APPENDIX A

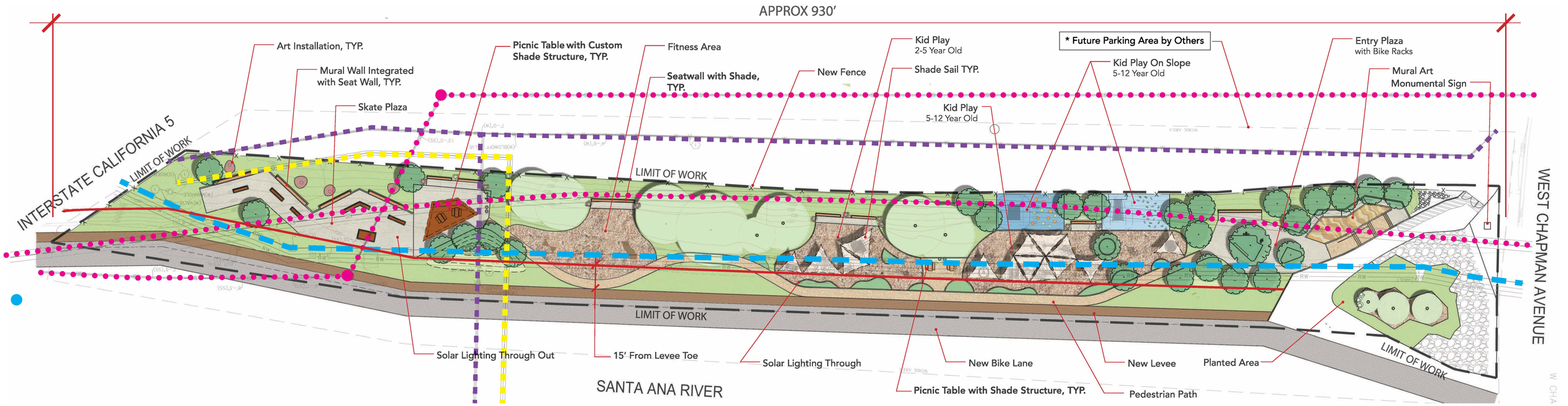
UTILITY INFORMATION

OVERALL SITE - UTILITY PLAN

CONCEPT DESIGN PACKAGE 10-11-2024

CITY OF ORANGE NEW PARK

2850 WEST CHAPMAN AVENUE, ORANGE, CA 92868



LEGEND

- Existing Tree
- New Tree
- Concrete
- Stabilized Decomposed Granite
- Wood Chips
- Planting Area
- Poured Rubber
- Tel
- Sewer
- Gas
- Dip Water

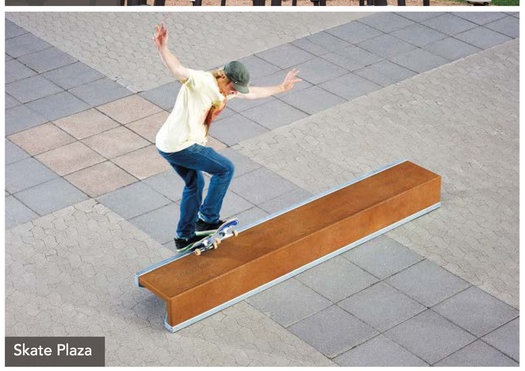
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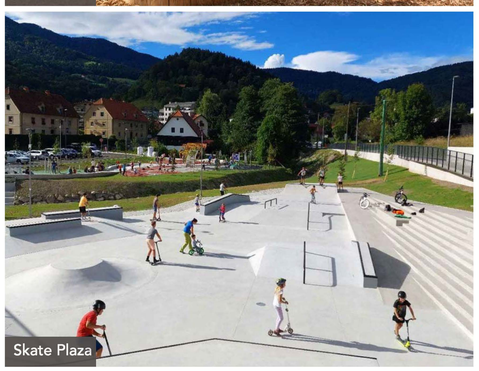

Fitness - Trek-


Natural


Play at the Slop


Entry Mural Wall Art De-


Skate Plaza


Skate Plaza


Native Planting

MIG

APPENDIX B

NATIVE AMERICAN TRIBAL CONSULTATION MATERIALS

Kent Norton <knorton@migcom.com>

West Park Consultation Request

2 messages

Robert Garcia <rgarcia@cityoforange.org> Wed, Jul 17, 2024 at 8:22 PM
To: Kent Norton <knorton@migcom.com>, "O. Johnson" <oscarj@migcom.com>
Cc: Robert Ambriz Jr <rambriz@cityoforange.org>

Hello Kent,

Just wanted to inform you that the Kizh Nation has requested consultation. I have requested dates and times from them so that we can meet with them. We have had consultations with this group in the past and are on good working terms with them. However, they typically only like to meet with City representatives, so I will keep you posted as to whether or not they are comfortable having representatives from MIG at the consultation.

Thank you,

Robert Garcia
Senior Planner

Advance Planning

Community Development Department
City of Orange

(714) 744-7231

E-mail correspondence, along with any attachments, may be subject to the California Public Records Act; and as such may be subject to public disclosure unless otherwise exempt under the Act.

Kent Norton <knorton@migcom.com> Wed, Jul 17, 2024 at 8:25 PM
To: Robert Garcia <rgarcia@cityoforange.org>

That is fine, I don't take it personally, that has been my experience with them too! If Andy Salas shows up tell him I said hello...
[Quoted text hidden]

CITY OF ORANGE

COMMUNITY DEVELOPMENT DEPARTMENT www.cityoforange.org

ADMINISTRATION (714) 744-7240
PLANNING DIVISION (714) 744-7220
BUILDING DIVISION (714) 744-7200
CODE ENFORCEMENT DIVISION (714) 744-7244

July 17, 2024

Gabrieleno Band of Mission Indians – Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393
Covina, CA, 91723
admin@gabrielenoindians.org

SUBJECT: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Chairman Andrew Salas:

The City of Orange has determined that a project application is complete for the Orange Westside Linear Park Project. Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

Project Location: The park project site is located in the City of Orange along the west side of the Santa Ana River on County of Orange Flood Control property in the southwestern portion of the City. The City is located in northern Orange County, north of the County seat of Santa Ana, and just southeast of Anaheim. An existing bike trail defines the eastern boundary of the project site and follows the west bank of the Santa Ana River in a north-south direction. The site is bounded Chapman Avenue on the north, the Interstate 5 Freeway (I-5 Freeway) on the south, by the Santa Ana River, Anita Drive, and State Route 57 (SR-57) on the east, and vacant land and commercial uses to the west. The site is in Section 36, Township 4 South, Range 10 West (San Bernardino Base and Meridian-SBBM) in U.S.G.S. Anaheim 7.5-minute topographic map. The site is located at Latitude 33° 47’ 11.75” North and Longitude 117° 52’ 59.40” West.

Project Description: The proposed park will be developed on an approximately 1.8-acre portion of a parcel along the west bank of the Santa Ana River. The project site is vacant with multiple mature trees scattered throughout the site, as well as an existing bike trail that runs along the western edge of the Santa Ana River. The proposed passive park would include a demonstration garden with drought tolerant plants, furnishings integrated into the landscape, educational/interpretative signage, public art on display, game tables and a play area intended for children ages 5-12 years old, a skate plaza, fitness area, solar and light-emitting diode (LED)

area lighting, security cameras, ADA concrete paving, fencing, monumentation/trail signage. The project would take place on previously disturbed land, anticipated ground disturbance would be very shallow due to the type of improvements planned, and at this time none of the existing oak trees are planned to be removed.

Lead Agency Point of Contact: Robert Garcia, Senior Planner, Advance Planning, City of Orange Community Development Department. Email: rgarcia@cityoforange.org Phone: (714) 744-7231

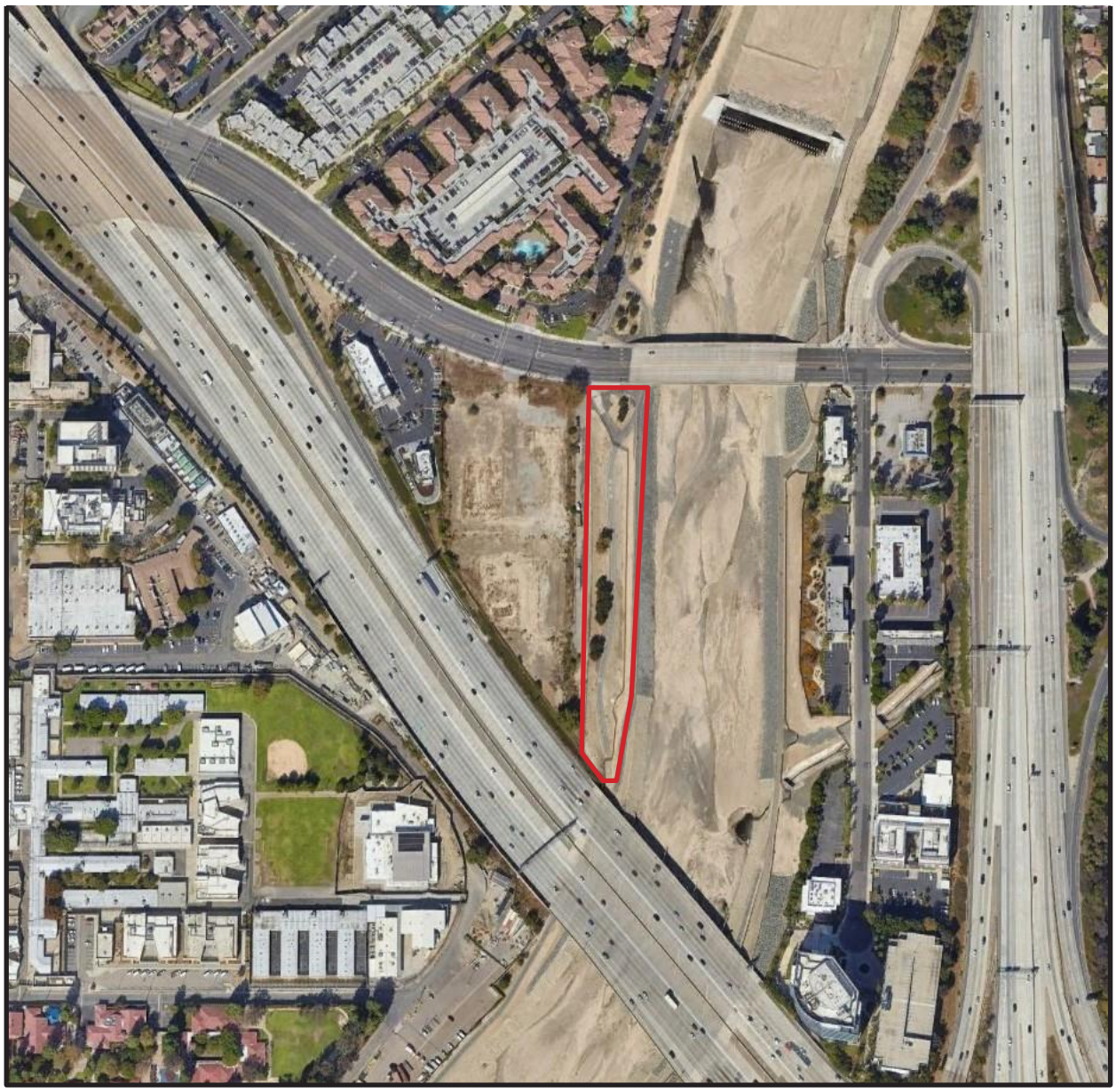
Pursuant to PRC § 21080.3.1 (b), you have 30 days from the receipt of this letter to request consultation, in writing, with the City of Orange.

Very Respectfully,

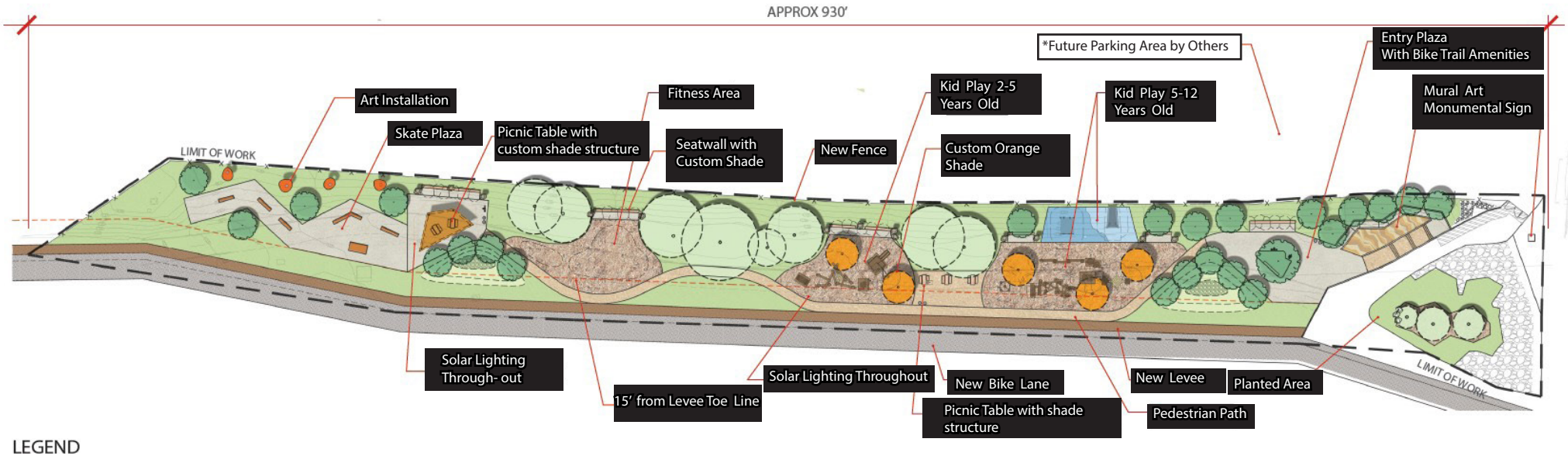


Robert Garcia
Senior Planner

Attachments: Site Location Map and Proposed Site Plan



Site Location Map



LEGEND

- Existing Tree
- New Tree
- Concrete
- Stabilized Decomposed Granite
- Wood Chips
- Planting Area
- Poured Rubber

0 30' 60' 120' 240'

http://www.migcom.com • 951-787-9222

Conceptual Park Plan

West Chapman Avenue Park Project

Orange, California

CITY OF ORANGE

COMMUNITY DEVELOPMENT DEPARTMENT www.cityoforange.org

ADMINISTRATION (714) 744-7240
PLANNING DIVISION (714) 744-7220
BUILDING DIVISION (714) 744-7200
CODE ENFORCEMENT DIVISION (714) 744-7244

July 17, 2024

Anthony Morales, Chief
Gabrieleno/Tongva San Gabriel Band of Mission Indians
P.O. Box 693
San Gabriel, CA 91778

SUBJECT: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Chief Anthony Morales:

The City of Orange has determined that a project application is complete for the Orange Westside Linear Park Project. Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

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Lead Agency Point of Contact: Robert Garcia, Senior Planner, Advance Planning, City of Orange Community Development Department. Email: rgarcia@cityoforange.org Phone: (714) 744-7231

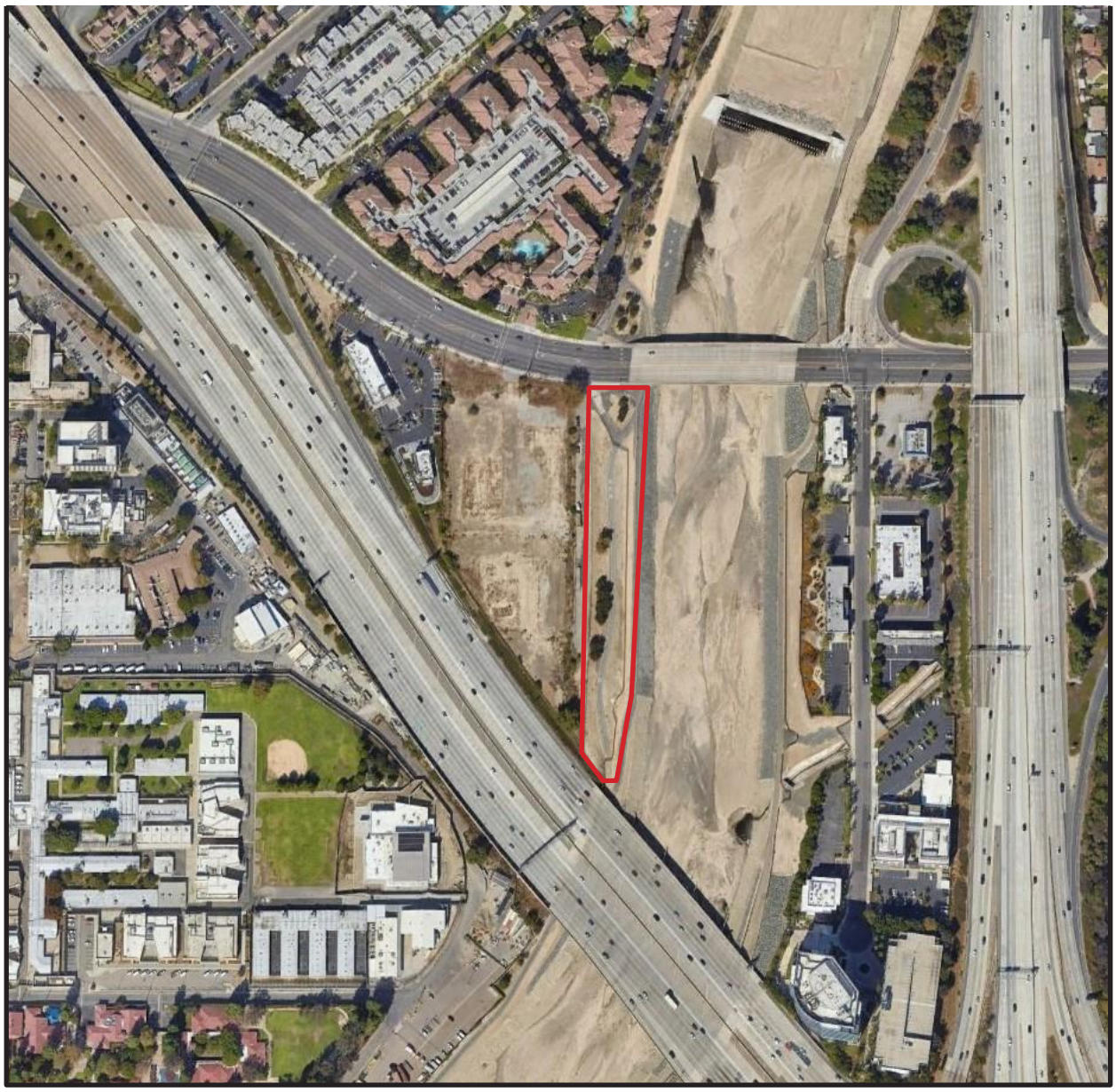
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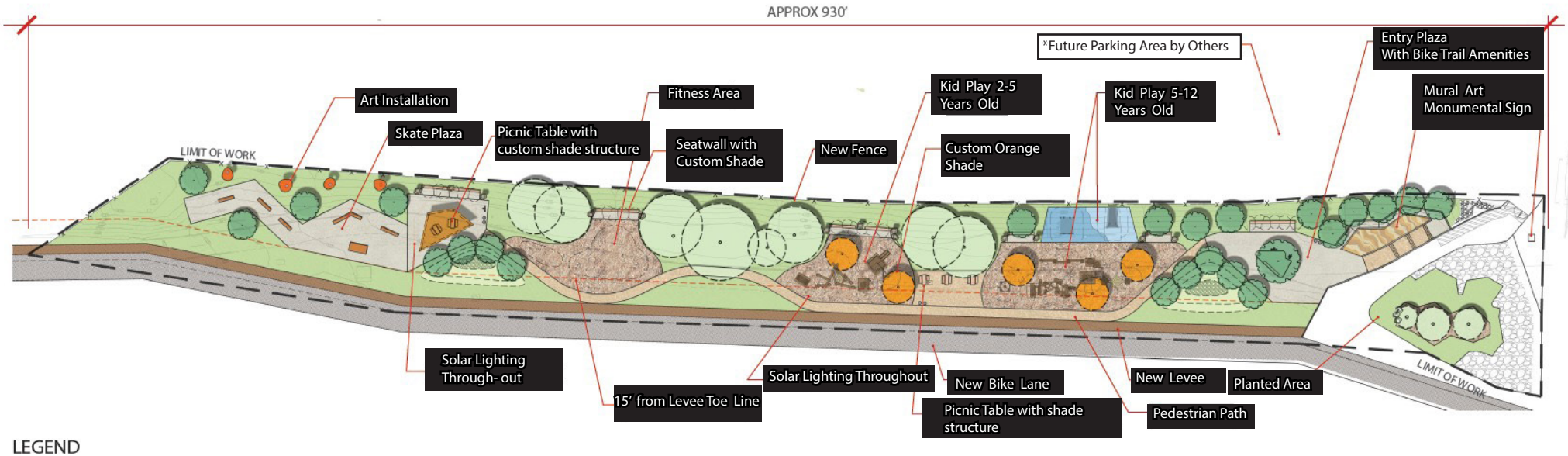


Robert Garcia
Senior Planner

Attachments: Site Location Map and Proposed Site Plan



Site Location Map



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- New Tree
- Concrete
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- Wood Chips
- Planting Area
- Poured Rubber

0 30' 60' 120' 240'

http://www.migcom.com • 951-787-9222

Conceptual Park Plan

West Chapman Avenue Park Project

Orange, California

CITY OF ORANGE

COMMUNITY DEVELOPMENT DEPARTMENT www.cityoforange.org

ADMINISTRATION (714) 744-7240
PLANNING DIVISION (714) 744-7220
BUILDING DIVISION (714) 744-7200
CODE ENFORCEMENT DIVISION (714) 744-7244

July 17, 2024

Gabrielino/Tongva Nation
Attn: Sandonne Goad, Chairperson
106 ½ Judge John Aiso Street, #231
Los Angeles, CA 90012
sgoad@gabrielino-tongva.com

SUBJECT: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Chairperson Sandonne Goad:

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Lead Agency Point of Contact: Robert Garcia, Senior Planner, Advance Planning, City of Orange Community Development Department. Email: rgarcia@cityoforange.org Phone: (714) 744-7231

