 1942 War Department Corps of Engineers Riverside 15 minute map. The 1901 maps show no structures within the Project Area, but the railroad is shown as well as several major roads. The 1942 Riverside map shows several structures adjacent to the Project Area. Blaine and Linden Streets are the closest streets noted on the map.

5.3 WITHIN THE PROJECT AREA

Two previous cultural resource studies have been conducted within or through a portion of the Project Area. One of the previous cultural resource studies surveyed a very small portion of the northern portion of the Project Area, and no cultural resources were identified within the Project Area (RECON, 2008). The second cultural resource study was only a record search and no pedestrian surveys occurred (Doan, 2003). Consequently, only a very small portion of the Project Area has been previously surveyed. There are no previously recorded cultural resources within the Project Area.

5.4 NATIVE AMERICAN SCOPING

TRC contacted the NAHC on November 6, 2013 requesting a search of their Sacred Land File for Native American cultural resources including any sacred land within the Proposed Project. TRC also requested that a current Native American contact list for the Proposed Project be provided. In their response, received on November 6, 2013, the NAHC stated that the Sacred Land File did not indicate the presence of cultural resources in the immediate vicinity of the Proposed Project. In their transmittal, the NAHC also enclosed a list of Native American individuals and/or organizations that might have knowledge of cultural resources in or near the Proposed Project (see Appendix B Native American Consultation). On November 8, 2013 letters were sent to the individuals listed requesting any input and/or comment/concerns regarding the Proposed Project. Daniel McCartney Director of Cultural Resources for the San Manuel Band of Mission Indians responded on November 12, 2013, stating that he was not aware of any sacred or

religious sites within the Project area. On November 26, 2013, the Sobaba Band of Luiseno Indians responded that the project area while outside of the existing reservation, does fall within the bounds of their Tribal Traditional Use Areas. They also requested a Native American Monitor from the Soboba Band of Luiseno Indians Cultural Resource Department be present during any ground disturbing proceedings. On December 11, 2013, an email was received from Mr. Sam Dunlap of the Gabrielino Tongva Nation recommending that adequate measures be in place during ground disturbance to ensure the protection of any cultural resources of their tribal group. He requested that a Native American monitor be selected from the Gabrielino Tongva Nation. No other responses have been received.

6.0 SURVEY METHODS

On November 4, 2013, TRC archaeologist Susan Underbrink conducted a cultural resource pedestrian survey of the Proposed Project area, to identify any visible cultural resources. Only the undeveloped land portions were surveyed, the streets and built environment were observed only. When feasible the survey was conducted using parallel transects spaced no greater than 15 meters apart. Most often meandering transects were utilized. Open areas were carefully checked for artifacts and darkened soils. Resource documentation consisted of note-taking; visual and aerial map verification, and photography.

7.0 SURVEY RESULTS

The field survey resulted in the identification of no new cultural resources within the Project area. No prehistoric sites were encountered in the field survey. The ground visibility was quite poor, with approximately 40 percent ground visibility (see Photograph 1); the ground was obscured by grasses, and in some cases car parts and areas of debris and fill. A total of 2.54 acres of bare/disturbed area is located on the Site, east and west of the University Wash Channel. The area east of the channel is currently used for the storage of wrecked and dismantled automobiles. The area west of the channel is comprised of a small strip of mostly bare ground with evidence of periodic ground disturbances and vegetation removal. A total of 3.74 acres of developed land are located on the Site and comprised almost entirely of paved roads.

Photograph 1: View of vacant lot, showing ground visibility in southeast portion of Project area.

8.0 SUMMARY AND RECOMMENDATIONS

The cultural resources survey included a records search/literature review and NAHC search for the Project. The records search/literature review encompassed land within a one-mile radius of the Project Area. The record search results indicate that only a very small portion of the Project Area had been previously surveyed, and that there are no previously recorded cultural resources within the Project Area. The NAHC sacred land search was negative and there have been no comments of concern. The field survey was negative; no new cultural resources were located.