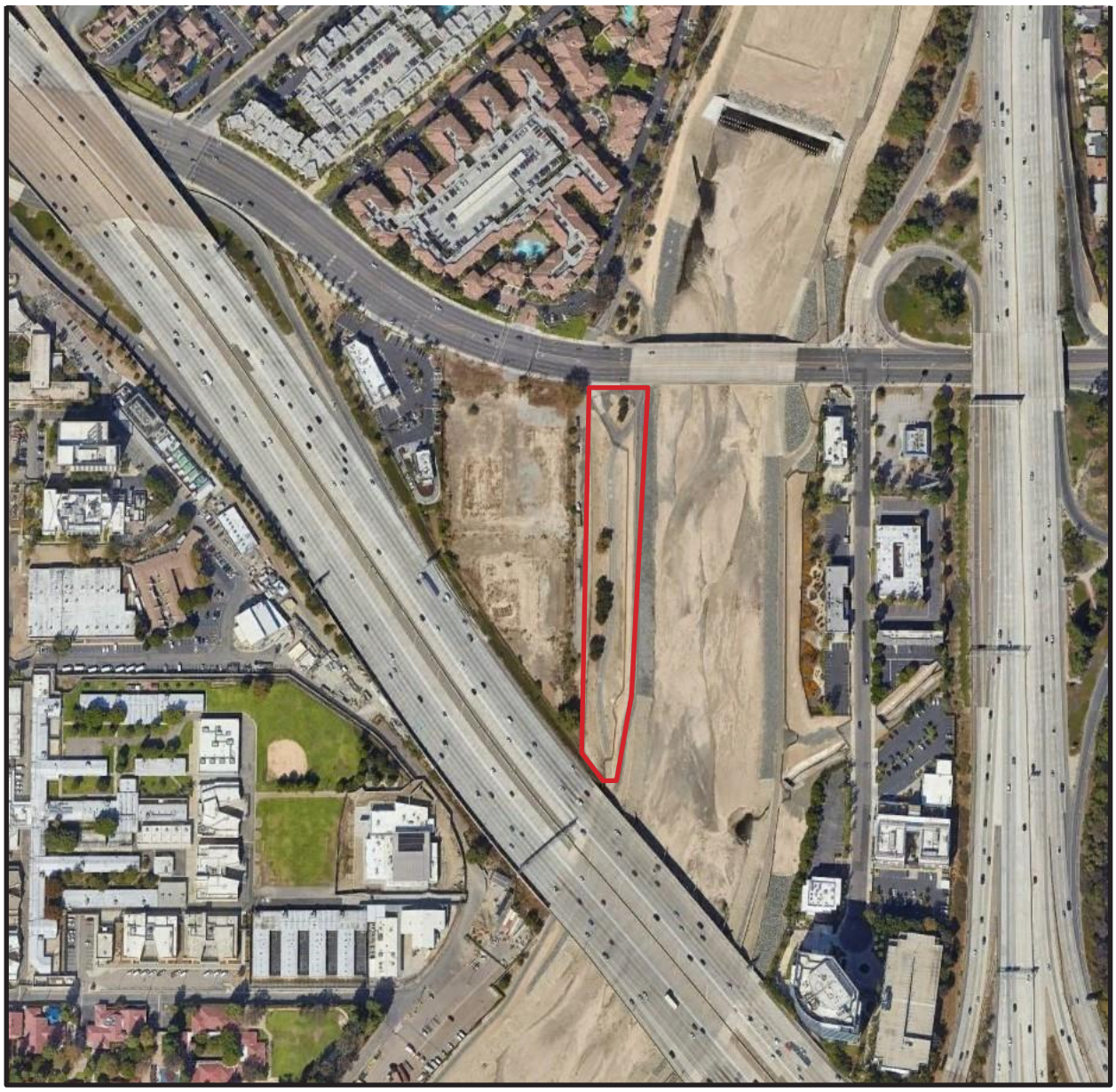
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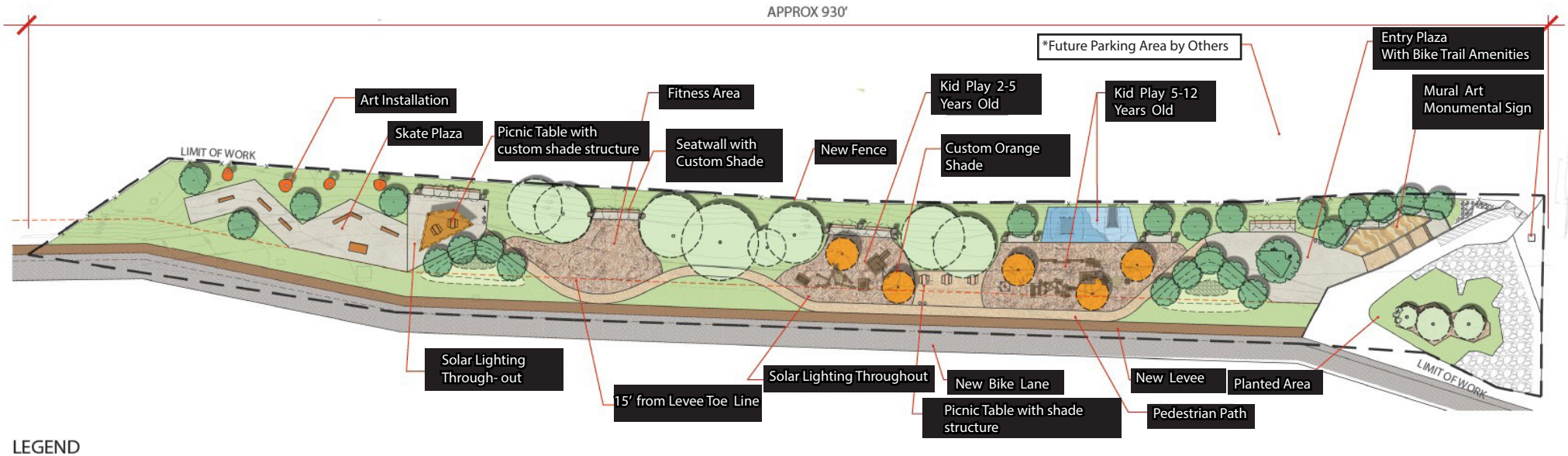


Robert Garcia
Senior Planner

Attachments: Site Location Map and Proposed Site Plan



Site Location Map



LEGEND

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- New Tree
- Concrete
- Stabilized Decomposed Granite
- Wood Chips
- Planting Area
- Poured Rubber

0 30' 60' 120' 240'

http://www.migcom.com • 951-787-9222

Conceptual Park Plan

West Chapman Avenue Park Project

Orange, California

CITY OF ORANGE

COMMUNITY DEVELOPMENT DEPARTMENT www.cityoforange.org

ADMINISTRATION (714) 744-7240
PLANNING DIVISION (714) 744-7220
BUILDING DIVISION (714) 744-7200
CODE ENFORCEMENT DIVISION (714) 744-7244

July 17, 2024

Abraham Becerra, Cultural Coordinator
Torres Martinez Desert Cahuilla Indians
P.O. Box 1160
Thermal, CA 92274
abecerra@tmdci.org
cultural-committee@tmtanf.org

SUBJECT: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Abraham Becerra, Cultural Coordinator, Torres Martinez Desert Cahuilla Indians:

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Lead Agency Point of Contact: Robert Garcia, Senior Planner, Advance Planning, City of Orange Community Development Department. Email: rgarcia@cityoforange.org Phone: (714) 744-7231

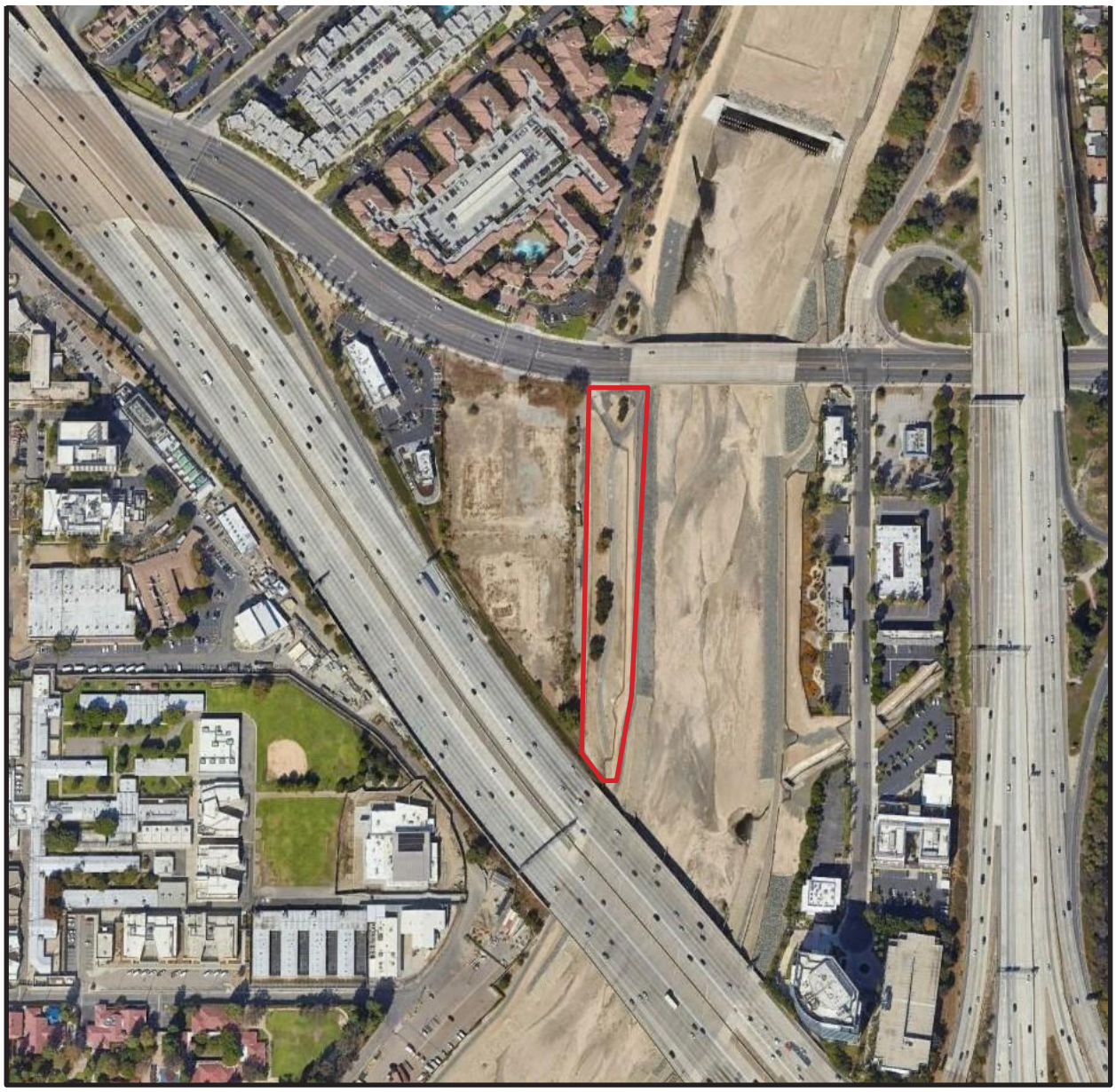
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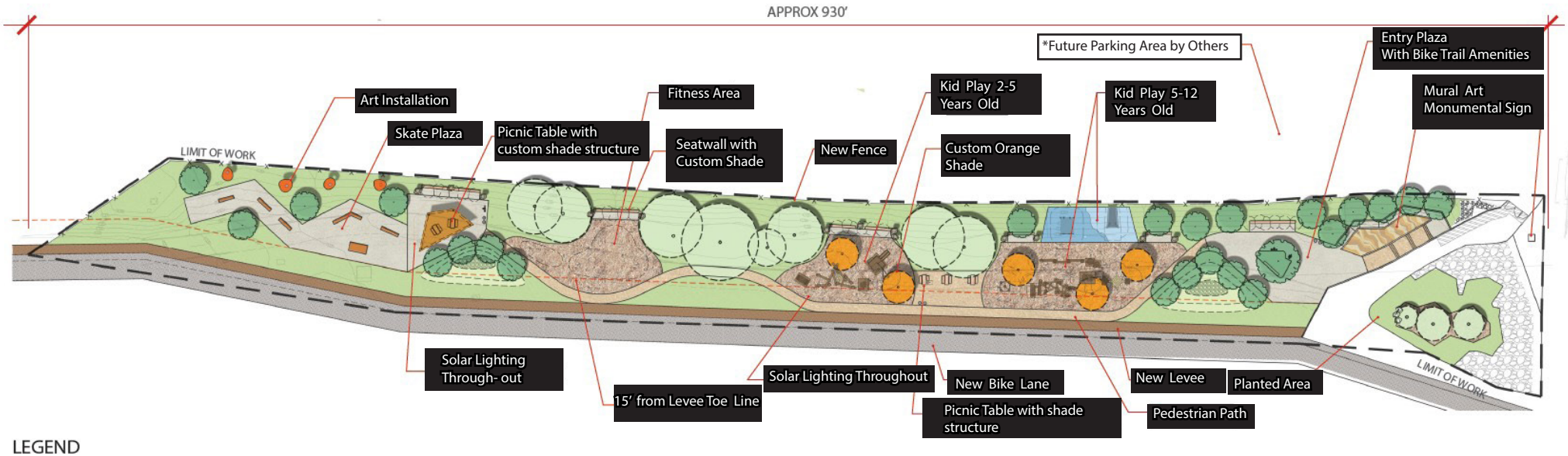


Robert Garcia
Senior Planner

Attachments: Site Location Map and Proposed Site Plan



Site Location Map



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- New Tree
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- Wood Chips
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0 30' 60' 120' 240'

http://www.migcom.com • 951-787-9222

Conceptual Park Plan

West Chapman Avenue Park Project

Orange, California

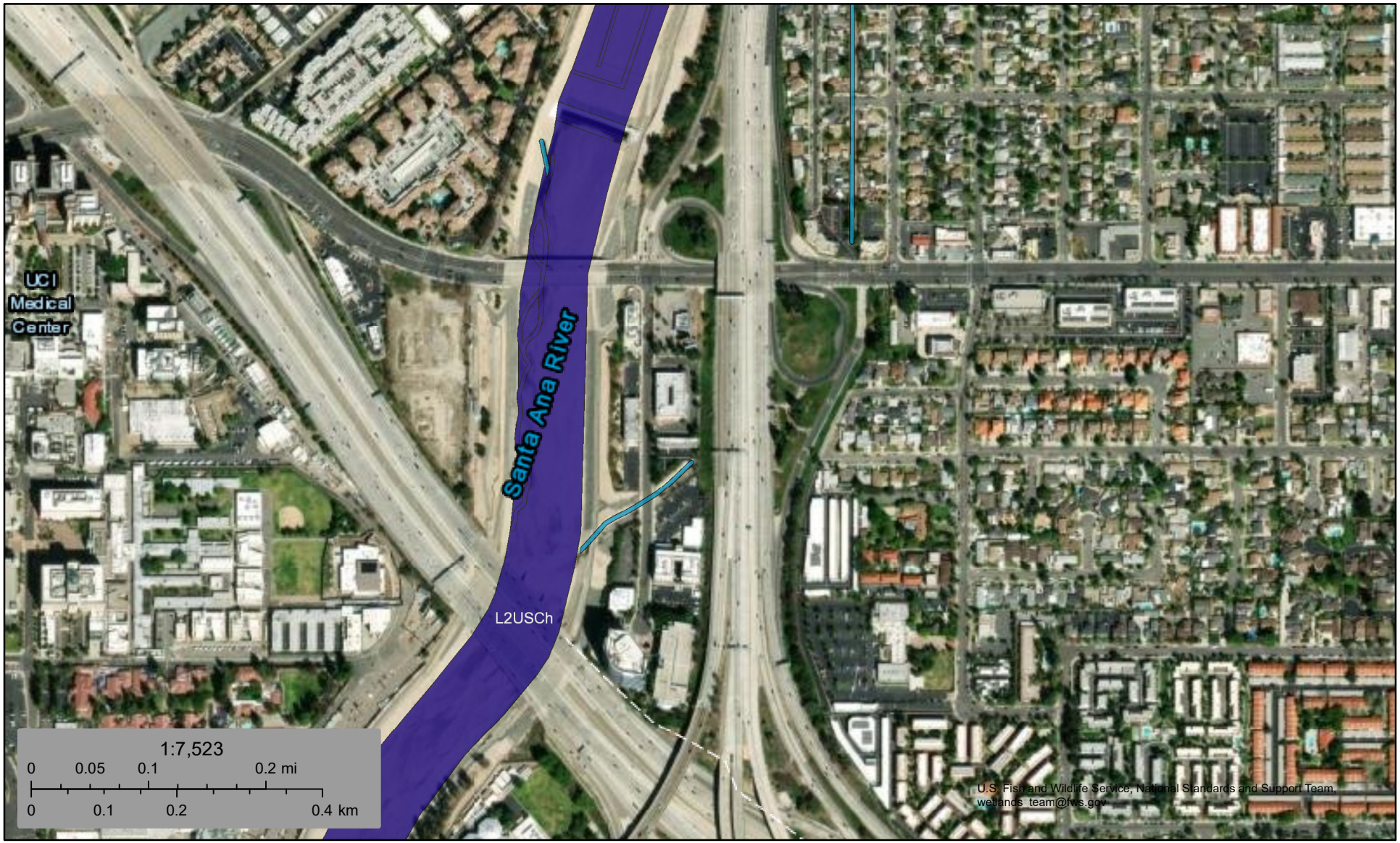
APPENDIX C

BIOLOGICAL RESOURCES DATA

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands



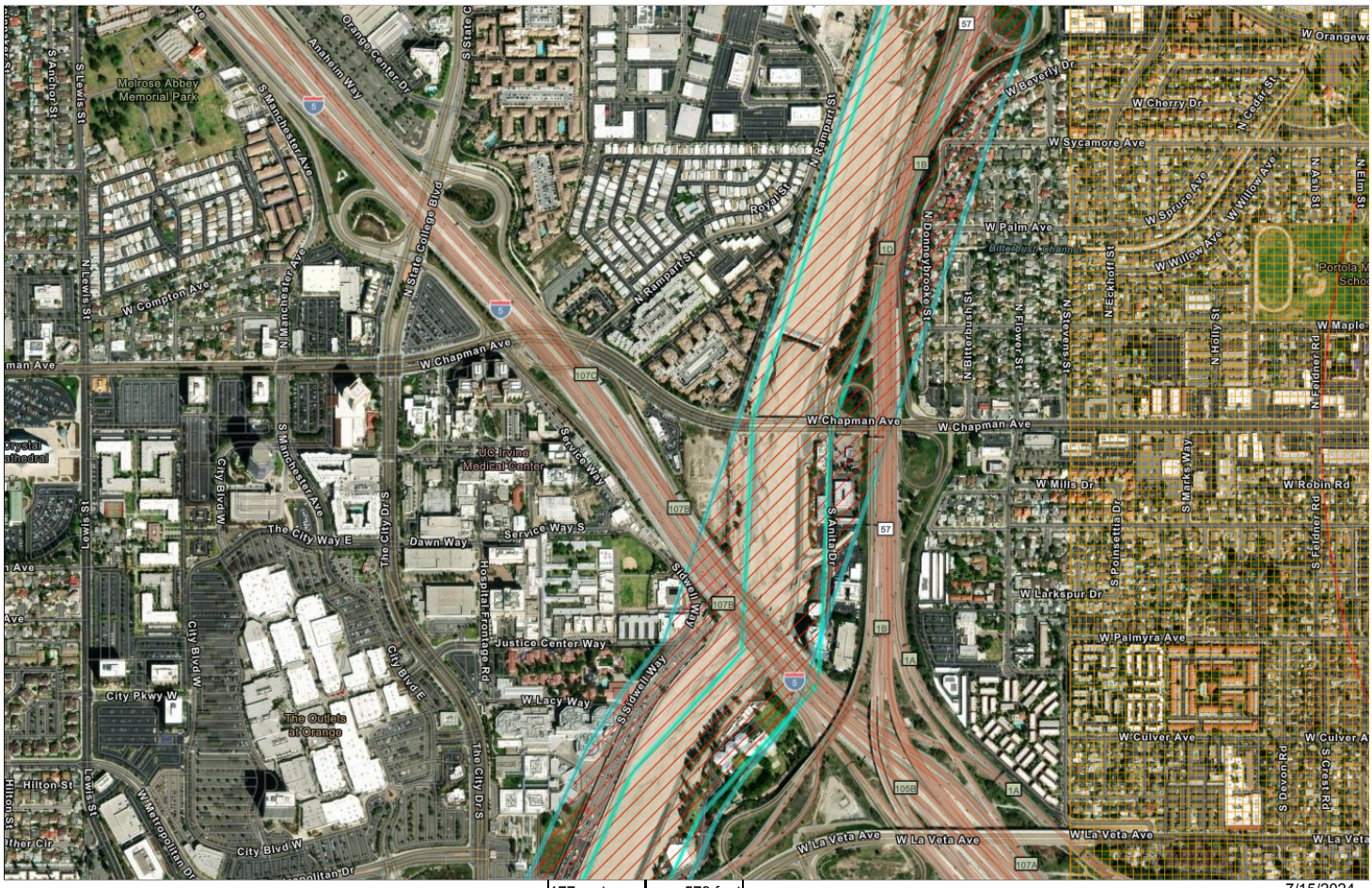
July 15, 2024

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

BIOS Map (Project Site)



177 meters | 579 feet

7/15/2024

Map Legend

California Natural Diversity Database (CNDDB) Commercial [ds85]

- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (circular)
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (circular)
- Terrestrial Comm. (80m)
- Terrestrial Comm. (specific)
- Terrestrial Comm. (non-specific)
- Terrestrial Comm. (circular)
- Aquatic Comm. (80m)
- Aquatic Comm. (specific)
- Aquatic Comm. (non-specific)
- Aquatic Comm. (circular)
- Multiple (80m)
- Multiple (specific)
- Multiple (non-specific)
- Multiple (circular)
- Sensitive EO's (Commercial only)

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Anaheim (3311778))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia villosa var. aurita chaparral sand-verbena	PDNYC010P1	None	None	G5T2?	S2	1B.1
Anniella stebbinsi Southern California legless lizard	ARACC01060	None	None	G3	S3	SSC
Astragalus hornii var. hornii Horn's milk-vetch	PDFAB0F421	None	None	GUT1	S1	1B.1
Atriplex parishii Parish's brittlescale	PDCHE041D0	None	None	G1G2	S1	1B.1
Bombus crotchii Crotch's bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
Bombus pensylvanicus American bumble bee	IIHYM24260	None	None	G3G4	S2	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S4	
Centromadia parryi ssp. australis southern tarplant	PDAST4R0P4	None	None	G3T2	S2	1B.1
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
Euphydryas editha quino quino checkerspot butterfly	IILEPK405L	Endangered	None	G4G5T1T2	S1S2	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S2	FP
Nasturtium gambelii Gambel's water cress	PDBRA270V0	Endangered	Threatened	G1	S1	1B.1
Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS	AFCHA0209J	Endangered	Candidate Endangered	G5T1Q	S1	
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G4	S4	SSC
Polioptila californica californica coastal California gnatcatcher	ABPBJ08081	Threatened	None	G4G5T3Q	S2	SSC
Sidalcea neomexicana salt spring checkerbloom	PDMAL110J0	None	None	G4	S2	2B.2
Spea hammondii western spadefoot	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC
Symphyotrichum defoliatum San Bernardino aster	PDASTE80C0	None	None	G2	S2	1B.2

Record Count: 19

APPENDIX D

CULTURAL RESOURCES ASSESSMENT

PARTNER
Engineering and Science, Inc.

January 5, 2018

Mr. Tom Bergerson
Principal
Architects Orange
144 North Orange Street
Orange, CA 92866

RE: Cultural Resources Assessment
2920 and 3000 West Chapman Avenue
City of Orange, Orange County, CA
Proposal Number: 17-201864.1

Dear Mr. Bergerson:

Partner Engineering and Science, Inc. (Partner) is pleased to provide the results of the *Cultural Resources Assessment* for the abovementioned address (the "subject property"). This Assessment is compliant with California Public Resources Code (PRC) Section 5024.1, Sections 21083.2 and 21084.1 of the California Environmental Quality Act (CEQA) (California PRC Section 21000 et. seq.), and Section 15064.5 of the CEQA Guidelines (California Code of Regulations Section 15000 et. seq.). PRC Section 5024.1 requires the identification and evaluation of historical resources that may be affected by a proposed project.

The project includes the development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be removed and replaced. This assessment included a site reconnaissance as well as research and interviews with representatives of the public, property ownership, site manager, and regulatory agencies. An attached assessment was made, conclusions stated, and recommendations outlined.

No cultural resources have been identified on the property through either the records search, literature review, or by pedestrian survey. Based on research with historic aerial photographs, the immediate vicinity of the project area remained undeveloped until the 1950s and the Denny's restaurant was built between 1967 and 1972. Although the structure was not formally evaluated, it does not appear to be an historical resource under CEQA nor the City of Orange guidelines due to various, electrical, plumbing, building, and signage alterations in recent years.

PARTNER
Engineering and Science, Inc.

Partner has no present or contemplated future ownership interest or financial interest in the real estate that is the subject of this assessment; and Partner has no personal interest with respect to the subject matter of the assessment of the parties involved and Partner has no relationship with the property or the owners thereof which would prevent an independent analysis of the environmental or other conditions of the property.

We appreciate the opportunity to provide environmental services to you. If you have any questions concerning this report, or if we can assist you in any other matter, please contact me at (248) 663-5694.

Sincerely,

Susan A. Cook
Technical Director – NEPA Services

Jenny Redlin
Relationship Manager

CULTURAL RESOURCES ASSESSMENT FOR THE MARRIOTT WEST CHAPMAN PROJECT

CITY OF ORANGE, ORANGE COUNTY, CALIFORNIA

PREPARED FOR:

PARTNER ENGINEERING AND SCIENCE, INC.
35055 West Twelve Mile Road, Suite 225
Farmington Hills, MI 48331
Contact: Susan Cook

PREPARED BY:

Contact: Liz Denniston

DUDEK
38 North Marengo Avenue
Pasadena, California 91101

JANUARY 2018

NATIONAL ARCHAEOLOGICAL DATABASE (NADB) INFORMATION

Authors:	Liz Denniston, M.A., RPA
Firm:	Dudek
Project Proponent:	Partner Engineering and Science, Inc. 35055 West Twelve Mile Road, Suite 225 Farmington Hills, MI 48331
Report Date:	January 2018
Report Title:	Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California
Type of Study:	Cultural Resource Assessment
New Resources:	N/A
Updated Sites:	N/A
USGS Quads:	Anaheim, CA 1:24,000; Township (T) 4S / Range (R) 10W / Section (S) 36
Acreage:	4.5 acres
Permit Numbers:	N/A
Keywords:	Marriott, CEQA, City of Los Angeles, Gabrielino/Tongva, Intensive Pedestrian Survey, Negative Results

EXECUTIVE SUMMARY

Dudek was retained by Partner Engineering and Science, Inc. (Partner Engineering) to conduct a cultural resources study in support of the Marriott West Project (project). This cultural resources study included the following components: (1) a California Historical Resources Information System (CHRIS) records search covering the proposed project sites plus a 1-mile radius at the South Central Coast Information Center (SCCIC), (2) a review of the California Native American Heritage Commission's (NAHC's) Sacred Lands File, (3) a Phase I pedestrian survey of the project area for cultural resources, and (4) recommendations.

This study is compliant with California Public Resources Code (PRC) Section 5024.1, Sections 21083.2 and 21084.1 of the California Environmental Quality Act (CEQA) (California PRC Section 21000 et. seq.), and Section 15064.5 of the CEQA Guidelines (California Code of Regulations Section 15000 et. seq.). PRC Section 5024.1 requires the identification and evaluation of historical resources that may be affected by a proposed project.

The project includes the development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be removed and replaced.

On December 4, 2017, Dudek gathered information about the project site and surrounding 1.0-mile (1,609 m) search buffer from the South Central Coastal Information Center and requested a search of the Sacred Lands Files from the Native American Heritage Commission. A response letter was received via email from the NAHC on January 4, 2018, stating that the results of the Sacred Lands File search failed to indicate the presence of Native American cultural resources in the immediate project area. The NAHC also provided a list of 23 Native American groups and individuals who may have knowledge of cultural resources in the project area. Letters were sent to each of the 23 representatives January 4, 2018. No responses have been received to date.

No cultural resources have been identified on the property through either the records search, literature review, or by pedestrian survey. Based on research with historic aerial photographs, the immediate vicinity of the project area remained undeveloped until the 1950s and the Denny's restaurant was built between 1967 and 1972. Although the structure was not formally evaluated, it does not appear to be an historical resource under CEQA nor the City of Orange guidelines due to various, electrical, plumbing, building, and signage alterations in recent years.

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1 INTRODUCTION

Dudek was retained by Partner Engineering and Science, Inc. (Partner Engineering) to conduct a cultural resources study in support of the Marriott West Project (project). This cultural resources study included the following components: (1) a California Historical Resources Information System (CHRIS) records search covering the proposed project sites plus a 1-mile radius at the South Central Coast Information Center (SCCIC), (2) a review of the California Native American Heritage Commission's (NAHC's) Sacred Lands File, (3) a Phase I pedestrian survey of the project area for cultural resources, and (4) recommendations.

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1.1 Project Personnel

Dudek Archaeologist Liz Denniston, M.A., Registered Professional Archaeologist (RPA), managed the study and authored the report. This report was reviewed for quality assurance/quality control by Architectural Historian Samantha Murray, MA, RPA. Ms. Denniston exceed the Secretary of the Interior's Professional Qualifications Standards (PQS, 36 CFR Part 61) archaeology and Ms. Murray in both architectural history and archaeology.

1.2 Proposed Project Work

The project includes the development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be removed and replaced.

1.3 Project Location

The project area is located within the western portion of City of Orange, Orange County, California. It is bound on the north by West Chapman Avenue, the east by the Santa Ana River, and the southwest by Interstate 5. Specifically, the project area is within Section 36 of Township 4S, Range 10W as depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim topographic quadrangle (Figure 1).

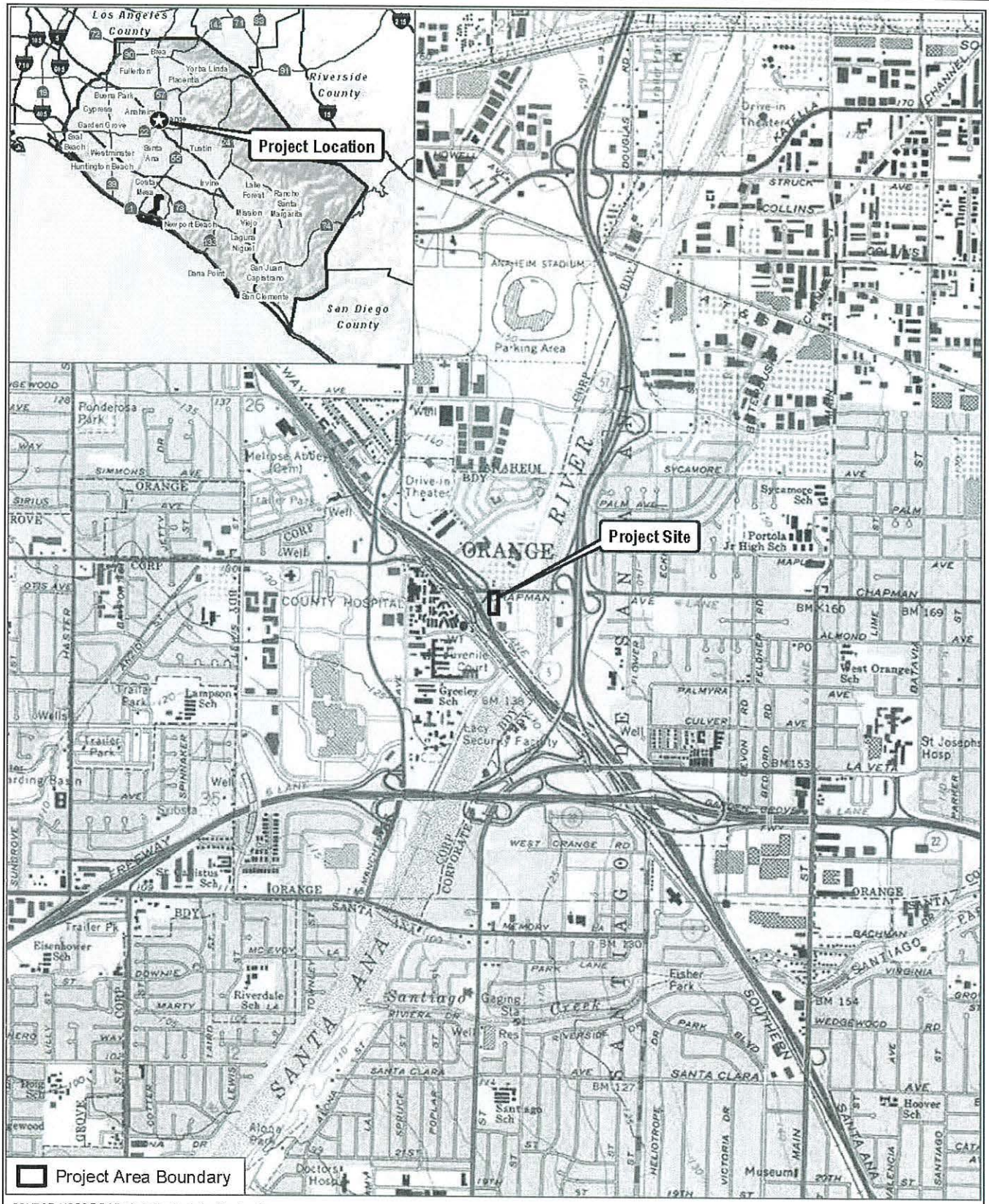


FIGURE 1
Project Location
Marriott West Chapman

2 REGULATORY SETTING

2.1 State

2.1.1 California Environmental Quality Act

2.1.1.1 The California Register of Historic Resources (Public Resources Code section 5020 et seq.)

In California, the term "historical resource" includes but is not limited to "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (California Public Resources Code section 5020.1(j)). In 1992, the California legislature established the California Register of Historical Resources (CRHR) "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (California Public Resources Code section 5024.1(a)). A resource is eligible for listing in the CRHR if the State Historical Resources Commission determines that it is a significant resource and that it meets any of the following National Register of Historic Places (NRHP) criteria:

1. Associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. Associated with the lives of persons important in our past.
3. 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.
4. Has yielded, or may be likely to yield, information important in prehistory or history.

(California Public Resources Code section 5024.1(c).) Resources less than 50 years old are not considered for listing in the CRHR, but may be considered if it can be demonstrated that sufficient time has passed to understand the historical importance of the resource (see 14 CCR, section 4852(d)(2)).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing on the NRHP are automatically listed on the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys. The State Historic Preservation Officer maintains the CRHR.

2.1.1.2 California Environmental Quality Act Statues and Guidelines

As described further below, the following CEQA statutes and CEQA Guidelines are relevant to the analysis of archaeological and historic resources:

1. California Public Resources Code section 21083.2(g): Defines "unique archaeological resource."
2. California Public Resources Code section 21084.1 and CEQA Guidelines section 15064.5(a): Defines historical resources. In addition, CEQA Guidelines section 15064.5(b) defines the phrase "substantial adverse change in the significance of an historical resource. It also defines the circumstances when a project would materially impair the significance of a historical resource.
3. California Public Resources Code section 5097.98 and CEQA Guidelines section 15064.5(e): These statutes sets forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony.
4. California Public Resources Code sections 21083.2(b)-(c) and CEQA Guidelines section 15126.4: These statutes and regulations provide information regarding the mitigation framework for archaeological and historic resources, including options of preservation-in-place mitigation measures; identifies preservation-in-place as the preferred manner of mitigating impacts to significant archaeological sites.

Under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an historical resource" (California Public Resources Code section 21084.1; CEQA Guidelines section 15064.5(b)). An "historical resource" is any site listed or eligible for listing in the CRHR. The CRHR listing criteria are intended to examine whether the resource in question: (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 pre-history or history.

The term "historical resource" also includes any site described in a local register of historic resources, or identified as significant in a historical resources survey (meeting the requirements of California Public Resources Code section 5024.1(q)).

CEQA also applies to "unique archaeological resources". Public Resources Code section 21083.2(g) defines a "unique archaeological resource" as any 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 historic event or person.

All historical resources and unique archaeological resources – as defined by statute – are presumed to be historically or culturally significant for purposes of CEQA (California Public Resources Code section 21084.1; CEQA Guidelines section 15064.5(a)). The lead agency is not precluded from determining that a resource is a historical resource even if it does not fall within this presumption (California Public Resources Code section 21084.1; CEQA Guidelines section 15064.5(a)). A site or resource that does not meet the definition of "historical resource" or "unique archaeological resource" is not considered significant under CEQA and need not be analyzed further. (Public Resources Code section 21083.2(a); CEQA Guidelines section 15064.5(c)(4)).

Under CEQA any significant cultural impact results from a "substantial adverse change in the significance of an historical resource [including a unique archaeological resource]" due to the "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines section 15064.5(b)(1); California Public Resources Code section 5020.1(q)). In turn, the significance of a historical resource is materially impaired when a project:

1. Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or
2. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
3. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA.

CEQA Guidelines section 15064.5(b)(2).

Pursuant to these sections, the CEQA first evaluates whether a project site contains any "historical resources," then assesses whether that project will cause a substantial adverse change in the significance of a historical resource such that the resource's historical significance is materially impaired.

When a project significantly affects a unique archeological resources, CEQA imposes special mitigation requirements. Specifically, "[i]f it can be demonstrated that a project will cause damage to a unique archeological resource, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. Examples of that treatment, in no order of preference, may include, but are not limited to, any of the following:"

1. "Planning construction to avoid archeological sites."
2. "Deeding archeological sites into permanent conservation easements."
3. "Capping or covering archeological sites with a layer of soil before building on the sites."
4. "Planning parks, greenspace, or other open space to incorporate archeological sites."

Pub. Resources Code section 21083.2(b)(1)-(4).

If these "preservation in place" options are not feasible, mitigation may be accomplished through data recovery. (Pub.Res. Code § 21083.2(d); CEQA Guidelines § 15126.4(b)(3)(C).) Public Resources Code section 21083.2(d) states that "[e]xcavation as mitigation shall be restricted to those parts of the unique archeological resource that would be damaged or destroyed by the project. Excavation as mitigation shall not be required for a unique archeological resource if the lead agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the resource, if this determination is documented in the environmental impact report."

These same requirements are set forth in slightly greater detail in CEQA Guidelines section 15126.4(b)(3), as follows:

(A) Preservation in place is the preferred manner of mitigating impacts to archeological sites. Preservation in place maintains the relationship between artifacts and the archeological context. Preservation may also avoid conflict with religious or cultural values of groups associated with the site.

(B) Preservation in place may be accomplished by, but is not limited to, the following:

1. Planning construction to avoid archeological sites;
2. Incorporation of sites within parks, greenspace, or other open space;

3. Covering the archeological sites with a layer of chemically stable soil before building tennis courts, parking lots, or similar facilities on the site[; and]
4. Deeding the site into a permanent conservation easement.

(C) When data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provision for adequately recovering the scientifically consequential information from and about the historical resource, shall be prepared and adopted prior to any excavation being undertaken.

Note that, when conducting data recovery, "[i]f an artifact must be removed during project excavation or testing, curation may be an appropriate mitigation." (Ibid.) However, "[d]ata recovery shall not be required for an historical resource if the lead agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the archeological or historic resource, provided that determination is documented in the EIR and that the studies are deposited with the California Historical Resources Regional California State

2.1.1.3 Assembly Bill 52

Assembly Bill 52 of 2014 (AB 52) amended PRC Section 5097.94 and added PRC Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3.

Consultation with Native Americans

AB 52 formalizes the consultation process between lead agencies and tribal representatives, requiring the lead agency to initiate consultation with California Native American groups that are traditionally and culturally affiliated with the project. This includes tribes that may not be federally recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or EIR.

Tribal Cultural Resources

Section 4 of AB 52 adds Sections 21074 (a) and (b) to the PRC, addressing tribal cultural resources and cultural landscapes. Section 21074 (a) defines tribal cultural resources as one of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    a. Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Section 1 (a)(9) of AB 52 establishes that "a substantial adverse change to a tribal cultural resource has a significant effect on the environment." Effects on tribal cultural resources should be considered under CEQA. Section 6 of AB 52 adds Section 21080.3.2 to the PRC, which states that parties may propose mitigation measures "capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource." Further, if a California Native American tribe requests consultation regarding project alternatives, mitigation measures, or significant effects to tribal cultural resources, the consultation shall include those topics (PRC Section 21080.3.2[a]). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (PRC Section 21082.3[a]). Information Center." (CEQA Guidelines section 15126.4(b)(3)(D).)

2.1.1.4 Native American Historic Cultural Sites (California Public Resources Code section 5097 et seq.)

The Native American Historic Resources Protection Act (Public Resources Code section 5097, et seq.) addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and establishes the NRHC to resolve disputes regarding the disposition of such remains. In addition, the Native American Historic Resource Protection Act makes it a misdemeanor punishable by up to 1 year in jail to deface or destroy an Indian historic or cultural site that is listed or may be eligible for listing in the CRHR.

2.1.1.5 California Native American Graves Protection and Repatriation Act

The California Native American Graves Protection and Repatriation Act (California Repatriation Act), enacted in 2001, requires all state agencies and museums that receive state funding and that have possession or control over collections of human remains or cultural items, as defined, to complete an inventory and summary of these remains and items on or before January 1, 2003, with certain exceptions. The California Repatriation Act also provides a process for the identification and repatriation of these items to the appropriate tribes.

2.1.2 California Health and Safety Code

CEQA Guidelines section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. As described below, these procedures are detailed in PRC section 5097.98.

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. Health and Safety Code section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the County coroner has examined the remains (section 7050.5b). PRC Section 5097.98 also outlines the process to be followed in the event that remains are discovered. If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the NAHC within 24 hours (section 7050.5c). The NAHC will notify the Most Likely Descendant (MLD). With the permission of the landowner, the MLD may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the MLD by the NAHC. The MLD may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

2.2 Local

2.2.1 City of Orange

As stated in the May, 2017, municipal code for the City of Orange, the Historic Districts portion was developed to (Orange Municipal Code Section 17.17, added by Ordinance No. 178,402, effective April 2, 2007):

> The City Council has determined that the spirit, character and history of the City, State, and Nation are reflected in the historic structures, improvements, natural features, sites, and areas of significance located within the City, and that in the face of ever-increasing pressures of modernization, cultural historic resources and historic districts located within the City are threatened with alteration, removal or demolition.
>
> These structures and districts represent the City's unique historical, social and cultural foundations, and should be preserved as living parts of community life and development in order to build a greater understanding of the City's past and to give future generations the opportunity to appreciate, understand and enjoy the City's rich heritage.

Section 17.17.050 states that an historic district may be established to preserve landmarks and areas exemplary of architectural, archaeological, cultural, economic, social, or historical value if the landmark or area meets the following criteria:

A. The resource exemplifies or reflects special elements of the City's cultural, social, economic, political, aesthetic, engineering, architectural or natural history and possesses an integrity of location, design, setting, materials, workmanship, feeling and association; and

   1. It embodies distinctive characteristics of a style, type, period or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship; or

   2. It contributes to the significance of an historic area, being a geographically definable area possessing a concentration of historic or scenic properties or thematically related grouping of properties which contribute to each other and are unified aesthetically, by plan or physical development; or

   3. It reflects significant geographical patterns, including those associated with different eras of settlement and growth, particular transportation modes, or distinctive examples of park or community planning; or

   4. It embodies elements of architectural design, detail, materials, or craftsmanship that represent a significant structural or architectural achievement or innovation; or

   5. It has a unique location or singular physical characteristic or is a view or vista representing an established and familiar visual feature of a neighborhood, community or the City of Orange.

B. It is one of the few remaining examples in the City, region, state, or nation possessing distinguishing characteristics of an architectural or historical type, or specimen; or

C. It is identified with persons or events significant in local, state or national history; or

D. It is representative of the work of a notable builder, designer or architect.

3 SETTING

3.1 Environment

The project alignment is located at the junction of two major roadways and the channelized Santa Ana River. In addition to the disturbances associated with the construction of the above, the entire project area has been graded and developed. The geologic units within the alignment and surrounding vicinity have been mapped as Quaternary alluvium and marine deposits, with alluvium and terrace rock being the two primary types (Jennings 1977, US Geological Survey 2008). Additional geologic material includes non-glacial lake or marine deposits (US Geological Survey 2010).

3.2 Cultural Context

Evidence for continuous human occupation in the region spans the last 10,000 years. Various attempts to parse out variability in archaeological assemblages over this broad time frame have led to the development of several cultural chronologies; some of these are based on geologic time, most are based on temporal trends in archaeological assemblages, and others are interpretive reconstructions. Each of these reconstructions describes essentially similar trends in assemblage composition in more or less detail. This research employs a common set of generalized terms used to describe chronological trends in assemblage composition: Paleoindian (pre-5500 BC), Archaic (8000 BC–AD 500), Late Prehistoric (AD 500–1750), and Ethnohistoric (post-AD 1750).

3.2.1 Paleoindian (pre-5500 BC)

Evidence for Paleoindian occupation in the region is tenuous; the knowledge of associated cultural pattern(s) is informed by a relatively sparse body of data that has been collected from within an area extending from coastal San Diego through the Mojave Desert and beyond. One of the earliest dated archaeological assemblages in this area (excluding the Channel Islands) derives from SDI-4669/W-12, in La Jolla, San Diego County. A human burial from SDI-4669 was radiocarbon dated to 9,590–9,920 years before present (95.4% probability) (Hector 2006). The burial is part of a larger site complex that contained more than 29 human burials associated with an assemblage that fits the Archaic profile (i.e., large amounts of groundstone, battered cobbles, and expedient flake tools). In contrast, typical Paleoindian assemblages include large stemmed projectile points, high proportions of formal lithic tools, bifacial lithic reduction strategies, and relatively small proportions of groundstone tools. Prime examples of this pattern are sites that were studied by Emma Lou Davis (1978) on China Lake Naval Air Weapons Station near Ridgecrest, California. These sites contained fluted and unfluted stemmed points and large numbers of formal flake tools (e.g., shaped scrapers, blades). Other typical Paleoindian sites include the Komodo site (MNO-679), a multicomponent fluted point site, and MNO-680, a single component Great Basined stemmed point site (Basgall et al. 2002). At MNO-679 and MNO-680, groundstone tools were rare, while finely made projectile points were common.