The field survey and record search review has led to the conclusion that there will be no significant impacts to cultural resources. Therefore, no further cultural resource work is recommended for the Project. In the event that unexpected intact archaeological deposits are discovered, work in the immediate area shall stop immediately until a qualified archaeologist (and Native American representative if the deposits are prehistoric or ethnographic) can evaluate the discovery for significance as described in Title 14, California Code of Regulations, Chapter 3, Guidelines for Implementation of the California Environmental Quality Act, Section 15064.5. Isolated artifacts, objects fewer than 50 years old, and archaeological artifacts in fill or imported soils shall not be considered significant discoveries and grading can continue. If intact archaeological deposits are found to be significant, they shall be subject to a mitigation program consistent with City of Riverside and CEQA guidelines. In the unlikely event human remains are encountered during ground-disturbing activities, all work shall cease in the vicinity of the discovery and the county coroner shall be contacted per the California Public Resources Code. Should the remains be identified as Native American, the NAHC shall be contacted within 48 hours to provide a Most Likely Descendent (MLD) to determine reburial practices for the remains.

9.0 REFERENCES

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APPENDIX A:
RECORD SEARCH

EASTERN INFORMATION CENTER

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

Department of Anthropology, University of California, Riverside, CA 92521-0418

(951) 827-5745 - Fax (951) 827-5409 - eickw@ucr.edu

Inyo, Mono, and Riverside Counties

January 6, 2012
EIC-RIV-ST-1673

Susan Underbrink
TRC
123 Technology Drive
Irvine, CA 92618

Re: Cultural Resources Records Search for the University Wash Channel Project

Dear Ms. Underbrink:

We received your request on December 16, 2011, for a cultural resources records search for the University Wash Channel project located in Sections 13 and 24, T.2S, R.5W, SBBM, in the city and county of Riverside. We have reviewed our site records, maps, and manuscripts against the location map you provided.

Our records indicate that 41 cultural resources studies have been conducted within a one-mile radius of your project area. Two of these studies involved the project area; copies of these reports are included for your reference. Three additional studies provide overviews of cultural resources in the general project vicinity. All of these reports are listed on the attachment entitled "Eastern Information Center Report Listing" and are available upon request at 15¢/page plus $40/hour. The bibliographic information for report RI-8598 is not available in our database at this time; the title page for this report has been included for your study needs.

No cultural resources properties are recorded within the boundaries of the project area. Our records indicate that 133 properties have been recorded within a half-mile radius of the project area. Copies of the records are included for your reference. All of these resources are listed on the attachment entitled "Eastern Information Center Resource Listing".

The above information is reflected on the enclosed maps. Areas that have been surveyed are highlighted in yellow. Numbers marked in blue ink refer to the report number (RI #). Cultural resources properties are marked in red; numbers in black refer to Trinomial designations, those in green to Primary Number designations. National Register properties are indicated in light blue.

Additional sources of information consulted are identified below.

National Register of Historic Places: 7 properties (33-008153 Federal Post Office; 33-009465 All Souls Universalist Church; 33-009525 First Church of Christ Scientist; 33-009526 First Congregational Church of Riverside; 33-009527 Harda House; 33-009687 San Pedro, Los Angeles, & Salt Lake RR Depot; 33-011757 Mission Court Bungalows) are listed.

Office of Historic Preservation (OHP), Archaeological Determinations of Eligibility (ADOE): one property (33-004495, CA-RIV-4495) is listed as determined eligible for inclusion on the National Register of Historic Places. The applicable portion of this directory is enclosed for your study needs.