Warren et al. (2004) claimed that a biface manufacturing tradition present at the Harris site complex (SDI-149) is representative of typical Paleoindian occupation in the Southern California region that possibly dates between 10,365 and 8200 BC (Warren et al. 2004, p. 26). Termed San Dieguito (Rogers 1945), assemblages at the Harris site, located in the area now occupied by City of Escondido, are qualitatively distinct from most others in the region because the site has large numbers of finely made bifaces (including projectile points), formal flake tools, a biface reduction trajectory, and relatively small amounts of processing tools (Warren 1964, 1968). Despite the unique assemblage composition, the definition of San Dieguito as a separate cultural tradition is debated. Gallegos (1987) suggested that the San Dieguito pattern is simply an inland manifestation of a broader economic pattern. Gallegos' interpretation of San Dieguito has been widely accepted in recent years, in part because of the difficulty in distinguishing San Dieguito components from other assemblage constituents. In other words, it is easier to ignore San Dieguito as a distinct socioeconomic pattern than it is to draw it out of mixed assemblages.

The large number of finished bifaces (i.e., projectile points and non-projectile blades), along with large numbers of formal flake tools at the Harris site complex, is very different than nearly all other assemblages throughout the region, regardless of age. Warren et al. (2004) made this point, tabulating basic assemblage constituents for key early Holocene sites. Producing finely made bifaces and formal flake tools implies that relatively large amounts of time were spent for tool manufacture. Such a strategy contrasts with the expedient flake-based tools and cobble-core reduction strategy that typifies non-San Dieguito Archaic sites. It can be inferred from the uniquely high degree of San Dieguito assemblage formality that the Harris site complex represents a distinct economic strategy from non-San Dieguito assemblages.

If San Dieguito truly represents a distinct socioeconomic strategy from the non-San Dieguito Archaic processing regime, its rarity implies that it was not only short-lived, but that it was not as economically successful as the Archaic strategy. Such a conclusion would fit with the general trends in Southern California deserts, wherein hunting-related tools are replaced by processing tools during the early Holocene (Basgall and Hall 1990).

3.2.2 Archaic (8000 BC–AD 500)

The more than 1500-year overlap between the presumed age of Paleoindian occupations and the Archaic period highlights the difficulty in defining a cultural chronology in the region. If San Dieguito is the only recognized Paleoindian component in the region, then the dominance of hunting tools implies that it derives from Great Basin adaptive strategies and is not necessarily a local adaptation. Warren et al. (2004) admitted as much, citing strong desert connections with San Dieguito. Thus, the Archaic pattern is the earliest local socioeconomic adaptation in the region (Hale 2001, 2009).

The Archaic pattern is relatively easy to define with assemblages that consist primarily of processing tools: millingstones, handstones, battered cobbles, heavy crude scrapers, incipient flake-based tools, and cobble-core reduction. These assemblages occur in all environments across the region, with little variability in tool

composition. Low assemblage variability over time and space among Archaic sites has been equated with cultural conservatism (Byrd and Reddy 2002; Warren 1968; Warren et al. 2004). Despite enormous amounts of archaeological work at Archaic sites, little change in assemblage composition occurs until the bow and arrow is adopted at around AD 500, as well as ceramics at approximately the same time (Griset 1996; Hale 2009). Even then, assemblage formality remains low. After the bow is adopted, small arrow points appear in large quantities, and already low amounts of formal flake tools are replaced by increasing amounts of expedient flake tools. Similarly, shaped millingstones and handstones decrease in proportion relative to expedient, unshaped groundstone tools (Hale 2009). Thus, the terminus of the Archaic period is equally as hard to define as its beginning because basic assemblage constituents and patterns of manufacturing investment remain stable, complimented only by the addition of the bow and ceramics.

3.2.3 Late Prehistoric (AD 500–1750)

The period of time following the Archaic and prior to Ethnohistoric times (AD 1750) is commonly referred to as the Late Prehistoric (Rogers 1945; Warren et al. 2004). However, several other subdivisions continue to be used to describe various shifts in assemblage composition, including the addition of ceramics and cremation practices. The post-AD 1450 period is called the San Luis Rey Complex (Meighan and True 1977). Rogers (1929) also subdivided the last 1,000 years into the Yuman II and III cultures, based on the distribution of ceramics. Despite these regional complexes, each is defined by the addition of arrow points and ceramics and the widespread use of bedrock mortars. Vagaries in the appearance of the bow and arrow and ceramics make the temporal resolution of the San Luis Rey complex difficult. For this reason, the term Late Prehistoric is well-suited to describe the last 1,500 years of prehistory in the region.

Temporal trends in socioeconomic adaptations during the Late Prehistoric period are poorly understood. This is partly due to the fact that the fundamental Late Prehistoric assemblage is very similar to the Archaic pattern but includes arrow points and large quantities of fine debitage from producing arrow points, ceramics, and cremations. While steatite was commonly the material of choice for vessel production, it was generally replaced near the time of missionization by locally procured clay to produce ceramic vessels. The appearance of mortars and pestles is difficult to place in time because most mortars are on bedrock. Some argue that the Ethnohistoric intensive acorn economy extends as far back as AD 500 (Bean and Shipek 1978). However, there is no substantial evidence that reliance on acorns, and the accompanying use of mortars and pestles, occurred prior to AD 1400. True (1980) argued that acorn processing and ceramic use in the region did not occur until the San Luis Rey pattern emerged after approximately AD 1450.

3.2.4 Ethnohistoric (post-AD 1750)

The history of the Native American communities prior to the mid-1700s has largely been reconstructed through later mission-period and early ethnographic accounts. The first records of the Native American inhabitants of the region come predominantly from European merchants, missionaries, military personnel, and explorers. These brief, and generally peripheral, accounts were prepared with the intent of furthering

respective colonial and economic aims and were combined with observations of the landscape. They were not intended to be unbiased accounts regarding the cultural structures and community practices of the newly encountered cultural groups. The establishment of the missions in the region brought more extensive documentation of Native American communities, though these groups did not become the focus of formal and in-depth ethnographic study until the early twentieth century (Bean and Shipek 1978; Boscana 1846; Fages 1937; Geiger and Meighan 1976; Harrington 1934; White 1963). The principal intent of these researchers was to record the precontact, culturally specific practices, ideologies, and languages that had survived the destabilizing effects of missionization and colonialism. This research, often understood as "salvage ethnography," was driven by the understanding that traditional knowledge was being lost due to the impacts of modernization and cultural assimilation. Alfred Kroeber applied his "memory culture" approach (Lightfoot 2005, p. 32) by recording languages and oral histories within the region. Ethnographic research by Dubois, Kroeber, Harrington, Spier, and others during the early twentieth century seemed to indicate that traditional cultural practices and beliefs survived among local Native American communities.

It is important to note that even though there were many informants for these early ethnographies who were able to provide information from personal experiences about Native American life before European immigration, a significantly large proportion of these informants were born after 1850; therefore, the documentation of pre-contact, aboriginal culture was being increasingly supplied by individuals born in California after considerable contact with Europeans. This is an important issue to note when examining these ethnographies, since considerable culture change had undoubtedly occurred by 1850 among the Native American survivors of California.

3.3 Ethnographic Overview

The project area is located within the Gabrielino (or Tongva) ethnographic boundary (Kroeber 1925). A brief discussion is presented below.

3.3.1 Gabrielino/Tongva

The archaeological record indicates that the Gabrielino arrived in the Los Angeles Basin around 500 B.C. Many contemporary Gabrielino identify themselves as descendants of the indigenous people living across the plains of the Los Angeles Basin and adjacent areas and use the native term Tongva to describe themselves (King 1994). This term is used in the remainder of this section to refer to the pre-contact inhabitants of the Los Angeles Basin and their descendants. Surrounding native groups included the Chumash and Tataviam to the northwest, the Serrano and Cahuilla to the northeast, and the Juaneño and Luiseño to the southeast.

The name "Gabrielino" denotes those people who were administered by the Spanish from the San Gabriel Mission, which included people from the Gabrielino area proper as well as other social groups (Bean and Smith 1978; Kroeber 1925). Therefore, in the post-Contact period, the name does not necessarily identify a specific ethnic or tribal group. The names by which Native Americans in southern California identified themselves

have, for the most part, been lost. Many modern Gabrielino identify themselves as descendants of the indigenous people living across the plains of the Los Angeles Basin and refer to themselves as the Tongva (King 1994). This term is used in the remainder of this section to refer to the pre-Contact inhabitants of the Los Angeles Basin and their descendants.

Tongva lands encompassed the greater Los Angeles Basin and three Channel Islands, San Clemente, San Nicolas, and Santa Catalina. The Tongva established large, permanent villages in the fertile lowlands along rivers and streams, and in sheltered areas along the coast, stretching from the foothills of the San Gabriel Mountains to the Pacific Ocean. A total tribal population has been estimated of at least 5,000 (Bean and Smith 1978), but recent ethnohistoric work suggests a number approaching 10,000 (O'Neil 2002). Houses constructed by the Tongva were large, circular, domed structures made of willow poles thatched with tule that could hold up to 50 people (Bean and Smith 1978). Other structures served as sweathouses, menstrual huts, ceremonial enclosures, and probably communal granaries. Cleared fields for races and games, such as lacrosse and pole throwing, were created adjacent to Tongva villages (McCawley 1996). Archaeological sites composed of villages with various sized structures have been identified.

The Gabrielino community of Siutcanga is believed to have been located at Rancho El Encino, a 4,461 acre tract of land granted to three ex-mission Indians named Ramón, Francisco, and Roque. When the Portolá expedition passed through the San Fernando Valley in 1769, the explorers stopped at a large freshwater pool located near "a populous Indian village" (McCawley 1996: 38). It is believed that the Spanish explorers stopped in an area near present-day Encino, and historians have suggested that the village observed by the Spaniards was in fact Siutcanga. In the mid-1980s, archaeological investigations in Encino at the intersection of Ventura and Balboa Boulevards revealed evidence of a large village site (CA-LAN-43) that may have been Siutcanga. The site is situated on an ancient streambed and included a cemetery with both human and animal burials. Radiocarbon testing dated the site to as early as 5,000 B.C. Most of this site has since been destroyed by development (McCawley 1996).

The Tongva subsistence economy was centered on gathering and hunting. The surrounding environment was rich and varied, and the tribe exploited mountains, foothills, valleys, deserts, riparian, estuarine, and open and rocky coastal eco-niches. Like that of most native Californians, acorns were the staple food (an established industry by the time of the early Intermediate Period). Acorns were supplemented by the roots, leaves, seeds, and fruits of a wide variety of flora (e.g., islay, cactus, yucca, sages, and agave). Fresh water and saltwater fish, shellfish, birds, reptiles, and insects, as well as large and small mammals, were also consumed (Bean and Smith 1978:546; Kroeber 1925; McCawley 1996).

A wide variety of tools and implements were used by the Tongva to gather and collect food resources. These included the bow and arrow, traps, nets, blinds, throwing sticks and slings, spears, harpoons, and hooks. Groups residing near the ocean used oceangoing plank canoes and tule balsa canoes for fishing, travel, and trade between the mainland and the Channel Islands (McCawley 1996).

Tongva people processed food with a variety of tools, including hammerstones and anvils, mortars and pestles, manos and metates, strainers, leaching baskets and bowls, knives, bone saws, and wooden drying racks. Food was consumed from a variety of vessels. Catalina Island steatite was used to make ollas and cooking vessels (Blackburn 1963; Kroeber 1925; McCawley 1996).

At the time of Spanish contact, the basis of Tongva religious life was the Chinigchinich cult, centered on the last of a series of heroic mythological figures. Chinigchinich gave instruction on laws and institutions, and also taught the people how to dance, the primary religious act for this society. He later withdrew into heaven, where he rewarded the faithful and punished those who disobeyed his laws (Kroeber 1925). The Chinigchinich religion seems to have been relatively new when the Spanish arrived. It was spreading south into the Southern Takic groups even as Christian missions were being built and may represent a mixture of native and Christian belief and practices (McCawley 1996).

Deceased Tongva were either buried or cremated, with inhumation more common on the Channel Islands and the neighboring mainland coast and cremation predominating on the remainder of the coast and in the interior (Harrington 1942; McCawley 1996). Cremation ashes have been found in archaeological contexts buried within stone bowls and in shell dishes (Ashby and Winterbourne 1966), as well as scattered among broken ground stone implements (Cleland et al. 2007). Archaeological data such as these correspond with ethnographic descriptions of an elaborate mourning ceremony that included a wide variety of offerings, including seeds, stone grinding tools, otter skins, baskets, wood tools, shell beads, bone and shell ornaments, and projectile points and knives. Offerings varied with the sex and status of the deceased (Johnston 1962; McCawley 1996; Reid 1926). At the behest of the Spanish missionaries, cremation essentially ceased during the post-Contact period (McCawley 1996).

3.4 Historic Context

Post-contact history for the State of California is generally divided into three periods: the Spanish Period (1769–1822), Mexican Period (1822–1848), and American Period (1848–present). Although Spanish, Russian, and British explorers visited the area for brief periods between 1529 and 1769, the Spanish Period in California begins with the establishment in 1769 of a settlement at San Diego and the founding of Mission San Diego de Alcalá, the first of 21 missions constructed between 1769 and 1823. Independence from Spain in 1821 marks the beginning of the Mexican Period, and the signing of the Treaty of Guadalupe Hidalgo in 1848, ending the Mexican–American War, signals the beginning of the American Period when California became a territory of the United States.

3.4.1 Spanish Period (1769–1822)

Spanish explorers made sailing expeditions along the coast of southern California between the mid-1500s and mid-1700s. In search of the legendary Northwest Passage, Juan Rodríquez Cabríllo stopped in 1542 at present-day San Diego Bay. With his crew, Cabríllo explored the shorelines of present Catalina Island as well as San

Pedro and Santa Monica bays. Much of the present-day California and Oregon coastline was mapped and recorded in the next half-century by Spanish naval officer Sebastián Vizcaíno. Vizcaíno's crew also landed on Santa Catalina Island and at San Pedro and Santa Monica bays, giving each location its long-standing name. The Spanish crown laid claim to California based on the surveys conducted by Cabríllo and Vizcaíno (Bancroft 1885; Gumprecht 1999).

More than 200 years passed before Spain began the colonization and inland exploration of Alta California. The 1769 overland expedition by Captain Gaspar de Portolá marks the beginning of California's Historic period, occurring just after the King of Spain installed the Franciscan Order to direct religious and colonization matters in assigned territories of the Americas. With a band of 64 soldiers, missionaries, Baja (lower) California Native Americans, and Mexican civilians, Portolá established the Presidio of San Diego, a fortified military outpost, as the first Spanish settlement in Alta California. In July of 1769, while Portolá was exploring southern California, Franciscan Fr. Junípero Serra founded Mission San Diego de Alcalá at Presidio Hill, the first of the 21 missions that would be established in Alta California by the Spanish and the Franciscan Order between 1769 and 1823.

The Portolá expedition first reached the present-day boundaries of Los Angeles in August 1769, thereby becoming the first Europeans to visit the area. Father Crespi named "the campsite by the river Nuestra Señora la Reina de los Angeles de la Porciúncula" or "Our Lady the Queen of the Angeles of the Porciúncula." Two years later, Friar Junípero Serra returned to the valley to establish a Catholic mission, the Mission San Gabriel Arcángel, on September 8, 1771 (Kyle 2002).

3.4.2 Mexican Period (1822–1848)

A major emphasis during the Spanish Period in California was the construction of missions and associated presidios to convert the Native American population to Christianity and integrated communal enterprise. Incentives were also provided to bring settlers to pueblos or towns, but just three pueblos were established during the Spanish Period, only two of which were successful and grew into California cities (San José and Los Angeles). Several factors kept growth within Alta California to a minimum, including the threat of foreign invasion, political dissatisfaction, and unrest among the indigenous population. After more than a decade of intermittent rebellion and warfare, New Spain (Mexico and the California territory) won independence from Spain in 1821. In 1822, the Mexican legislative body in California ended isolationist policies designed to protect the Spanish monopoly on trade, and decreed California ports open to foreign merchants (Dallas 1955).

Extensive land grants were established in the interior during the Mexican Period, in part to increase the population inland from the more settled coastal areas where the Spanish first concentrated their colonization efforts. Nine ranchos were granted between 1837 and 1846 in the future Orange County area (Middlebrook 2005). Among the first ranchos deeded within the future Orange County were Manuel Nieto's Rancho Las Bolsas (partially in future Los Angeles County), granted by Spanish Governor Pedro Fages in 1784, and the Rancho Santiago de Santa Ana, granted by Governor José Joaquín Arrillaga to José Antonio Yorba and Juan Pablo Peralta in 1810. The

secularization of the missions following Mexico's independence from Spain resulted in the subdivision of former mission lands and establishment of many additional ranchos.

During the supremacy of the ranchos (1834–1848), landowners largely focused on the cattle industry and devoted large tracts to grazing. Cattle hides became a primary southern California export, providing a commodity to trade for goods from the east and other areas in the United States and Mexico. The number of non-native inhabitants increased during this period because of the influx of explorers, trappers, and ranchers associated with the land grants. The rising California population contributed to the introduction and rise of diseases foreign to the Native American population, who had no associated immunities.

3.4.3 American Period (1848–Present)

War in 1846 between Mexico and the United States precipitated the Battle of Chino, a clash between resident *Californios* and Americans in the San Bernardino area. The Mexican–American War ended with the Treaty of Guadalupe Hidalgo in 1848, ushering California into its American Period.

California officially became a state with the Compromise of 1850, which also designated Utah and New Mexico (with present-day Arizona) as U.S. Territories (Waugh 2003). Horticulture and livestock, based primarily on cattle as the currency and staple of the rancho system, continued to dominate the southern California economy through 1850s. The Gold Rush began in 1848 and, with the influx of people seeking gold, cattle were no longer desired mainly for their hides but also as a source of meat and other goods. During the 1850s cattle boom, rancho *vaqueros* drove large herds from southern to northern California to feed that region's burgeoning mining and commercial boom. The cattle boom ended for southern California as neighboring states and territories drove herds to northern California at reduced prices. Operation of the huge ranchos became increasingly difficult, and droughts severely reduced their productivity (Cleland 2007).

3.5 Historic Context of the Project Area

Juan Pablo Grijalva first petitioned for the lands that became known as the *Rancho Santiago de Santa Ana* in 1801 (Pleasants 1931). Grijalva, however, died in 1806 and the petitioned lands went to his son-in-law, José Antonio Yorba and his grandson, Juan Pablo Peralta. Comprised of approximately 63,414-acres (256.63 km^2), the rancho extended from the Santa Ana River to the Santa Ana Mountains and encompassed the current cities of Santa Ana, Orange, Villa Park, Anaheim Hills, El Modena, Tustin, Costa Mesa, and a part of Irvine (Dominguez 1985). When Alta California was ceded to the United States by México with the signing of the Treaty of Guadalupe Hidalgo, many Californios lost titles to their lands. Grijalva's descendants, however, were able to retain ownership through marriages to Anglo-Americans.

In the 1860's, the Yorba family turned to the legal practice of attorneys Andrew Glassell, Alfred Chapman and Colonel George H. Smith to oversee the financial aspects of *Rancho Santiago de Santa Ana* (Dominguez 1985). After a drought in 1868, it was determined that there was not enough cash from the rancho to satisfy the

attorney fees owed. In lieu of these fees, a portion of the rancho, which would later become the City of Orange, was signed over to Glassell and Chapman (Brigandi 1997).

Glassell and Chapman held approximately 5,400 acres (22 km^2) along both sides of the Santiago Creek. Water was the key factor for the location of their townsite and it was originally known as Richland. Richland was built around a plaza, a unique design for townsites in southern California. By 1873, the townsite was large enough to require a post office. An application to build one was sent to Washington, but it was refused, because there was already a Richland, California in Sacramento County. A new name, Orange, was proposed and accepted (Brigandi 1997).

Orange incorporated on April 6, 1888. Being the only city in Orange County to be planned and built around a plaza, it earned the nickname "Plaza City". Due to the increasing demand for California-grown citrus, as well as the ongoing railroad rate wars of the time, the town experienced its first growth spurt during the last decade of the 19th century. Like most cities in Orange County, agriculture was central to the local economy, and growth thereafter was steady until the 1950s. With the development of a region-wide freeway system connecting Los Angeles with outlying areas like Orange, a second population boom occurred, spurring the construction of large housing tracts from the 1950s to the early 1970s (Brigandi 1997).

4 BACKGROUND RESEARCH

4.1 Literature Review

On December 4, 2017, Dudek completed a search of the California Historical Resources Information System (CHRIS) at the SCCIC, located on the campus of California State University, Fullerton. This search included mapped prehistoric, historical, and built-environment resources; Department of Parks and Recreation (DPR) site records; technical reports; archival resources; and ethnographic references. Additional consulted sources included historical maps of the project site, the NRHP, the CRHR, the California Historic Property Data File, and the lists of California State Historical Landmarks, California Points of Historical Interest, and the Archaeological Determinations of Eligibility. Confidential results of the records search are provided in Appendix A.

4.1.1 Previously Conducted Cultural Resource Studies

The SCCIC records indicate that 20 previous cultural resources technical investigations have been conducted within 1.0-mile (1,609 m) of the project site between 1975 and 2012. None of the 20 previous studies overlap with the project area but 2 are located adjacent to it. The remaining 18 investigations are located within the records search buffer. All 20 technical investigations are summarized in Table 1.

Table 1
Previous Technical Studies Within the One-Mile Search Buffer

Report Number (OR-)	Authors	Date	Title	Proximity
00270	Leonard, Nelson N. III and Mathew C. Hall	1975	Description and Evaluation of Cultural Resources Within the US Army Corps of Engineers' Santa Ana River Project	Outside
00801	Langenwalter, Paul E. and James Brock	1985	Phase II Archaeological Studies Prado Basin and the Lower Santa Ana River	Outside
00814	Romani, John F.	1982	Archaeological Survey Report for the Route I-5 Santa Ana Transportation Corridor, Route 405 in Orange County to Route 605 in Los Angeles County Pm 21.30/44.38; 0.00/6.85	Outside
00894	McKenna, Jeanette and Roger Hatheway	1988	Archaeological Survey of the Orange Drive-in Thester Property	Outside
01836	Padon, Beth	1998	Cultural Resource Review for Groundwater Replenishment System Program EIR/Tier I/EIS, Orange County Water District and County Sanitation Districts of Orange County	Outside
01898	Anonymous	1990	Finding of Effect Widening of Interstate 5 and Reconstruction of Interchanges Between State Routes 22/57 and 91 in the Cities of Santa Ana, Orange, Anaheim, Fullerton and Buena Park	Outside

Table 1
Previous Technical Studies Within the One-Mile Search Buffer

Report Number (OR-)	Authors	Date	Title	Proximity
01900	Hatheway, Roger G.	1987	Historical and Architectural Evaluation of Four Railroad Bridges, Lower Santa Ana River and Santiago Creek Orange County, California	Outside
02519	Houghtby, Michael A.	2001	Doj010427a, the Lacy Branch Jail Build Out, Orange County, Ca	Outside
02614	Padon, Beth	2002	Archaeological Archival and Field Review of the Juvenile Hall Project Anaheim USGS 7.5' Quadrangle, Orange County, California	Outside
02765	McKenna, Jeanette A.	2002	The Pinnacle at Uptown Orange	Adjacent
02853	Padon, Beth	2004	Archaeological Monitoring for the Probation/juvenile Hall 60-bed Expansion, Orange County, California	Outside
02899	McKenna, Jeanette A.	2003	Block at Orange Expansion Project	Outside
02917	Bonner, Wayne H.	2005	Cultural Resource Records Search and Site Visit Results for Cingular Telecommunications Facility Candidate Cm- 023-01 (oc-003-01) O.c. Medical, 300 South Flower Street, Orange, Orange County, California	Outside
03276	Kane, Diane	1998	Historic Architectural Survey Report for I-5 Hov Lane Improvement Project	Outside
03373	Arrington, Cindy and Nancy Sikes	2006	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project State of California: Volumes I and Ii	Adjacent
04017	Bonner, Wayne	2011	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate LA33523-A (Dupont Commercial), 2165 Dupont Drive, Anaheim, Orange County, California	Outside
04087	Salenius, Sylvia	1998	Program EIR/Tier 1 EIS, Groundwater Replenishment System	Outside
04259	Becker, Kenneth, Goodman, John, Sewell, Kristin, and Van Galder, Sarah	2007	Cultural Resources Monitoring Report, Orange County Water District Groundwater Replenishment System, Orange County, California	Outside
04266	Bissell, Ronald M.	2000	Cultural Resources Reconnaissance for the Groundwater Replenishment System, Orange County, California	Outside
04292	Meiser, M.K., Wallace, James, and Deitler, Sara	2012	Historic Property Survey Report, improvements to Interstate 5 (I-5) between State Route 55 and State Route 57	Outside

4.1.2 Previously Recorded Cultural Resources

The SCCIC records indicate that there have not been any resources recorded either within the project area or within 1.0-mile (1,609 m) of the project site.

4.2 Historic Aerial Review

Dudek consulted historic maps and aerial photographs to understand development of the project site and surrounding properties. Topographic maps are available from 1896 to the present and aerial images are available from 1952 to the present (NETR 2017). These images indicate that in 1896, the City of Orange was established to the east of the project area, with occasional structures present along the eastern edge of the Santa Ana River. In 1896, the Santa Ana Branch of the railroad is also present to the southwest. In 1901, a road is visible on the topographic map, bisecting the project area east by west. No major changes occur until 1935, when Santa Ana Boulevard is present to the southwest of the project area paralleling the railroad line. Additionally, by 1935, Chapman Avenue had been established to the north of the project area.

The project area itself remained agricultural land with a single homestead structure in the northwestern corner until 1963. At this time, Santa Ana Boulevard was expanded to become Interstate 5 (I-5), with an off ramp developed from I-5 to connect with Chapman Avenue. Between 1967 and 1972, the Denny's restaurant was built. The existing Motel 6 is not present until the 1980 aerial photograph.

4.3 Historic Structure Research

Historic aerial photographs of the project area indicate that the existing Denny's restaurant was built between 1967 and 1972, making it over 45 years old. The restaurant is Contemporary style and has modifications to the east and south sides to accommodate air conditioning and industrial additions (Figures 2 through 5). Further, this Denny's does not exhibit any of the hallmark mid-century Googie Style characteristics seen in other 1960s Denny's restaurants. Far more interesting and better examples of mid-century Denny's roadside architecture can be seen at Denny's restaurants throughout Southern California. Examples include: 530 Ramirez Street in Los Angeles; 665 N Mollison Avenue in El Cajon; 135 Avenida Navarro in San Clemente; 2627 E Colorado Blvd in Pasadena; and 2439 El Cajon Blvd in San Diego. Until recently, the City of Orange contained one of these mid-century Denny's restaurants at 1701 E Lomita Ave. It eventually became Earl's Home Cookin' and closed circa 2008 (RoadsideArchitecture.Com 2018). Although the structure was not formally evaluated, it does not appear to be an historical resource under CEQA nor the City of Orange guidelines. A review of online building permits indicates that the building was subject to various, electrical, plumbing, building, and signage alterations in recent years (Sungard Public Sector 2018). While the specifics of each permit are not provided online, the following past building alterations include mechanical alterations in 1989 (Permit Number [No.] 8906-805), unknown building modification in 1990 (Permit No. 9004-503), unknown building modifications in 1995 (Permit No. 9505-016 and 9505-427), re-roof building in 2001 (Permit No. 0012-128), and the addition of three illuminated wall signs in 2004 (Permit No. 0408-225).



Figure 2. Northern face of Denny's restaurant, view facing southeast.



Figure 3. Western face of Denny's restaurant, view facing northeast.

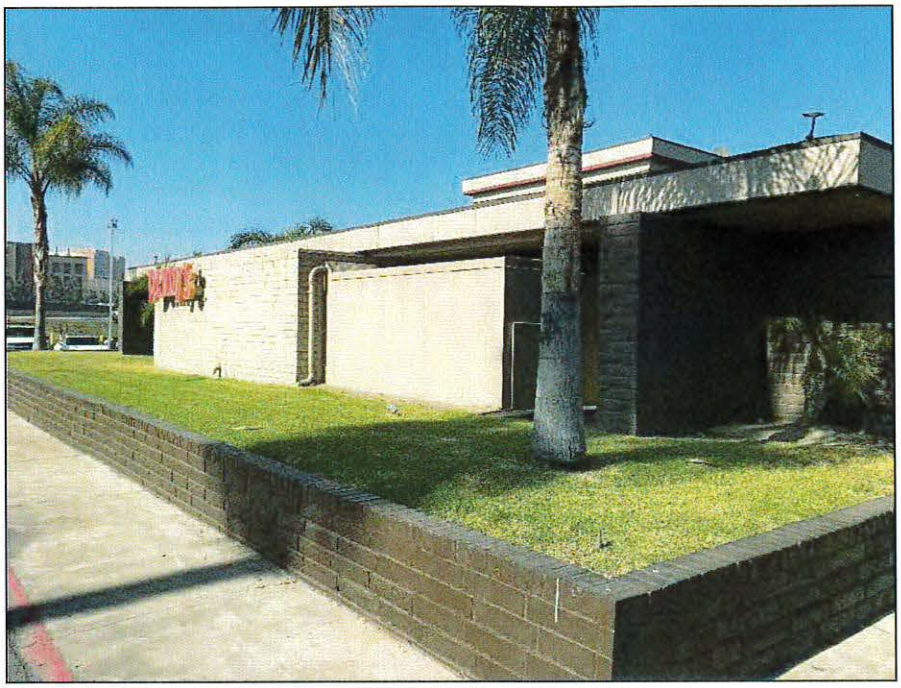


Figure 4. Southern face of Denny's restaurant, view facing northwest.

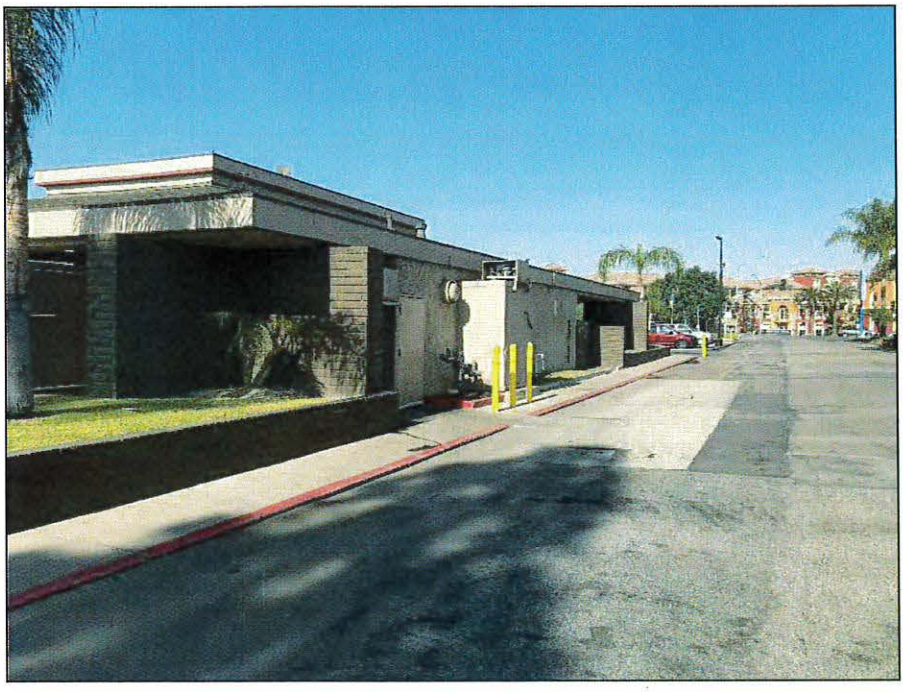


Figure 5. Eastern face of Denny's restaurant, view facing northwest.

4.4 Native American Coordination

On December 4, 2017, Dudek requested a search of the Sacred Lands Files from the Native American Heritage Commission (NAHC). A response letter was received via email from the NAHC on January 4, 2018, stating that the results of the Sacred Lands File search failed to indicate the presence of Native American cultural resources in the immediate project area. The NAHC also provided a list of 23 Native American groups and individuals who may have knowledge of cultural resources in the project area. Letters were sent to each of the 23 representatives January 4, 2018 for any knowledge of resources in the project area. To date, no responses have been received. Should any responses be received, they will be forwarded to Partner Engineering for referral to the project lead agency. The coordination conducted here does not constitute formal AB 52 consultation and all documentation of coordination with Native American groups and individuals is provided in Appendix B.

5 CULTURAL RESOURCES SURVEY

5.1 Field Methodology

A qualified Dudek archaeologist conducted a reconnaissance-level survey of the project area on December 27, 2017. The survey was conducted to identify and record any cultural resources that may occur in the project area. Because of the developed/disturbed nature of the site, reconnaissance-level survey methods were used to spot-check areas with ground surface visibility for archaeological resources. Exposed ground surfaces were examined for the presence of prehistoric artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools), historical artifacts (e.g., metal, glass, ceramics), sediment discolorations that might indicate the presence of a cultural midden, and depressions and other features that might indicate the former presence of structures or buildings (e.g., post holes, foundations).

During the survey, the existing Denny's restaurant, constructed over 45 years ago, was also examined. The built environment component of the survey entailed documenting the building with notes and photographs. A hand held sub-meter accurate global positioning system (GPS) unit was used to record locational information. The survey area and cultural constituents were photographed using a digital camera. All field notes, photographs, and records related to the current study are on file at the Dudek Pasadena, California, office.

5.2 Field Survey

The project area consists of three developed parcels containing a Denny's restaurant and the two Motel 6 structures. The project is surrounded by commercial development. Only small areas of unpaved areas were visible, with the majority of the project area paved. No cultural resources were identified during the survey.

6 FINDINGS AND CONCLUSIONS

No cultural resources have been identified on the property through either the records search, literature review, or by pedestrian survey. Based on research with historic aerial photographs, the immediate vicinity of the project area remained undeveloped until the 1950s and the Denny's restaurant was built between 1967 and 1972. Although the structure was not formally evaluated, it does not appear to be an historical resource under CEQA nor the City of Orange guidelines due to various, electrical, plumbing, building, and signage alterations in recent years.

If Native American cultural resources (i.e., prehistoric or ethnohistoric-period artifacts, food remains, or features associated with Native Americans) are exposed during project-related ground disturbance, the Gabrielino/Tongva should be contacted. This group should be asked to provide the services of a trained Native American consultant to monitor ground-disturbing work in the area containing the Native American cultural resources. This monitoring would occur on an as needed basis, and would be intended to ensure that Native American concerns are taken into account during the construction process.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to CA PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the City of Orange so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

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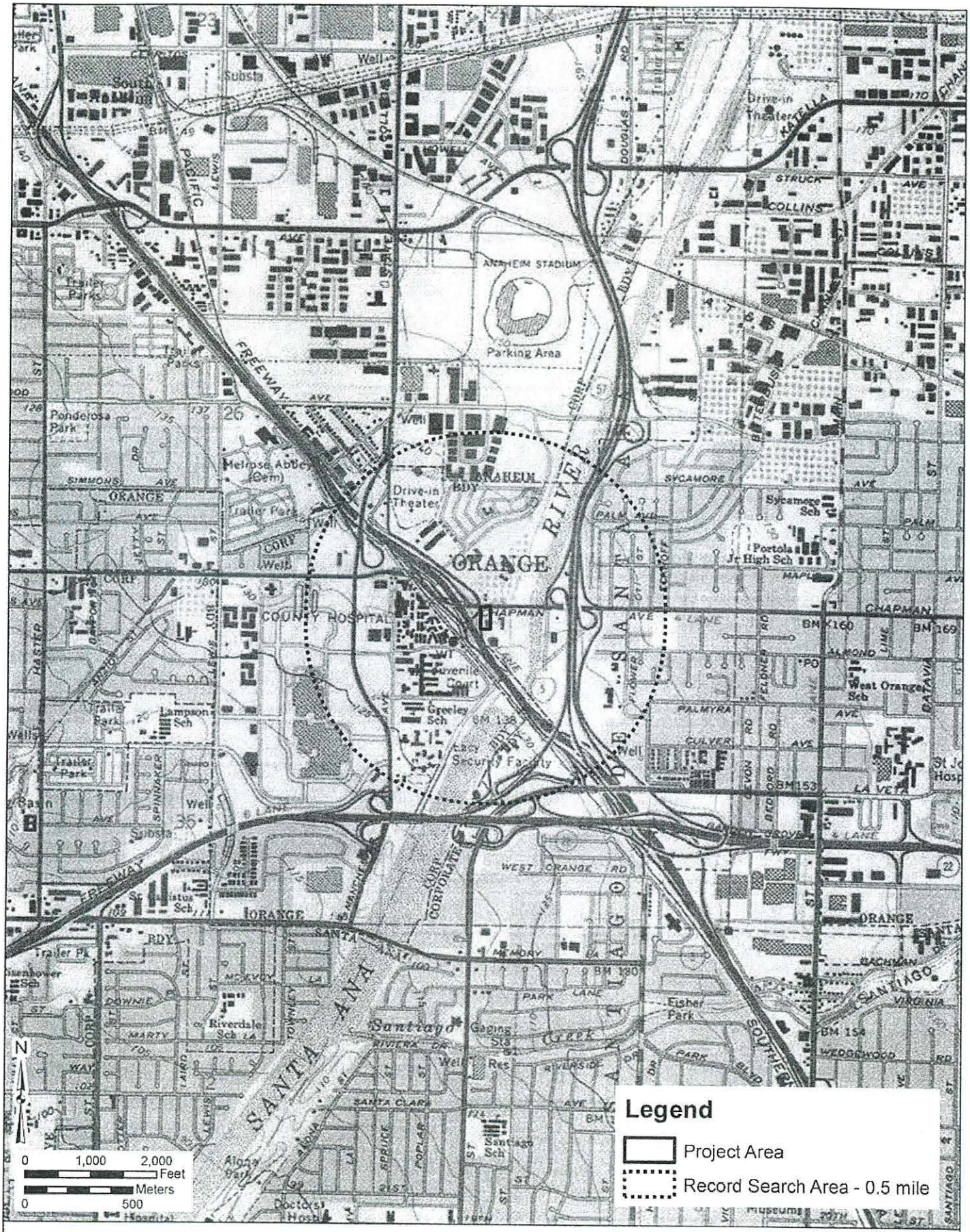
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APPENDIX A