Office of Historic Preservation (OHP), Directory of Properties in the Historic Property Data File (HPD): 21 properties (33-005791 Mission Inn; 33-008153 Federal Post Office; 33-009527 Harada House; 33-009678 John W. North Park; 33-009681 Riverside-Arlington Heights Fruit; 33-009682 Old YMCA Building; 33-009686 Riverside Municipal Auditorium; 33-009687 San Pedro-LA-Salt Lake RR Depot; 33-009689 Sutherland Fruit Company; 33-009690 University Heights Junior High School; 33-011517 7th Street Historic District; 33-011520 Mission Business Building; 33-011521 Heritage Square District; 33-011539 Ridgecourt; 33-011756; 33-011848; 33-011849 Dennis Home; 33-011862; 33-011863; 33-012102 Elmer Day House; 33-016819 E.T. Wall Citrus Packing and Sorting Plant) are listed as determined eligible; 6 properties (33-011757 Mission Court Bungalows; 33-011833; 33-011847; 33-011864 Church of Scientology; 33-011878; 33-012093) are listed as potentially eligible; 6 properties (33-011627 Former Smith-Grubbs Company, 33-011628 Former Cresmer Manufacturing Company compound; 33-011793; 33-011854 De Anza Motel, 33-012130 Fairmont Park; 33-012135) are listed as not eligible but maybe of local interest; 44 properties (33-011629 D&E Auto Parts and Service; 33-012131; 33-012132; 33-012133; 33-012134; 33-012136; 33-012145; 33-012150; 33-012151; 33-012152; 33-012153; 33-012154; 33-012155; 33-012156; 33-012157; 33-012158; 33-012159; 33-012160; 33-012161; 33-012162; 33-012163; 33-012164; 33-0121653; 33-012166; 33-012167; 33-012168; 33-012192; 33-013206; 33-013207; 33-013209; 33-013210; 33-013211; 33-013212; 33-013213; 33-013214; 33-013215; 33-013216; 33-013535; 33-015158; 33-015258; 33-015259; 33-015260; 33-016213; 33-017252) are listed as ineligible; 4 properties (33-010973 Atchison,

Topeka & Santa Fe Depot; 33-011784 Allen Chapel; 33-011902 East Side; 33-014392 National Orange Company) are listed as not evaluated for inclusion on the National Register of Historic Places.

Note: not all properties in the California Historical Resources Information System are listed in the OHP ADOE and HPD; the ADOE and HPD comprise lists of properties submitted to the OHP for review.

A copy of the relevant portions of the 1901 and 1942 USGS Riverside 15' and the 1901 USGS Elsinore 30' topographic maps are included for your reference.

As the Information Center for Riverside County, it is necessary that we receive a copy of <u>all</u> cultural resources reports and site information pertaining to this county in order to maintain our map and manuscript files. Confidential information provided with this records search regarding the location of cultural resources outside the boundaries of your project area should not be included in reports addressing the project area.

Sincerely.

Michael P. Loyd
Information Officer

Enclosures

APPENDIX B:
NATIVE AMERICAN CONSULTATION

123 Technology Drive
Irvine, California 92618

949.727.9336 PHONE
949.727.7399 FAX

www.TRCsolutions.com

November 6, 2013

Mr. Dave Singleton
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814
Sent via Fax

Dear Mr. Singleton,

TRC Solutions, Inc. has been retained by Riverside City Flood Control District to conduct a cultural study for the University Wash project. The project is located in Riverside County. The project is depicted on the attached United States Geological Survey (USGS) quadrangle map.

Quadrangle	Township	Range	Section
Riverside East	2S	5W	13, 24

Please conduct a search of the Sacred Lands Inventory to determine if these locations are within any identified Sacred Lands. Additionally, please forward a list of Native American tribes associated with these areas. Thank you for your time and help.

Respectfully,

Susan Underbrink

Susan Underbrink, M.A., RPA
Project Manager/Senior Archaeologist

Enclosures: USGS map

STATE OF CALIFORNIA — Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691
(916) 373-3715
Fax (916) 373-5471
Web Site www.nahc.ca.gov
Ds_nahc@pacbell.net

November 6, 2013

Ms. Susan Underbrink, M.A., RPA, Project Manager
TRC
123 Technology Drive
Irvine, CA 92618

Sent by FAX to: 949-727-7399
No. of Pages: 4

RE: Request for Sacred Lands File Search and Native American Contacts list for the **"University Wash Project (under the auspices of the Riverside City Flood Control District)"** located in the Downtown Riverside area, near the S.R. 60/S.R. 91 Interchange; Riverside County, California

Dear Ms. Underbrink:

A record search of the NAHC Sacred Lands File **failed to indicate** the presence of Native American traditional cultural places in the project site(s) submitted as defined by the USGS coordinates configuring the 'Area of Potential Effect' or APE. Also, please note that the absence of archaeological recorded items does not preclude their existence within the footprint of the proposed project. Other data sources for Native American sacred places/sites should also be contacted. A Native American tribe or individual may be the only sources of information about traditional cultural places or sites.