CONFIDENTIAL SCCIC Records Search Results

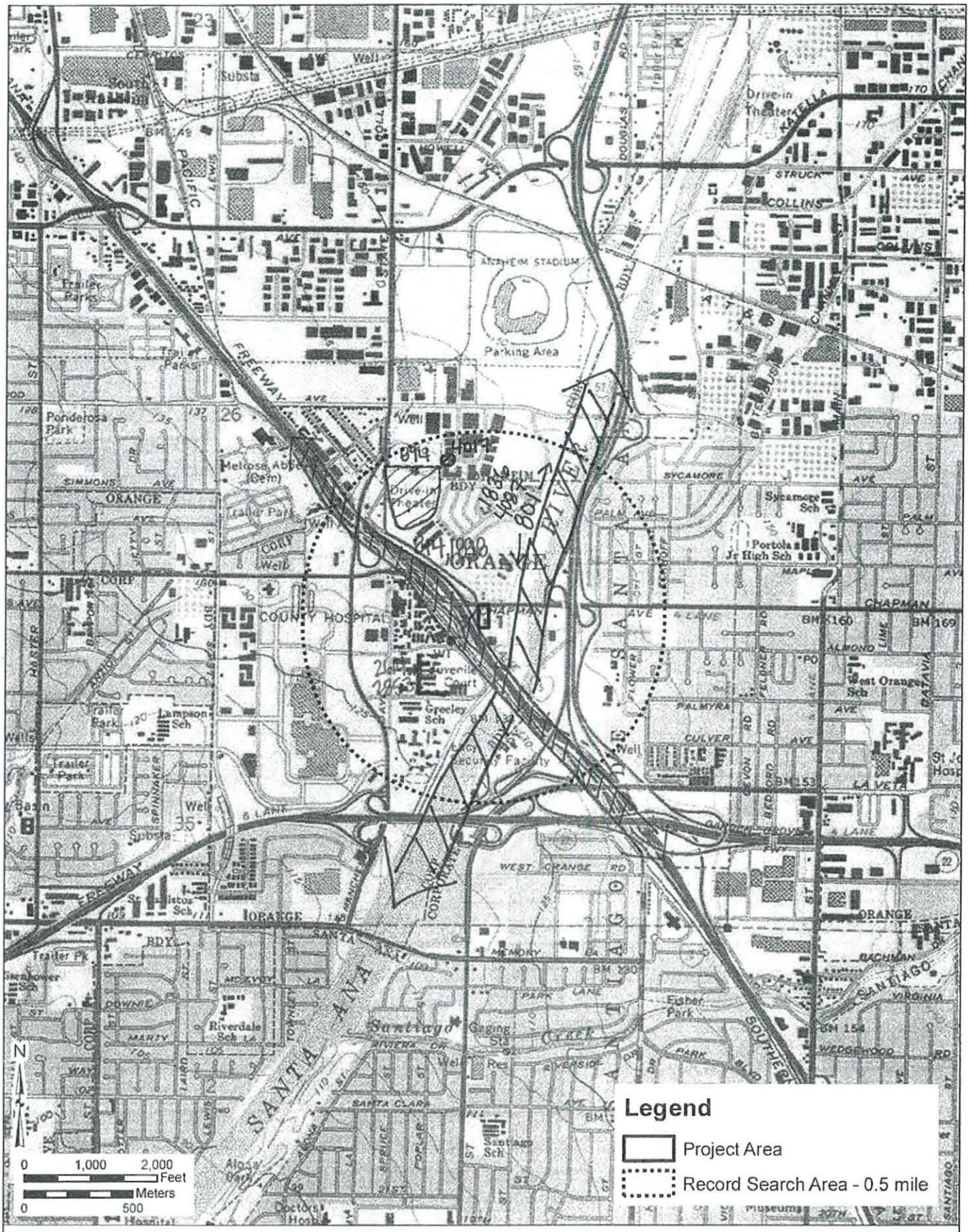


USGS 7.5-Minute Series Anaheim Quadrangle
Township 4S / Range 10W / Section 36

Records Search

Marriott West Chapman

RESOURCES = Ø

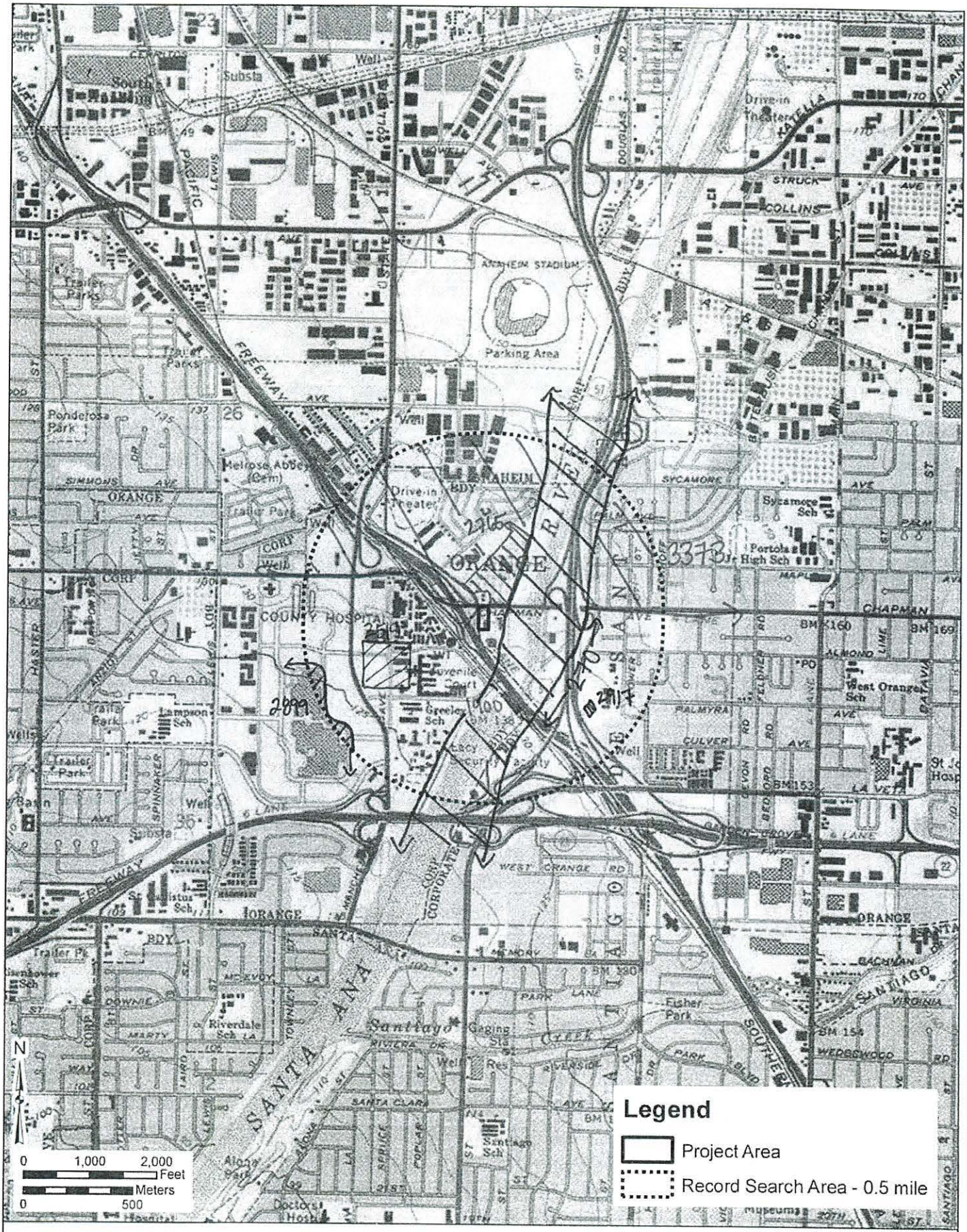


USGS 7.5-Minute Series Anaheim Quadrangle
Township 4S / Range 10W / Section 36

Records Search

Marriott West Chapman

REPORTS 1 OF 3

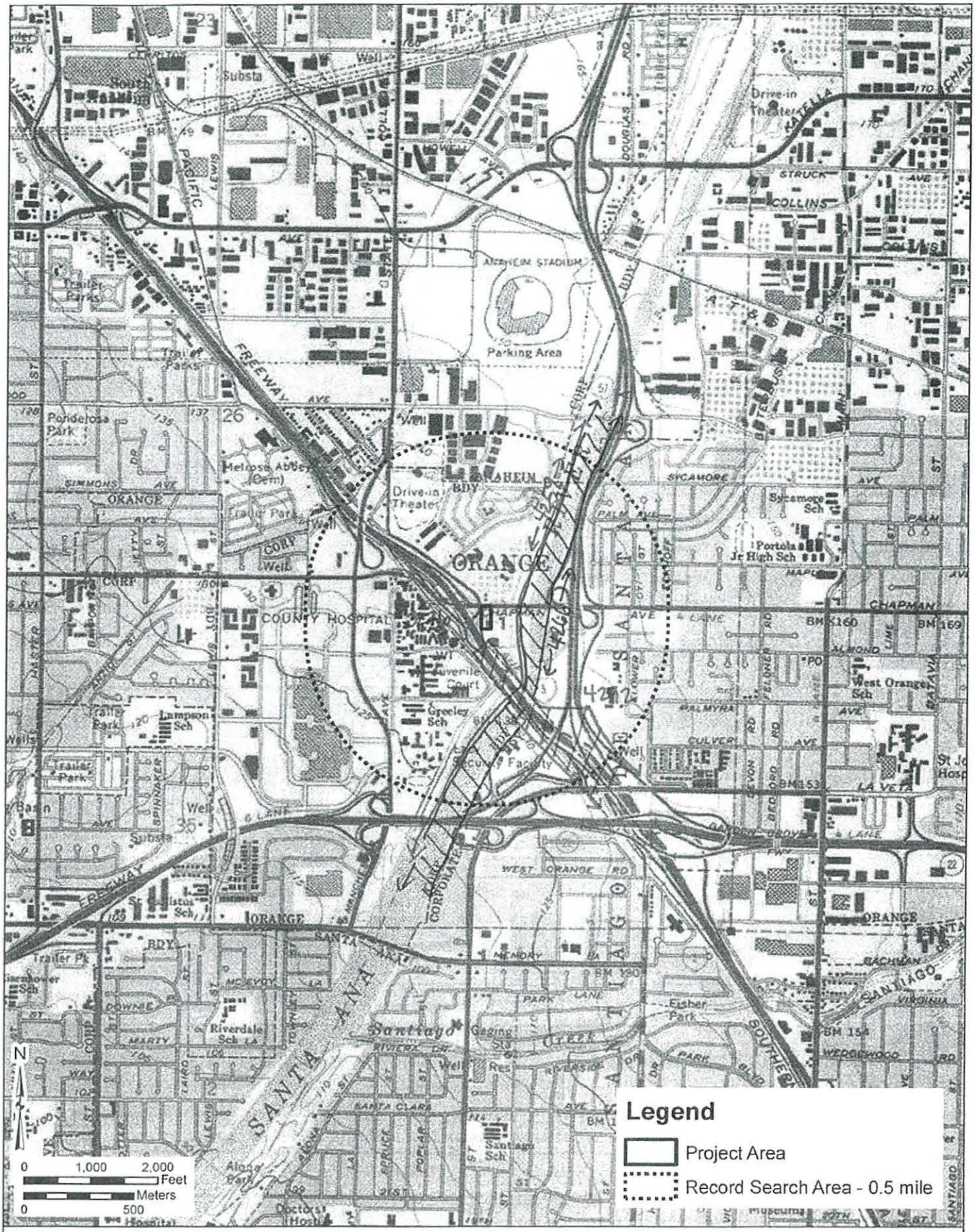


USGS 7.5-Minute Series Anaheim Quadrangle
Township 4S / Range 10W / Section 36

REPORTS 2 OF 3

Records Search

Marriott West Chapman



USGS 7.5-Minute Series Anaheim Quadrangle
Township 4S / Range 10W / Section 36

Records Search

Marriott West Chapman

REPORTS 3 OF 3

Report List

Marriott West Chapman #10801

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
OR-00270		1975	Leonard, Nelson N. III and Mathew C. Hall	Description and Evaluation of Cultural Resources Within the US Army Corps of Engineers' Santa Ana River Project	Archaeological Research Unit, UC Riverside	30-000277
OR-00801		1985	Langenwalter, Paul E. and James Brock	Phase Ii Archaeological Studies Prado Basin and the Lower Santa Ana River		30-000089, 30-000817
OR-00814		1982	Romani, John F.	ARCHAEOLOGICAL SURVEY REPORT for the Route I-5 Santa Ana Transportation Corridor, Route 405 in Orange County to Route 605 in Los Angeles County Pm 21.30/44.38; 0.00/6.85	Caltrans	
OR-00894		1988	McKenna, Jeanette and Roger Hatheway	Archaeological Survey of the Orange Drive-in Thester Property	University of California, Los Angeles Archaeological Survey	
OR-01836		1998	Padon, Beth	Cultural Resource Review for Groundwater Replenishment System Program EIR/Tier I/EIS, Orange County Water District and County Sanitation Districts of Orange County	Discovery Works, Inc.	
OR-01898		1990	Anonymous	Finding of Effect Widening of Interstate 5 and Reconstruction of Interchanges Between State Routes 22/57 and 91 in the Cities of Santa Ana, Orange, Anaheim, Fullerton and Buena Park	Caltrans	30-161815, 30-161816
OR-01900		1987	Hatheway, Roger G.	Historical and Architectural Evaluation of Four Railroad Bridges, Lower Santa Ana River and Santiago Creek Orange County, California	Roger Hatheway	30-161847
OR-02519		2001	Houghtby, Michael A.	Doj010427a, the Lacy Branch Jail Build Out, Orange County, Ca	State of California Board of Corrections	
OR-02614		2002	Padon, Beth	Archaeological Archival and Field Review of the Juvenile Hall Project Anaheim USGS 7.5' Quadrangle, Orange County, California	Discovery Works, Inc.	
OR-02765		2002	McKenna, Jeanette A.	The Pinnacle at Uptown Orange	McKenna et al.	
OR-02853		2004	Padon, Beth	Archaeological Monitoring for the Probation/juvenile Hall 60-bed Expansion, Orange County, California	Discovery Works, Inc.	
OR-02899		2003	McKenna, Jeanette A.	Block at Orange Expansion Project	McKenn et al.	

Report List

Marriott West Chapman #10801

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
OR-02917		2005	Bonner, Wayne H.	Cultural Resource Records Search and Site Visit Results for Cingular Telecommunications Facility Candidate Cm-023-01 (oc-003-01) O.c. Medical, 300 South Flower Street, Orange, Orange County, California	Michael Brandman Associates	
OR-03276		1998	Kane, Diane	Historic Architectural Survey Report for I-5 Hov Lane Improvement Project	California Department of Transportation, District 7	
OR-03373		2006	Arrington, Cindy and Nancy Sikes	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project State of California: Volumes I and Ii	SWCA Environmental Consultants, Inc.	
OR-04017		2011	Bonner, Wayne	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate LA33523-A (Dupont Commercial), 2165 Dupont Drive, Anaheim, Orange County, California	Michael Brandman Associates	
OR-04087		1998	Salenius, Sylvia	Program EIR/Tier 1 EIS, Groundwater Replenishment System	Orange County Water District & Orange County Sanitation District	
OR-04259		2007	Becker, Kenneth, Goodman, John, Sewell, Kristin, and Van Galder, Sarah	Cultural Resources Monitoring Report, Orange County Water District Groundwater Replenishment System, Orange County, California	SRI	30-001670, 30-001671, 30-100402
OR-04266		2000	Bissell, Ronald M.	Cultural Resources Reconnaissance for the Groundwater Replenishment System, Orange County, California	RMW Paleo Associates	30-000058, 30-000076, 30-000145, 30-000163, 30-000283, 30-000302, 30-000356, 30-000428, 30-000429, 30-000430, 30-000506, 30-000516, 30-000517, 30-001524

Report List

Marriott West Chapman #10801

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
OR-04292		2012	Meiser, M.K., Wallace, James, and Deitler, Sara	Historic Property Survey Report, improvements to Interstate 5 (I-5) between State Route 55 and State Route 57	AECOM	30-001598, 30-160811, 30-160814, 30-160816, 30-160817, 30-160818, 30-160819, 30-160824, 30-160830, 30-160836, 30-160838, 30-160842, 30-160843, 30-160845, 30-160847, 30-160851, 30-160852, 30-160916, 30-160930, 30-160931, 30-160934, 30-160949, 30-161037, 30-161827, 30-176576, 30-176577, 30-176578, 30-176579, 30-176580, 30-176581, 30-176582, 30-176583, 30-176584, 30-176585, 30-176587, 30-176588, 30-176589, 30-176663, 30-176664, 30-176802, 30-176809, 30-177013, 30-177014, 30-177015, 30-177016, 30-177017, 30-177018, 30-177019, 30-177020, 30-177036, 30-179882

APPENDIX B

Native American Coordination Documentation

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95501
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Marriott West Chapman

County: Orange

USGS Quadrangle

Name: Anaheim (see attached map)

Township: 4S Range: 10W Section(s): 36

Company/Firm/Agency:

Dudek

Contact Person: Elizabeth Denniston

Street Address: 38 North Marengo Avenue

City: Pasadena Zip: 91101

Phone: (626) 375-7682 Extension: N/A

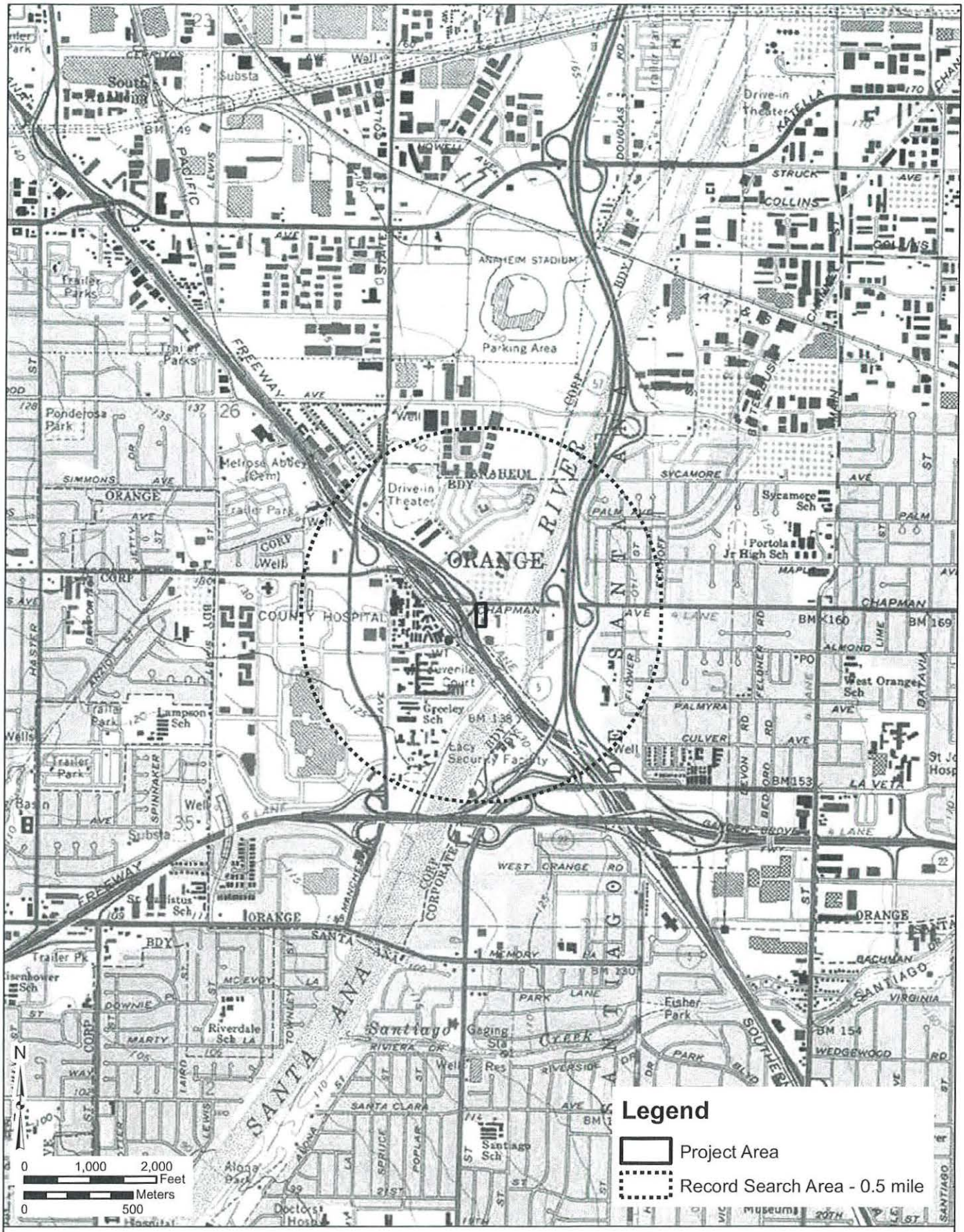
Fax: (760) 632-0164

Email: edenniston@dudek.com

Project Description:

The Marriott West Chapman project (project) includes the redevelopment of approximately 4.5 acres within the City of Orange, CA. Currently, two hotels and a Denny's are located within the project boundaries. These structures will be removed and a Marriott & Residence Inn will be constructed.

☑ Project Location Map is attached



USGS 7.5-Minute Series Anaheim Quadrangle
Township 4S / Range 10W / Section 36

Records Search

Marriott West Chapman

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710

January 4, 2018

Elizabeth Denniston
Dudek

Sent by E-mail: edenniston@dudek.com

RE: Proposed Marriott West Chapman Project, City of Orange; Anaheim USGS Quadrangle, Orange County, California

Dear Ms. Denniston:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.

Attached is a list of tribes culturally affiliated to the project area. I suggest you contact all of the listed Tribes. If they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst
(916) 373-3714

CONFIDENTIALITY NOTICE: This communication with its contents may contain confidential and/or legally privileged information. It is solely for the use of the intended recipient(s). Unauthorized interception, review, use or disclosure is prohibited and may violate applicable laws including the Electronic Communications Privacy Act. If you are not the intended recipient, please contact the sender and destroy all copies of the communication.

Native American Heritage Commission
Native American Contact List
Orange County
1/4/2018

Campo Band of Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1 — Kumeyaay
Campo, CA, 91906
Phone: (619) 478 - 9046
Fax: (619) 478-5818
rgoff@campo-nsn.gov

Ewiiaapaayp Tribal Office
Robert Pinto, Chairperson
4054 Willows Road — Kumeyaay
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126

Ewiiaapaayp Tribal Office
Michael Garcia, Vice Chairperson
4054 Willows Road — Kumeyaay
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
michaelg@leaningrock.net

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chariperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
gabrielenoindians@yahoo.com

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., — Gabrielino
#231
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Jamul Indian Village
Erica Pinto, Chairperson
P.O. Box 612 — Kumeyaay
Jamul, CA, 91935
Phone: (619) 669 - 4785
Fax: (619) 669-4817

Juaneno Band of Mission Indians
Sonia Johnston, Chairperson
P.O. Box 25628 — Juaneno
Santa Ana, CA, 92799
sonia.johnston@sbcglobal.net

Juaneno Band of Mission Indians Acjachemen Nation - Belardes
Joyce Perry, Tribal Manager
4955 Paseo Segovia — Juaneno
Irvine, CA, 92603
Phone: (949) 293 - 8522
kaamalam@gmail.com

Juaneno Band of Mission Indians Acjachemen Nation - Belardes
Matias Belardes, Chairperson
32161 Avenida Los Amigos — Juaneno
San Juan Capisttrano, CA, 92675
Phone: (949) 293 - 8522

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Marriott West Chapman Project, Orange County.

Native American Heritage Commission
Native American Contact List
Orange County
1/4/2018

Juaneno Band of Mission Indians Acjachemen Nation - Romero
Teresa Romero, Chairperson
31411-A La Matanza Street — Juaneno
San Juan Capistrano, CA, 92675
Phone: (949) 488 - 3484
Fax: (949) 488-3294
tromero@juaneno.com

La Posta Band of Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road — Kumeyaay
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com

La Posta Band of Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road — Kumeyaay
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
jmiller@LPtribe.net

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box 1302 — Kumeyaay
Boulevard, CA, 91905
Phone: (619) 766 - 4930
Fax: (619) 766-4957

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
P.O. Box 221838 — Kitanemuk
Newhall, CA, 91322 — Serrano
Phone: (760) 885 - 0955 — Tataviam
tsen2u@hotmail.com

San Pasqual Band of Mission Indians
Allen E. Lawson, Chairperson
P.O. Box 365 — Kumeyaay
Valley Center, CA, 92082
Phone: (760) 749 - 3200
Fax: (760) 749-3876
allenl@sanpasqualtribe.org

San Pasqual Band of Mission Indians
John Flores, Environmental Coordinator
P. O. Box 365 — Kumeyaay
Valley Center, CA, 92082
Phone: (760) 749 - 3200
Fax: (760) 749-3876
johnf@sanpasqualtribe.org

Sycuan Band of the Kumeyaay Nation
Cody J. Martinez, Chairperson
1 Kwaaypaay Court — Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 2613
Fax: (619) 445-1927
ssilva@sycuan-nsn.gov

Sycuan Band of the Kumeyaay Nation
Lisa Haws, Cultural Resources Manager
1 Kwaaypaay Court — Kumeyaay
El Cajon, CA, 92019
Phone: (619) 312 - 1935
lhaws@sycuan-nsn.gov

Viejas Band of Kumeyaay Indians
Julie Hagen,
1 Viejas Grade Road — Kumeyaay
Alpine, CA, 91901
Phone: (619) 445 - 3810
Fax: (619) 445-5337
jhagen@viejas-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Marriott West Chapman Project, Orange County.

Viejas Band of Kumeyaay Indians
Robert Welch, Chairperson
1 Viejas Grade Road
Alpine, CA, 91901
Phone: (619) 445 - 3810
Fax: (619) 445-5337
jhagen@viejas-nsn.gov

Kumeyaay

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Marriott West Chapman Project, Orange County.

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Mr. Allen E. Lawson, Chairperson
San Pasqual Band of Mission Indians
P.O. Box 365
Valley Center, CA 92082

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Lawson:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

The project area is located within the western portion of City of Orange, Orange County, California. It is bound on the north by West Chapman Avenue, the east by the Santa Ana River, and the southwest by Interstate 5. Specifically, the project area is within Section 36 of Township 4S, Range 10W as depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim topographic quadrangle (Attached Figure 1).

As part of the cultural resources study prepared for the proposed project, Dudek conducted a California Historical Resources Information System (CHRIS) records search at the South Central Coastal Information Center (SCCIC) for the project site and surrounding one-mile. The SCCIC records 20 previous cultural resources technical investigations have been conducted within 1.0-mile (1,609 m) of the project area between 1975 and 2012. A total of 20 previous studies overlap with the project area but 2 are located adjacent to it. The SCCIC records indicate that there have not been any resources recorded either within the project area or within 1.0-mile (1,609 m) of the project site.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project

area. The NAHC emailed a response on January 3, 2018, which stated that the SLF search failed to indicate the presence of Native American cultural resources in the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at (626) 204-9813, edenniston@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

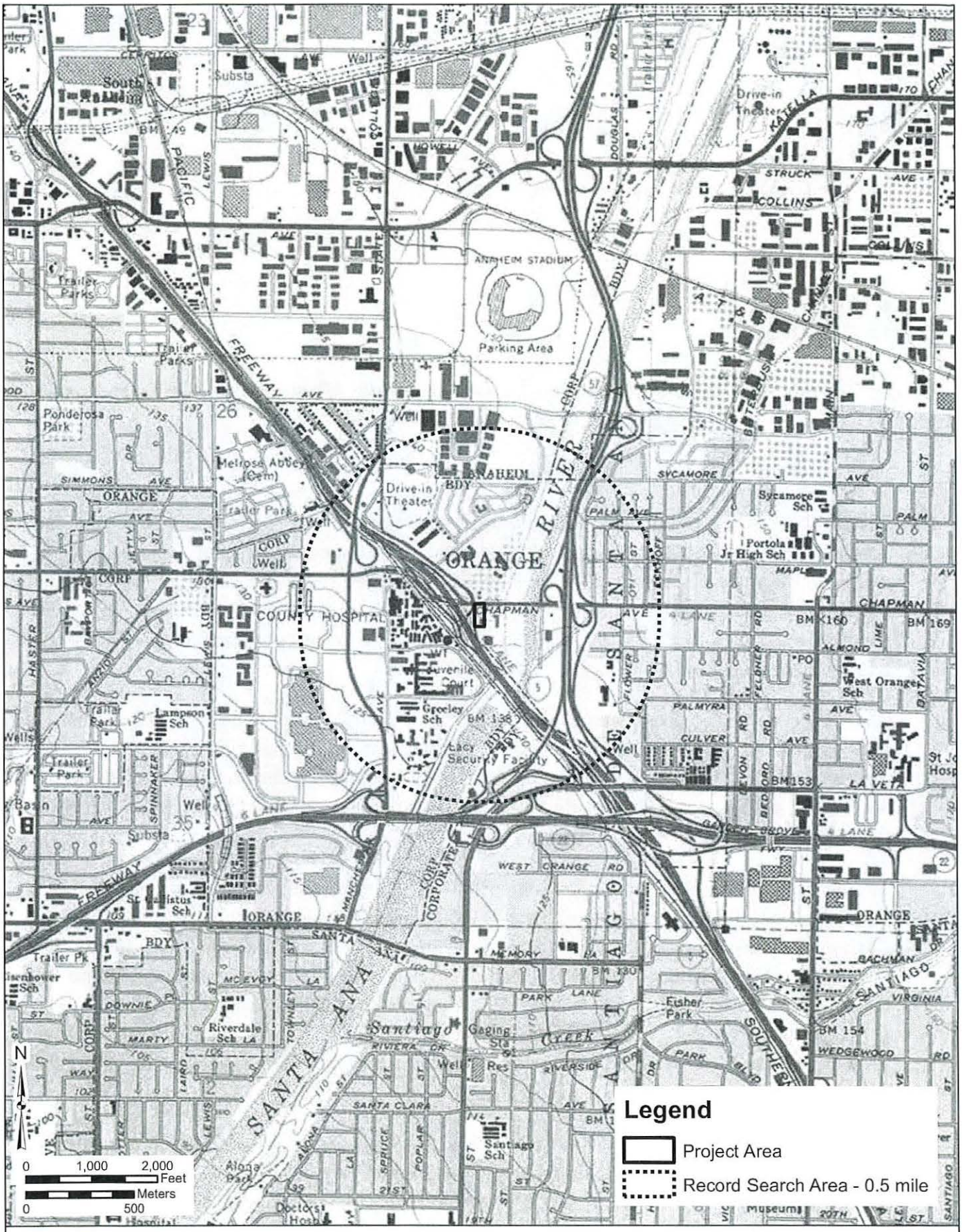
Please note that this letter does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. AB 52 is a process between the lead agency and California Native American Tribes concerning potential impacts to tribal cultural resources. Tribes that wish to be notified of projects for the purposes of AB 52 must contact the lead agency in writing (pursuant to Public Resources Code Section 21080.3.1 (b)).

Thank you for your assistance.

Sincerely,

Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: *Figure 1*



USGS 7.5-Minute Series Anaheim Quadrangle
Township 4S / Range 10W / Section 36

Records Search

Marriott West Chapman

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951 300 2100 F 951 300 2105

January 4, 2018 10801

Mr. Andrew Salas, Chairperson
Gabrieleno Band of Mission Indians
P.O. Box 393
Covina, CA 91723

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Salas:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at (626) 204-9813, edenniston@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that this letter does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. AB 52 is a process between the lead agency and California Native American Tribes concerning potential impacts to tribal cultural resources. Tribes that wish to be notified of projects for the purposes of AB 52 must contact the lead agency in writing (pursuant to Public Resources Code Section 21080.3.1 (b)).

Thank you for your assistance.

Sincerely,

Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Ms. Angela Elliott Santos, Chairperson
Manzanita Band of Kumeyaay Nation
P.O. Box 1302
Boulevard, CA 91905

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Ms. Santos:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

The project area is located within the western portion of City of Orange, Orange County, California. It is bound on the north by West Chapman Avenue, the east by the Santa Ana River, and the southwest by Interstate 5. Specifically, the project area is within Section 36 of Township 4S, Range 10W as depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim topographic quadrangle (Attached Figure 1).

As part of the cultural resources study prepared for the proposed project, Dudek conducted a California Historical Resources Information System (CHRIS) records search at the South Central Coastal Information Center (SCCIC) for the project site and surrounding one-mile. The SCCIC records 20 previous cultural resources technical investigations have been conducted within 1.0-mile (1,609 m) of the project area between 1975 and 2012. A total of 20 previous studies overlap with the project area but 2 are located adjacent to it. The SCCIC records indicate that there have not been any resources recorded either within the project area or within 1.0-mile (1,609 m) of the project site.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project

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Thank you for your assistance.

Sincerely,

Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Mr. Anthony Morales, Chairperson
Gabrieleno/Tongva San Gabriel Band of Mission Indians
P.O. Box 693
San Gabriel, CA 91778

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Morales:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

The project area is located within the western portion of City of Orange, Orange County, California. It is bound on the north by West Chapman Avenue, the east by the Santa Ana River, and the southwest by Interstate 5. Specifically, the project area is within Section 36 of Township 4S, Range 10W as depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim topographic quadrangle (Attached Figure 1).

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Thank you for your assistance.

Sincerely,

Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Mr. Charles Alvarez, Councilman
Gabrielino Tongva Tribe
23454 Vanowen St.
West Hills, CA 91307

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Alvarez:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

The project area is located within the western portion of City of Orange, Orange County, California. It is bound on the north by West Chapman Avenue, the east by the Santa Ana River, and the southwest by Interstate 5. Specifically, the project area is within Section 36 of Township 4S, Range 10W as depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim topographic quadrangle (Attached Figure 1).

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Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Mr. Cody Martinez, Chairperson
Sycuan Band of the Kumeyaay Nation
1 Kwaaypaay Court
El Cajon, CA 92019

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Martinez:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

The project area is located within the western portion of City of Orange, Orange County, California. It is bound on the north by West Chapman Avenue, the east by the Santa Ana River, and the southwest by Interstate 5. Specifically, the project area is within Section 36 of Township 4S, Range 10W as depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim topographic quadrangle (Attached Figure 1).

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Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Ms. Erica Pinto, Chairperson
Jamul Indian Village
P.O. Box 612
Jamul, CA 91935

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Ms. Pinto:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

The project area is located within the western portion of City of Orange, Orange County, California. It is bound on the north by West Chapman Avenue, the east by the Santa Ana River, and the southwest by Interstate 5. Specifically, the project area is within Section 36 of Township 4S, Range 10W as depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim topographic quadrangle (Attached Figure 1).

As part of the cultural resources study prepared for the proposed project, Dudek conducted a California Historical Resources Information System (CHRIS) records search at the South Central Coastal Information Center (SCCIC) for the project site and surrounding one-mile. The SCCIC records 20 previous cultural resources technical investigations have been conducted within 1.0-mile (1,609 m) of the project area between 1975 and 2012. A total of 20 previous studies overlap with the project area but 2 are located adjacent to it. The SCCIC records indicate that there have not been any resources recorded either within the project area or within 1.0-mile (1,609 m) of the project site.

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Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Ms. Gwendolyn Parada, Chairperson
La Posta Band of Mission Indians
8 Crestwood Rd.
Boulevard, CA 91905

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Ms. Parada:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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Thank you for your assistance.

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Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Ms. Javaughn Miller,
La Posta Band of Mission Indians
8 Crestwood Rd.
Boulevard, CA 91905

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Ms. Miller:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Mr. John Flores, Environmental Coordinator
San Pasqual Band of Indians
P.O. Box 365
Valley Center, CA 92082

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Flores:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: *Figure 1*

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Mr. John Valenzuela, Chairperson
San Fernando Band of Mission Indians
P.O. Box 221838
Newhall, CA 91322

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Valenzuela:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Ms. Joyce Perry, Representing Tribal Chairperson
Juaneno Band of Mission Indians Acjachemen Nation
4955 Paseo Segovia
Irvine, CA 92612

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Ms. Perry:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Ms. Julie Hagen, Cultural Resources
Viejas Band of Kumeyaay Indians
P.O. Box 908
Alpine, CA 91903

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Ms. Hagen:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

The project area is located within the western portion of City of Orange, Orange County, California. It is bound on the north by West Chapman Avenue, the east by the Santa Ana River, and the southwest by Interstate 5. Specifically, the project area is within Section 36 of Township 4S, Range 10W as depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim topographic quadrangle (Attached Figure 1).

As part of the cultural resources study prepared for the proposed project, Dudek conducted a California Historical Resources Information System (CHRIS) records search at the South Central Coastal Information Center (SCCIC) for the project site and surrounding one-mile. The SCCIC records 20 previous cultural resources technical investigations have been conducted within 1.0-mile (1,609 m) of the project area between 1975 and 2012. A total of 20 previous studies overlap with the project area but 2 are located adjacent to it. The SCCIC records indicate that there have not been any resources recorded either within the project area or within 1.0-mile (1,609 m) of the project site.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project

area. The NAHC emailed a response on January 3, 2018, which stated that the SLF search failed to indicate the presence of Native American cultural resources in the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at (626) 204-9813, edenniston@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that this letter does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. AB 52 is a process between the lead agency and California Native American Tribes concerning potential impacts to tribal cultural resources. Tribes that wish to be notified of projects for the purposes of AB 52 must contact the lead agency in writing (pursuant to Public Resources Code Section 21080.3.1 (b)).

Thank you for your assistance.

Sincerely,

Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951 300 2100 F 951 300 2105

January 4, 2018 10801

Ms. Lisa Haws, Cultural Resource Manager
Sycuan Band of the Kumeyaay Nation
1 Kwaaypaay Court
El Cajon, CA 92019

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Ms. Haws:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

The project area is located within the western portion of City of Orange, Orange County, California. It is bound on the north by West Chapman Avenue, the east by the Santa Ana River, and the southwest by Interstate 5. Specifically, the project area is within Section 36 of Township 4S, Range 10W as depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim topographic quadrangle (Attached Figure 1).

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Thank you for your assistance.

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Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Mr. Matias Belardes, Chairperson
Juaneno Band of Mission Indians Acjachemen Nation
32161 Avenida Los Amigos
San Juan Capistrano, CA 92675

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Belardes:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

The project area is located within the western portion of City of Orange, Orange County, California. It is bound on the north by West Chapman Avenue, the east by the Santa Ana River, and the southwest by Interstate 5. Specifically, the project area is within Section 36 of Township 4S, Range 10W as depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim topographic quadrangle (Attached Figure 1).

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Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Mr. Michael Garcia, Vice Chairperson
Ewiiaapaayp Tribal Office
4054 Willows Road
Alpine, CA 91901

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Garcia:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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As part of the cultural resources study prepared for the proposed project, Dudek conducted a California Historical Resources Information System (CHRIS) records search at the South Central Coastal Information Center (SCCIC) for the project site and surrounding one-mile. The SCCIC records 20 previous cultural resources technical investigations have been conducted within 1.0-mile (1,609 m) of the project area between 1975 and 2012. A total of 20 previous studies overlap with the project area but 2 are located adjacent to it. The SCCIC records indicate that there have not been any resources recorded either within the project area or within 1.0-mile (1,609 m) of the project site.

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Archaeologist

Attachments: Figure 1

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3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Mr. Ralph Goff, Chairperson
Campo Band of Mission Indians
36190 Church Road, Suite 1
Campo, CA 91906

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Goff:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Mr. Robert Welch, Sr., Chairperson
Viejas Band of Kumeyaay Indians
1 Viejas Grade Rd.
Alpine, CA 91901

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Welch, Sr.:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951 300 2100 F 951 300 2105

January 4, 2018 10801

Mr. Robert Pinto, Sr., Chairperson
Ewiaapaayp Tribal Office
4054 Willow Rd.
Alpine, CA 91901

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Pinto, Sr.:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951 300 2100 F 951 300 2105

January 4, 2018 10801

Mr. Robert F. Dorame, Tribal Chair/Cultural Resources
Gabrieleno Tongva Indians of California Tribal Council
P.O. Box 490
Bellflower, CA 90707

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Mr. Dorame:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Ms. Sandonne Goad, Chairperson
Gabrielino-Tongva Nation
106 1/2 Judge John Also St.
Los Angeles, CA 90012

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Ms. Goad:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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Archaeologist

Attachments: Figure 1

DUDEK

3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Ms. Sonia Johnston, Tribal Chairperson
Juaneno Band of Mission Indians
P.O. Box 25628
Santa Ana, CA 92799

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Ms. Johnston:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

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Archaeologist

Attachments: Figure 1

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3544 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
T 951.300.2100 F 951.300.2105

January 4, 2018 10801

Ms. Teresa Romero, Chairwoman
Juaneno Band of Mission Indians Acjachemen Nation
31411-A La Matanza Street
San Juan Capistrano, CA 92675

Subject: ***Cultural Resources Assessment for the Marriott West Chapman Project, City of Orange, Orange County, California***

Dear Ms. Romero:

Partner Engineering and Science, Inc. proposes development of a Marriott and Residence Inn hotel at the properties identified as 2920 and 3000 West Chapman Avenue within the City of Orange. The properties comprise assessor parcel numbers 231-641-05, -10, and -12 and total approximately 4.5 acres. The project will involve the removal of an existing Denny's restaurant and the two Motel 6 structures. The existing asphalt parking lot encompassing all three structures will be also be replaced.

The project area is located within the western portion of City of Orange, Orange County, California. It is bound on the north by West Chapman Avenue, the east by the Santa Ana River, and the southwest by Interstate 5. Specifically, the project area is within Section 36 of Township 4S, Range 10W as depicted on the U.S. Geological Survey (USGS) 7.5-minute Anaheim topographic quadrangle (Attached Figure 1).

As part of the cultural resources study prepared for the proposed project, Dudek conducted a California Historical Resources Information System (CHRIS) records search at the South Central Coastal Information Center (SCCIC) for the project site and surrounding one-mile. The SCCIC records 20 previous cultural resources technical investigations have been conducted within 1.0-mile (1,609 m) of the project area between 1975 and 2012. A total of 20 previous studies overlap with the project area but 2 are located adjacent to it. The SCCIC records indicate that there have not been any resources recorded either within the project area or within 1.0-mile (1,609 m) of the project site.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project

area. The NAHC emailed a response on January 3, 2018, which stated that the SLF search failed to indicate the presence of Native American cultural resources in the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at (626) 204-9813, edenniston@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that this letter does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. AB 52 is a process between the lead agency and California Native American Tribes concerning potential impacts to tribal cultural resources. Tribes that wish to be notified of projects for the purposes of AB 52 must contact the lead agency in writing (pursuant to Public Resources Code Section 21080.3.1 (b)).

Thank you for your assistance.

Sincerely,

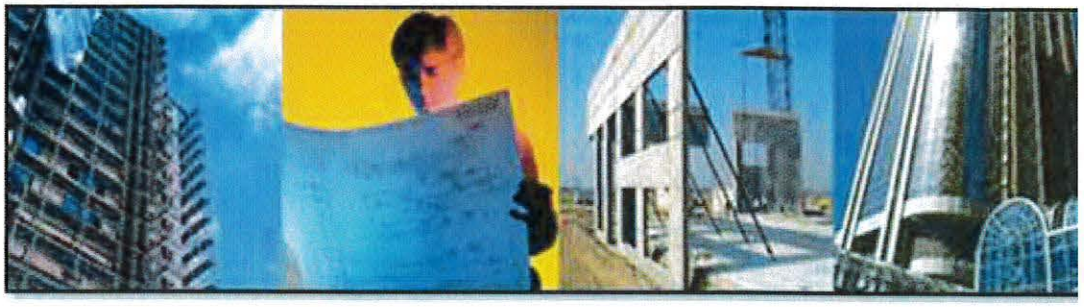
Elizabeth Denniston, M.A., RPA
Archaeologist

Attachments: *Figure 1*

APPENDIX E

PHASE 1 ESA HAZMAT REPORT

PARTNER
Engineering and Science, Inc.



PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Dual Brand Marriott / Mixed-use Development
2920 and 3000 West Chapman Avenue
Orange, California 92868

Report Date: December 4, 2017
Partner Project No. 17-200264.1



Prepared for:

DCSG Developments
680 East Colorado Boulevard, Suite 180
Pasadena, California 91101

PARTNER
Engineering and Science, Inc.

December 4, 2017

Dennis Costanzo
DCSG Developments
680 East Colorado Boulevard, Suite 180
Pasadena, California 91101

Subject: Phase I Environmental Site Assessment
Dual Brand Marriott / Mixed-use Development
2920 and 3000 West Chapman Avenue
Orange, California 92868
Partner Project No. 17-200264.1

Dear Mr. Costanzo:

Partner Engineering and Science, Inc. (Partner) is pleased to provide the results of the *Phase I Environmental Site Assessment* (Phase I ESA) report of the abovementioned address (the "subject property"). This assessment was performed in general conformance with the scope and limitations as detailed in the ASTM Practice E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

This assessment included a site reconnaissance as well as research and interviews with representatives of the public, property ownership, site manager, and regulatory agencies. An assessment was made, conclusions stated, and recommendations outlined.

We appreciate the opportunity to provide environmental services to you. If you have any questions concerning this report, or if we can assist you in any other matter, please contact me at (310) 615-4500.

Sincerely,

Jenny Redlin, REPA
Relationship Manager

EXECUTIVE SUMMARY

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in general accordance with the scope of work and limitations of ASTM Standard Practice E1527-13, the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) and set forth by DCSG Developments for the property located at 2920 and 3000 West Chapman Avenue in the City of Orange, Orange County, California (the "subject property"). The Phase I Environmental Site Assessment is designed to provide DCSG Developments with an assessment concerning environmental conditions (limited to those issues identified in the report) as they exist at the subject property.

Property Description

The subject property is located on the south side of West Chapman Avenue and on the east side of the Interstate 5 Freeway within a mixed commercial/residential area of Orange County. Please refer to the table below for further description of the subject property:

Subject Property Data	
Addresses:	2920 and 3000 West Chapman Avenue, Orange, California
Property Use:	Commercial; Restaurant and Motel
Land Acreage (Ac):	4.5 Ac
Number of Buildings:	Three
Number of Floors:	Denny's building (one floor); both Motel 6 buildings (two floors)
Gross Building Area (SF):	5,000 SF (Denny's Building); 12,500 SF (Main Motel 6 Building); 7,000 SF (second Motel 6 Building) (estimates only)
Date of Construction:	The current Denny's building appears to have been constructed between 1966 and 1972. The current main Motel 6 building on the southern portion of the subject property appears to have been constructed between 1972 and 1977. The current second Motel 6 building on the eastern portion of the subject property appears to have been constructed between 1977 and 1980.
Assessor's Parcel Number (APN):	231-641-05 (Parcel A); 231-641-09 (Parcel B); 231-641-10 (Parcel C); 231-641-11 (Parcel D); and 231-641-12 (Parcel E)
Type of Construction:	Concrete Masonry Unit (CMU), steel or wood-framed, concrete slab-on-grade
Current Tenants:	Denny's restaurant (one building) and Motel 6 (two buildings)
Site Assessment Performed By:	Ramil G. Reyes of Partner
Site Assessment Conducted On:	November 21, 2017

The subject property is currently occupied by Motel 6 and Denny's for commercial use. Denny's occupies the building on the northwest portion of the subject property and consists of a typical restaurant including dining areas, kitchen, food preparation areas, several walk-in coolers and freezers, storage areas, and offices. There are two two-story buildings associated with Motel 6. The main Motel 6 building is located on the southern portion of the property and contains a front office/lobby area, two floors of rooms, an outdoor pool, an outdoor common area, and a guest laundry room on the first floor. The

second Motel 6 building is located on the northeastern portion of the subject property and contains two floors of guest rooms and a laundry room that includes large washers and dryers that are mainly used to clean the motel's linens. Onsite operations associated with Denny's consist mainly of general restaurant related operations involving cooking, preparation, and servicing of food and beverages to customers. No operations were observed at the Denny's tenant space that included the handling of significant quantities of hazardous substances and petroleum products. There are two 50-gallon capacity above ground grease traps located next to the kitchen area that are used to temporarily store used cooking oil and waste grease generated from cooking operations prior to its disposal offsite by an outside vendor. Onsite operations associated with Motel 6 consist mainly of general motel related operations involving the cleaning, maintenance, and servicing of guest rooms. No operations were observed at either of the Motel 6 tenant spaces that included the handling of significant quantities of hazardous substances and petroleum products. No dry-cleaning activities take place onsite. In addition to the current structures, the subject property is also improved with asphalt-paved parking areas and landscaping features associated with each tenant building.

According to available historical sources, the subject property was formerly used as agricultural land from as early as 1938 until the subject property was developed with the current Denny's structure in 1960s and the two Motel 6 structures in the 1970s. Denny's restaurant and Motel 6 have been the only tenants on the subject property since it has been developed.

The immediately surrounding properties consist of an apartment complex to the north across West Chapman Avenue; Interstate 5 Freeway to the south; the Santa Ana River to the east; and Jack In The Box restaurant, a retail strip center and Interstate 5 Freeway to the west.

According to site specific hydrological data for a site located approximately 1/8-mile north of the subject property, the depth and direction of groundwater in the vicinity of the subject property is inferred to be approximately 80 feet below ground surface (bgs) and flow toward the south.

Findings

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- Partner did not identify any recognized environmental conditions during the course of this assessment.

A *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- Partner did not identify any controlled recognized environmental conditions during the course of this assessment.

A *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- Partner did not identify any historical recognized environmental conditions during the course of this assessment.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, warrant further discussion. The following was identified during the course of this assessment:

- Due to the age of the subject property buildings, there is a potential that asbestos-containing material (ACM) and/or lead-based paint (LBP) are present. Overall, all suspect ACMs and painted surfaces were observed in good condition and do not pose a health and safety concern to the occupants of the subject property at this time. The identified suspect ACMs would need to be sampled to confirm the presence or absence of asbestos prior to any renovation or demolition activities to prevent potential exposure to workers and/or building occupants.

Conclusions, Opinions and Recommendations

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 of 2920 and 3000 West Chapman Avenue in the City of Orange, Orange County, California (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed no evidence of recognized environmental conditions in connection with the subject property; however, environmental issues were identified. Based on the conclusions of this assessment, Partner recommends no further investigation of the subject property at this time.

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1.0 INTRODUCTION

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in general conformance with the scope and limitations of ASTM Standard Practice E1527-13 and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) for the property located at 2920 and 3000 West Chapman Avenue in the City of Orange, Orange County, California (the "subject property"). Any exceptions to, or deletions from, this scope of work are described in the report.

1.1 Purpose

The purpose of this ESA is to identify existing or potential Recognized Environmental Conditions (as defined by ASTM Standard E1527-13) affecting the subject property that: 1) constitute or result in a material violation or a potential material violation of any applicable environmental law; 2) impose any material constraints on the operation of the subject property or require a material change in the use thereof; 3) require clean-up, remedial action or other response with respect to Hazardous Substances or Petroleum Products on or affecting the subject property under any applicable environmental law; 4) may affect the value of the subject property; and 5) may require specific actions to be performed with regard to such conditions and circumstances. The information contained in the ESA Report will be used by Client to: 1) evaluate its legal and financial liabilities for transactions related to foreclosure, purchase, sale, loan origination, loan workout or seller financing; 2) evaluate the subject property's overall development potential, the associated market value and the impact of applicable laws that restrict financial and other types of assistance for the future development of the subject property; and/or 3) determine whether specific actions are required to be performed prior to the foreclosure, purchase, sale, loan origination, loan workout or seller financing of the subject property.

This ESA was performed to permit the *User* to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) liability (hereinafter, the "*landowner liability protections*," or "*LLPs*"). ASTM Standard E1527-13 constitutes "*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B).

1.2 Scope of Work

The scope of work for this ESA is in general accordance with the requirements of ASTM Standard E1527-13. This assessment included: 1) a property and adjacent site reconnaissance; 2) interviews with key personnel; 3) a review of historical sources; 4) a review of regulatory agency records; and 5) a review of a regulatory database report provided by a third-party vendor. Partner contacted local agencies, such as environmental health departments, fire departments and building departments in order to determine any current and/or former hazardous substances usage, storage and/or releases of hazardous substances on the subject property. Additionally, Partner researched information on the presence of activity and use limitations (AULs) at these agencies. As defined by ASTM E1527-13, AULs are the legal or physical restrictions or limitations on the use of, or access to, a site or facility: 1) to reduce or eliminate potential

exposure to hazardous substances or petroleum products in the soil or groundwater on the subject property; or 2) to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment. These legal or physical restrictions, which may include institutional and/or engineering controls (IC/ECs), are intended to prevent adverse impacts to individuals or populations that may be exposed to hazardous substances and petroleum products in the soil or groundwater on the property.

If requested by Client, this report may also include the identification, discussion of, and/or limited sampling of asbestos-containing materials (ACMs), lead-based paint (LBP), mold, and/or radon.

1.3 Limitations

Partner warrants that the findings and conclusions contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work. These methodologies are described as representing good commercial and customary practice for conducting an ESA of a property for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist on the subject property conditions that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. Partner believes that the information obtained from the record review and the interviews concerning the subject property is reliable. However, Partner cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the Client. No other warranties are implied or expressed.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation, availability, and accuracy of pertinent records, and the personal recollections of those persons contacted.

This practice does not address requirements of any state or local laws or of any federal laws other than the all appropriate inquiry provisions of the LLPs. Further, this report does not intend to address all of the safety concerns, if any, associated with the subject property.

Environmental concerns, which are beyond the scope of a Phase I ESA as defined by ASTM include the following: ACMs, LBP, radon, and lead in drinking water. These issues may affect environmental risk at the subject property and may warrant discussion and/or assessment; however, are considered non-scope issues. If specifically requested by the Client, these non-scope issues are discussed in Section 6.3.