In the 1985 Appellate Court decision (170 Cal App 3rd 604), the Court held that the NAHC has jurisdiction and special expertise, as a state agency, over affected Native American resources impacted by proposed projects, including archaeological places of religious significance to Native Americans, and to Native American burial sites.

Attached is a list of Native American tribes, Native American individuals or organizations that may have knowledge of cultural resources in or near the project area (APE). As part of the consultation process the NAHC recommends that local government and project developers contact the tribal governments and individuals in order to determine the proposed action on any cultural places/sacred sites. If a response from those listed is not received in two weeks of notification, the NAHC requests that a follow-up telephone call be made to ensure the project information has been received

If you have any questions or need additional information, please contact me at (916) 373-3715.

Sincerely,

Dave Singleton
Program Analyst

Attachments

PS: Nice hearing from you Susan; keep up the good work!

Native American Contacts
Riverside County, California
November 6, 2013

Pechanga Band of Mission Indians
Paul Macarro, Cultural Resources Manager
P.O. Box 1477 Luiseno
Temecula , CA 92593
(951) 770-8100
pmacarro@pechanga-nsn.gov
(951) 506-9491 Fax

Ramona Band of Cahuilla Mission Indians
Joseph Hamilton, Chairman
P.O. Box 391670 Cahuilla
Anza , CA 92539
admin@ramonatribe.com
(951) 763-4105
(951) 763-4325 Fax

San Manuel Band of Mission Indians
Carla Rodriguez, Chairwoman
26569 Community Center Drive Serrano
Highland , CA 92346
(909) 864-8933
(909) 864-3724 - FAX
(909) 864-3370 Fax

Soboba Band of Mission Indians
Rosemary Morillo, Chairperson; Attn: Carrie Garcia
P.O. Box 487 Luiseno
San Jacinto , CA 92581
carrieg@soboba-nsn.gov
(951) 654-2765
(951) 654-4198 - Fax

Gabrieleno/Tongva San Gabriel Band of Mission
Anthony Morales, Chairperson
PO Box 693 Gabrielino Tongva
San Gabriel , CA 91778
GTTribalcouncil@aol.com
(626) 286-1632
(626) 286-1758 - Home
(626) 286-1262 -FAX

Santa Rosa Band of Mission Indians
John Marcus, Chairman
P.O. Box 391820 Cahuilla
Anza , CA 92539
(951) 659-2700
(951) 659-2228 Fax

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
sgoad@gabrielino-tongva.com
951-845-0443

Morongo Band of Mission Indians
William Madrigal, Jr.,Cultural Resources Manager
12700 Pumarra Road Cahuilla
Banning , CA 92220 Serrano
(951) 201-1866 - cell
wmadrigal@morongo-nsn.gov
(951) 572-6004 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

his list s only applicable for contacting local Native Americans with regard to cultural resources for the proposed University Wash Project; located in the City of Riverside Down Area; Riverside County, California for which a Sacred Lands File search and Native American Contacts list were requested.

Native American Contacts
Riverside County, California
November 6, 2013

San Manuel Band of Mission Indians
Daniel McCarthy, M.S.., Director-CRM Dept.
26569 Community Center. Drive Serrano
Highland , CA 92346
(909) 864-8933, Ext 3248
dmccarthy@sanmanuel-nsn.gov
(909) 862-5152 Fax

Serrano Nation of Mission Indians
Goldie Walker, Chairwoman
P.O. Box 343 Serrano
Patton , CA 92369

(909) 528-9027 or
(909) 528-9032

Cahuilla Band of Indians
Luther Salgado, Chairperson
PO Box 391760 Cahuilla
Anza , CA 92539
Chairman@cahuilla.net
760-763-5549
760-763-2631 - Tribal EPA

Pechanga Cultural Resources Department
Anna Hoover, Cultural Analyst
P.O. Box 2183 Luiseño
Temecula , CA 92593
ahoover@pechanga-nsn.gov
951-770-8104
(951) 694-0446 - FAX

Ernest H. Siva
Morongo Band of Mission Indians Tribal Elder
9570 Mias Canyon Road Serrano
Banning , CA 92220 Cahuilla
siva@dishmail.net
(951) 849-4676

SOBOBA BAND OF LUISENO INDIANS
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 Luiseno
San Jacinto , CA 92581
jontiveros@soboba-nsn.gov
(951) 663-5279
(951) 654-5544, ext 4137

Gabrielino /Tongva Nation
Sam Dunlap, Cultural Resorces Director
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net
909-262-9351

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed University Wash Project; located in the City of Riverside Down Area; Riverside County, California for which a Sacred Lands File search and Native American Contacts list were requested.

123 Technology Drive
Irvine, California 92618

949.727.9336 PHONE
949.727.7399 FAX

www.TRCsolutions.com

November 8, 2013

Gabrielino/Tongva Nation
Sam Dunlap, Cultural Resources Director
P.O. Box 86908
Los Angeles, CA 90086
Sent via email

Dear Mr. Dunlap,

TRC Solutions, Inc. has been retained by Riverside City Flood Control District to conduct a cultural study for the University Wash project. The project is located in Riverside County. The project is depicted on the attached United States Geological Survey (USGS) quadrangle map.

Quadrangle	Township	Range	Section
Riverside East	2S	5W	13, 24

TRC conducted a literature search/review, and a cultural resources survey for the project vicinity in addition to a Sacred Lands Search with the Native American Heritage Commission. Pursuant to Section 101 of the National Historic Preservation Act, TRC is notifying Native American parties about the project and inquiring about any cultural sensitivity concerns you may have.

I would appreciate any input or concerns you may have about the project in writing so they may be addressed in a timely manner. If you have any questions or concerns regarding this project, please feel free to contact me at any time. Thank you for your time and help.

Respectfully,

Susan Underbrink

Susan Underbrink M.A., RPA
Senior Archaeologist
sunderbrink@trcsolutions.com
(949) 727-7385 direct line

Enclosure: USGS Map

123 Technology Drive
Irvine, California 92618

949.727.9336 PHONE
949.727.7399 FAX

www.TRCsolutions.com

November 8, 2013

Gabrielino/Tongva Nation
Sandonne Goad, Chairperson
P.O. Box 86908
Los Angeles, CA 90086
Sent via email

Dear Ms. Goad,

TRC Solutions, Inc. has been retained by Riverside City Flood Control District to conduct a cultural study for the University Wash project. The project is located in Riverside County. The project is depicted on the attached United States Geological Survey (USGS) quadrangle map.

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November 8, 2013

Ramona Band of Cahuilla Mission Indians
Joseph Hamilton, Chairman
P.O. Box 391670
Anza, CA 92539
Sent via email

Dear Mr. Hamilton,

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Irvine, California 92618

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949.727.7399 FAX

www.TRCsolutions.com

November 8, 2013

Pechanga Cultural Resources Department
Ms. Anna Hoover, Cultural Analyst
P.O. Box 2183
Temecula, CA 92593
Sent via email

Dear Ms. Hoover,

TRC Solutions, Inc. has been retained by Riverside City Flood Control District to conduct a cultural study for the University Wash project. The project is located in Riverside County. The project is depicted on the attached United States Geological Survey (USGS) quadrangle map.

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Paul Macarro, Cultural Resources Director
P.O. Box 1477
Temecula, CA 92593
Sent via email

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123 Technology Drive
Irvine, California 92618

949.727.9336 PHONE
949.727.7399 FAX

www.TRCsolutions.com

November 8, 2013

Morongo Band of Mission Indians
William Madrigal, Jr., Cultural Resources Manager
12700 Pumarra Road
Banning, CA 92220
Sent via email

Dear Mr. Madrigal Jr.,

TRC Solutions, Inc. has been retained by Riverside City Flood Control District to conduct a cultural study for the University Wash project. The project is located in Riverside County. The project is depicted on the attached United States Geological Survey (USGS) quadrangle map.

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Susan Underbrink

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