1.4 User Reliance

DCSG Developments engaged Partner to perform this assessment in accordance with an agreement governing the nature, scope and purpose of the work as well as other matters critical to the engagement. All reports, both verbal and written, are for the sole use and benefit of DCSG Developments. Either verbally or in writing, third parties may come into possession of this report or all or part of the information generated as a result of this work. In the absence of a written agreement with Partner granting such rights, no third parties shall have rights of recourse or recovery whatsoever under any course of action against Partner, its officers, employees, vendors, successors or assigns. Any such unauthorized user shall be responsible to protect, indemnify and hold Partner, Client and their respective officers, employees, vendors, successors and assigns harmless from any and all claims, damages, losses, liabilities, expenses (including reasonable attorneys' fees) and costs attributable to such Use. Unauthorized use of this report shall constitute acceptance of and commitment to these responsibilities, which shall be irrevocable and shall apply regardless of the cause of action or legal theory pled or asserted. Additional legal penalties may apply.

This report has been completed under specific Terms and Conditions relating to scope, relying parties, limitations of liability, indemnification, dispute resolution, and other factors relevant to any reliance on this report. Any parties relying on this report do so having accepted the Terms and Conditions for which this report was completed. A copy of Partner's standard Terms and Conditions can be found at http://www.partneresi.com/terms-and-conditions.php.

1.5 Limiting Conditions

The findings and conclusions contain all of the limitations inherent in these methodologies that are referred to in ASTM E1527-13.

Specific limitations and exceptions to this ESA are more specifically set forth below:

- Interviews with past owners, operators and occupants were not reasonably ascertainable and thus constitute a data gap. Based on information obtained from other historical sources (as discussed in Section 3.0), this data gap is not expected to alter the findings of this assessment.
- Partner requested information relative to deed restrictions and environmental liens, a title search, and completion of a pre-survey questionnaire from the Report User. This information was not provided at the time of the assessment.
- Partner was unable to determine the property use at 5-year intervals, which constitutes a data gap. Information concerning historical use of the subject property was unavailable from 1953 to 1962 and 1996 to 2004. Except for property tax files and recorded land title records, which were not considered to be sufficiently useful, Partner reviewed all standard historical sources and conducted appropriate interviews.

- Partner submitted Freedom of Information Act (FOIA) requests to California EPA, Office of Environmental Health Hazard Assessment (OEHHA) and Orange County Health Care Agency (OCHCA) for information pertaining to hazardous substances, underground storage tanks, releases, inspection records, etc. for the subject property and/or adjacent properties. As of this writing, these agencies have not responded to Partner's request. Based on information obtained from other historical sources, this limitation is not expected to alter the overall findings of this assessment.
- Partner observed approximately 10% of all interior units and all common and mechanical areas. Based on the size and nature of use of the unobserved units (guest rooms), this limited method of survey is not expected to alter the overall findings of this assessment.

Due to time constraints associated with this report, the Client has requested the report despite the above-listed limitations.

2.0 SITE DESCRIPTION

2.1 Site Location and Legal Description

The subject property at 2920 and 3000 West Chapman Avenue in Orange, California is located on the south side of West Chapman Avenue and on the east side of the Interstate 5 Freeway. According to the online research and information provided by the site contact, the subject property is legally described as *PM 75-3 Par 3* and *Lockhart Tract Lot 9 Por of Lot*, and ownership is currently vested in the Alice Wagner Trust since 1946.

Please refer to Figure 1: Site Location Map, Figure 2: Site Plan, Figure 3: Topographic Map, and Appendix A: Site Photographs for the location and site characteristics of the subject property.

2.2 Current Property Use

The subject property is currently occupied by Motel 6 and Denny's for commercial use. Denny's occupies the building on the northwest portion of the subject property and consists of a typical restaurant including dining areas, kitchen, food preparation areas, several walk-in coolers and freezers, storage areas, and offices. There are two, two-story buildings associated with Motel 6. The main Motel 6 building is located on the southern portion of the property and contains a front office/lobby area, two floors of rooms, an outdoor pool, an outdoor common area, and a guest laundry room on the first floor. The second Motel 6 building is located on the northeastern portion of the subject property and contains two floors of rooms and a laundry room that includes large washers and dryers that are mainly used to clean the motel's linens. Onsite operations associated with Denny's consist mainly of general restaurant related operations involving cooking, preparation, and servicing of food and beverages to customers. No operations were observed at the Denny's tenant space that included the handling of significant quantities of hazardous substances and petroleum products. There are two 50-gallon capacity above ground grease traps located next to the kitchen area that are used to temporarily store used cooking oil and waste grease generated from cooking operations prior to its disposal offsite by an outside vendor. Onsite operations associated with Motel 6 consist mainly of general motel related operations involving the cleaning, maintenance, and servicing of guest rooms. No operations were observed at either of the Motel 6 tenant spaces that included the handling of significant quantities of hazardous substances and petroleum products. No dry-cleaning activities take place onsite. In addition to the current structures, the subject property is also improved with asphalt-paved parking areas and landscaping features associated with each tenant building.

The subject property is designated for commercial development by the City of Orange.

The subject property was not identified in the regulatory database report of Section 4.2.

2.3 Current Use of Adjacent Properties

The subject property is located within a mixed commercial/residential area of Orange County. During the vicinity reconnaissance, Partner observed the following land use on properties in the immediate vicinity of the subject property:

Immediately Surrounding Properties

North: West Chapman Avenue beyond which is an apartment complex (301 North Rampart Street)
South: Interstate 5 Freeway and Santa Ana River
East: Bike path/trail beyond which is the Santa Ana River
West: Jack In The Box (3050 West Chapman Avenue), retail strip center with no environmentally sensitive tenants (3070 West Chapman Avenue), and Interstate 5 Freeway followed by the UC Irvine Medical Center (101 The City Drive South)

The adjacent property to the north is identified as a Leaking Underground Storage Tank (LUST), Historical UST and CA FID UST site in the regulatory database report and the adjacent property to the west is identified as a LUST, CHMIRS, HAZNET and NPDES site, as discussed in Section 4.2.

2.4 Physical Setting Sources

2.4.1 Topography

The United States Geological Survey (USGS) *Anaheim, California* Quadrangle 7.5-minute series topographic map was reviewed for this ESA. According to the contour lines on the topographic map, the subject property is located at approximately 140 feet above mean sea level (MSL). The contour lines in the area of the subject property indicate the area is sloping gently toward the south. The subject property is depicted on the 2012 map as developed.

A copy of the most recent topographic map is included as Figure 3 of this report.

2.4.2 Hydrology

According to topographic map interpretation, the direction of groundwater in the vicinity of the subject property is inferred to flow toward the south. The nearest surface water in the vicinity of the subject property is the Santa Ana River located adjacent and east of the subject property. No settling ponds, lagoons, surface impoundments, wetlands or natural catch basins were observed at the subject property during this assessment.

According to available information, a public water system operated by the Orange County Water District (OCWD) serves the subject property vicinity. According to a representative of the OCWD, shallow groundwater beneath the subject property is not utilized for domestic purposes. The City of Orange obtains approximately 75% of its water from ground water sources via 15 active wells. The ground water basin is managed by the OCWD. The City of Orange also imports water from the Colorado River and Northern California from the Metropolitan Water District of Southern California through the Municipal Water District of Orange County.

According to site specific hydrological data for a site located approximately 1/8-mile north of the subject property, the depth and direction of groundwater in the vicinity of the subject property is inferred to be approximately 80 feet below ground surface (bgs).

2.4.3 Geology/Soils

The subject property is situated within the coastal plain of Orange County. The coastal plain of Orange County was formed from recent (Holocene) alluvial deposits. The alluvial fans of the Los Angeles, San Gabriel, Rio Hondo, and Santa Ana rivers resulted from the formation of a gently sloping plain through stream deposition. The portion of the coastal plain within Orange County is underlain by deep structural depression primarily containing sedimentary rocks. The subsurface of the County varies in thickness and lithology due to the rapid rate of deposition of rock units, folding, and faulting. The sedimentary deposits of the coastal plain are a hybrid of marine and continental sediment.

Based on information obtained from the USDA Natural Resources Conservation Service Web Soil Survey online database, the subject property is mapped as Metz with a clay loam soil surface texture. The Metz series consists of soils with high infiltration rates and soils that are deep, well drained to excessively drained sands and gravels. The soil drainage class is listed as somewhat excessively drained and the hydric status is listed as not hydric.

2.4.4 Flood Zone Information

Partner performed a review of the Flood Insurance Rate Map, published by the Federal Emergency Management Agency. According to Community Panel Number 06059C0142J dated December 1, 2009, the subject property appears to be located in Zone X, an area located outside of the 100-year and 500-year flood plains.

A copy of the reviewed flood map is not included in Appendix B of this report.

3.0 HISTORICAL INFORMATION

Partner obtained historical use information about the subject property from a variety of sources. A chronological listing of the historical data found is summarized in the table below:

Historical Use Information		
Period/Date	**Source**	**Description/Use**
1938-1952	Aerial Photographs, Topographic Maps, City Directories	Agricultural land
1963-1966	Aerial Photographs, Topographic Maps, City Directories	Vacant lot
1972-Present	Aerial Photographs, Building Records, City Directories, Interviews, Onsite Observations	Commercial (Denny's 1960s-Present; Motel 6 1970s-Present)

Tenants on the subject property include Denny's (1960s-Present) and Motel 6 (1970s-Present).

The subject property parcel was historically used for agricultural purposes. There is a potential that agricultural related chemicals such as pesticides, herbicides, and fertilizers, may have been used and stored onsite. The subject property is either paved over or covered by building structures that minimize direct contact to any potential remaining concentrations in the soil. Additionally, during previous site development activities, near surface soils (where residual agricultural chemical concentrations would have most likely been present, if at all) were generally mixed with fill material or disturbed during grading. Also, it is common that engineered fill material is placed over underlying soils as part of the development activities. Furthermore, it is likely that residual agricultural chemicals (if any) would have likely degraded since the site was last utilized for agricultural purposes. These additional variables serve to further reduce the potential for exposure to residual agricultural chemicals (if any). Based on these reasons, Partner concludes that the possible former use of agricultural chemicals is not expected to represent a significant environmental concern at this time.

No other potential environmental concerns were identified in association with the current or former use of the subject property.

3.1 Aerial Photograph Review

Partner obtained available aerial photographs of the subject property and surrounding area from Environmental Data Resources (EDR) on November 17, 2017. The following observations were noted to be visible on the subject property and adjacent properties during the aerial photograph review:

Date: 1938	*Scale: 1"=500'*
Subject Property:	Agricultural land
North:	Agricultural land
South:	Santa Ana River, Road, and Agricultural land
East:	Santa Ana River
West:	Agricultural land

Date: 1941	*Scale: 1"=500'*
Subject Property:	No significant changes visible

Date: 1938		*Scale:* 1"=500'
North:	No significant changes visible	
South:	No significant changes visible	
East:	No significant changes visible	
West:	No significant changes visible	

Date: 1952		*Scale:* 1"=500'
Subject Property:	No significant changes visible	
North:	No significant changes visible	
South:	No significant changes visible	
East:	No significant changes visible	
West:	Developed with what appears to be residential structures	

Date: 1963		*Scale:* 1"=500'
Subject Property:	Vacant lot	
North:	Agricultural land across a roadway	
South:	Interstate 5 Freeway and Santa Ana River	
East:	Santa Ana River	
West:	Vacant lot and new road	

Date: 1966		*Scale:* 1"=500'
Subject Property:	No significant changes visible	
North:	No significant changes visible	
South:	No significant changes visible	
East:	No significant changes visible	
West:	No significant changes visible	

Date: 1972		*Scale:* 1"=500'
Subject Property:	Developed with existing Denny's building; remaining portions vacant	
North:	Developed with a commercial structure and potential fueling canopies across a roadway	
South:	No significant changes visible	
East:	No significant changes visible	
West:	Interstate 5 Freeway	

Date: 1977		*Scale:* 1"=500'
Subject Property:	Developed with existing main Motel 6 building on south portion; east portion remains vacant	
North:	No significant changes except a vacant lot to the northeast across a roadway	
South:	No significant changes visible	
East:	No significant changes visible	
West:	No significant changes visible	

Dates: 1987, 1989, 1990		*Scale:* 1"=500'
Subject Property:	Developed with existing second Motel 6 building on east portion; subject property	

Dates: 1987, 1989, 1990		*Scale: 1"=500'*
	fully developed	
North:	No significant changes visible except the vacant lot appears as a parking lot	
South:	No significant changes visible	
East:	No significant changes visible	
West:	No significant changes visible	

Date: 1989, 1990, 1995		*Scale: 1"=500'*
Subject Property:	No significant changes visible	
North:	No significant changes visible	
South:	No significant changes visible	
East:	No significant changes visible	
West:	No significant changes visible	

Date: 2005		*Scale: 1"=500'*
Subject Property:	No significant changes visible	
North:	The former commercial building with canopies and the parking lot have been demolished and the land appears vacant	
South:	No significant changes visible	
East:	No significant changes visible	
West:	Vacant lot followed by Interstate 5 freeway	

Date: 2009, 2010		*Scale: 1"=500'*
Subject Property:	No significant changes visible	
North:	Developed with apartment complex	
South:	No significant changes visible	
East:	No significant changes visible	
West:	No significant changes visible	

Date: 2012		*Scale: 1"=500'*
Subject Property:	No significant changes visible	
North:	No significant changes visible	
South:	No significant changes visible	
East:	No significant changes visible	
West:	Developed with commercial structures followed by Interstate 5 freeway	

Copies of select aerial photographs are included in Appendix B of this report.

3.2 Fire Insurance Maps

Partner reviewed the collection of Sanborn Fire insurance maps from Environmental Data Resources (EDR) on November 17, 2017. Sanborn map coverage was not available for the subject property.

Copies of reviewed Sanborn Maps are included in Appendix B of this report.

3.3 City Directories

Partner reviewed historical city directories obtained from Environmental Data Resources (EDR) on November 17, 2017 for past names and businesses that were listed for the subject property and adjacent properties. The findings are presented in the following table:

City Directory Search for 2920 West Chapman Avenue (Subject Property)

Year(s)	Occupant Listed
1980	Orange
1986	Orange
1995	Motel 6/Orange
2005	Motel 6 Operating LP
2010	Motel 6 Operating LP LTD Partnership
2014	Motel 6 Operating LP

City Directory Search for 3000 West Chapman Avenue (Subject Property)

Year(s)	Occupant Listed
1970	Dennys Restaurant No 154
1975	Orange
1980	Orange
1986	Orange
1991	Orange
1995	Dennys Restaurant/Orange
2005	Dennys Inc.
2010	Dennys Inc.
2014	Dennys Inc.

Based on the city directory review, no environmentally sensitive listings were identified for the subject property addresses based solely on the entity name.

City Directory Search for Adjacent Properties

Year(s)	Occupant Listed
1965	**Freeway Service Center** (3011 W Chapman Ave)
1975	**Bills Service Center** (3011 W Chapman Ave)
1986	**A & Ms Mobil Service** (3011 W Chapman Ave)
1991	**A & Ms Mobil Service** (3011 W Chapman Ave)
2005	Guillermo Velasco (3063 W Chapman Ave)
2010	Phamily Spt Medicine Physicians/Emergency Machine Mgt Inc/D S Family Enterprises Inc/Free Style Finance/Yih-Chang Li MD Prof Corp/Genuine Tours & Event Mktg/Progressive Law Group Inc/ Jone Christopher/ Vision To Web LLC/Samaniego Investigations/Wet Rain Inc/Carprei Inc/Cloud 9 Inc/Renaissance Uptown Garage/Medici Enterprises LLC/Street Angels/Lebanese Arabic School/Things From Middle Earth/Streamline Auto Concepts/Adrian Empire Incorporated/Torres Family Developers/Reliable Leads LLC (3063 W Chapman Ave)

City Directory Search for Adjacent Properties	
2014	Jack In The Box Family Restaurants (3050 W Chapman Ave); Sunny Coast Windows Doors/Stronghold Garage Doors/Lavender Blue LLC/Justin Robert Busch MD/Don Roberts All Around Entertainment LLC/Renaissance Uptown Garage/Medici Enterprises LLC/West Corporation/SM Management Company/Street Angels/Lebanese Arabic School/Sung Won Han SUNG WON HAN/Goal Keep Logistics Inc (3063 W Chapman Ave); ATC Development LLC/AAA Flag & Banner Mfg Co Inc/California Pita Grill/Waba Grill/Suphattra Retreat LLC (3070 W Chapman Ave);

According to the city directory review, the adjacent property to the north has been occupied by a service center and gasoline station from the 1960s through the 1980s at 3011 West Chapman Avenue. This facility was identified as a Leaking Underground Storage Tank (LUST) site, as discussed in Section 4.2.3.

Copies of reviewed city directories are included in Appendix B of this report.

3.4 Historical Topographic Maps

Partner reviewed historical topographic maps obtained from Environmental Data Resources (EDR) on November 17, 2017. The following observations were noted to be depicted on the subject property and adjacent properties during the topographic map review:

Dates: 1896, 1898, 1901, 1902, 1935	
Subject Property:	Undeveloped
North:	Undeveloped
South:	Intersection of Santa Ana Boulevard/Railroad and Santa Ana River followed by undeveloped land
East:	Santa Ana River
West:	Santa Ana Boulevard/Railroad and undeveloped land

Date: 1942	
Subject Property:	Agricultural land
North:	Agricultural land
South:	Intersection of Santa Ana Boulevard/Railroad and Santa Ana River followed by undeveloped land
East:	Santa Ana River followed by Agricultural land
West:	Santa Ana Boulevard/Railroad and agricultural land

Dates: 1949, 1950	
Subject Property:	No significant changes depicted
North:	No significant changes depicted
South:	No significant changes depicted
East:	No significant changes depicted
West:	No significant changes depicted

Dates: 1964, 1965	
Subject Property:	Depicted as undeveloped
North:	No significant changes depicted
South:	Intersection of Interstate 5 Freeway and Santa Ana River
East:	No significant changes depicted
West:	Interstate 5 Freeway followed by medical center and juvenile court

Date: 1972	
Subject Property:	Depicted with existing Denny's structure on northwest portion
North:	No significant changes depicted
South:	No significant changes depicted
East:	No significant changes depicted
West:	No significant changes depicted

Date: 1981	
Subject Property:	Depicted as developed with the three existing structures
North:	Depicted as developed with commercial/residential structures
South:	No significant changes depicted
East:	Santa Ana River followed by developed land
West:	No significant changes depicted

Date: 2012	
Subject Property:	Depicted as developed
North:	Depicted as developed
South:	Intersection of Interstate 5 Freeway and Santa Ana River
East:	Santa Ana River
West:	Depicted as developed including Interstate 5 Freeway

Copies of reviewed topographic maps are included in Appendix B of this report.

4.0 REGULATORY RECORDS REVIEW

4.1 Regulatory Agencies

4.1.1 State Department

Regulatory Agency Data	
Name of Agency:	California EPA, Office of Environmental Health Hazard Assessment (OEHHA)
Point of Contact:	Monet Vela
Agency Address:	1001 I Street, Sacramento, California
Agency Phone Number:	(916) 324-7572
Date of Contact:	November 28, 2017
Method of Communication:	Email
Summary of Communication:	As of the date of this report, Partner has not received a response from the OEHHA for inclusion in this report.

A copy of pertinent documents is included in Appendix B of this report.

4.1.2 Health Department

Regulatory Agency Data	
Name of Agency:	Orange County Health Care Agency (OCHCA)
Point of Contact:	Custodian of Records
Agency Address:	200 West Santa Ana Blvd, STE 125, Santa Ana, California
Agency Phone Number:	(714) 834-2044
Date of Contact:	November 13, 2017
Method of Communication:	Email
Summary of Communication:	As of the date of this report, Partner has not received a response from the OCHCA for inclusion in this report.

A copy of pertinent documents is included in Appendix B of this report.

4.1.3 Fire Department

Regulatory Agency Data	
Name of Agency:	City of Orange Fire Department (OFD)
Point of Contact:	City Clerk's Office
Agency Address:	300 E. Chapman Avenue, Orange, California
Agency Phone Number:	(714) 744-5500
Date of Contact:	November 28, 2017
Method of Communication:	Email
Summary of Communication:	No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the OFD.

A copy of pertinent documents is included in Appendix B of this report.

4.1.4 Air Pollution Control Agency

Regulatory Agency Data	
Name of Agency:	South Coast Air Quality Management District (SCAQMD)
Point of Contact:	Public Records Unit
Agency Address:	21865 Copley Drive, Diamond Bar, California
Agency Phone Number:	(909) 396-2000
Date of Contact:	November 29, 2017
Method of Communication:	Online
Summary of Communication:	No Permits to Operate (PTO), Notices of Violation (NOV), or Notices to Comply (NTC) or the presence of AULs, dry cleaning machines, or USTs were on file for the subject property with the SCAQMD.

A copy of pertinent documents is included in Appendix B of this report.

4.1.5 Regional Water Quality Agency

Regulatory Agency Data	
Name of Agency:	Regional Water Quality Control Board (RWQCB)
Point of Contact:	Geotracker Online Database System
Agency Address:	1001 I Street, Sacramento, California
Agency Phone Number:	(866) 480-1028
Date of Contact:	November 7, 2017
Method of Communication:	Online
Summary of Communication:	No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the RWQCB.

A copy of pertinent documents is included in Appendix B of this report.

4.1.6 Department of Toxic Substances Control

Regulatory Agency Data	
Name of Agency:	California Department of Toxic Substances Control (DTSC)
Point of Contact:	Envirostor Online Database System
Agency Address:	1001 I Street, Sacramento, California
Agency Phone Number:	(800) 728-6942
Date of Contact:	November 7, 2017
Method of Communication:	Online
Summary of Communication:	No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the DTSC.

A copy of pertinent documents is included in Appendix B of this report.

4.1.7 Building Department

Regulatory Agency Data	
Name of Agency:	City of Orange Building Department (OBD)
Point of Contact:	Building Division Online Database

Regulatory Agency Data	
Agency Address:	300 East Chapman Avenue, Orange, California
Agency Phone Number:	(714) 744-7200
Date of Contact:	November 29, 2017
Method of Communication:	Online
Summary of Communication:	Records were available for review, as further discussed in the following table.

Building Records Reviewed for 2920 and 3000 West Chapman Avenue (Subject Property)

Year(s)	Owner/Applicant	Description (2920 West Chapman Avenue)
1988	Not reported	Building permit for mechanical
1989	Not reported	Building permits for motel building, electrical
1996	Not reported	Building permit for "demo res"
1997	Not reported	Building permits for electrical, commercial building, plumbing
2000	Not reported	Building code violation for "substandard living" (closed)
2005	Not reported	Building permits for change out showers, re-roof
2011	Not reported	Building permit for "pool lift"
2014	Not reported	Building permits for signage, alteration/repair
2015	Not reported	Building permit for "administrative"
NA	Not reported	Building permit for construction of new 194,700 SF hotel (status "submitted", no date reported)
		Description (3000 West Chapman Avenue)
1989	Not reported	Building permit for mechanical
1990	Not reported	Building permits for commercial building, electrical
1995	Not reported	Building permits for restaurant, electrical, commercial building, plumbing
1996	Not reported	Building permit for electrical
2000	Not reported	Building permit for re-roof
2004	Not reported	Building permit for signage

A copy of pertinent documents is included in Appendix B of this report.

4.1.8 Planning Department

Regulatory Agency Data	
Name of Agency:	City of Orange Planning Department (OPD)
Point of Contact:	Zoning Division
Agency Address:	300 East Chapman Avenue, Orange, California
Agency Phone Number:	(714) 744-2225
Date of Contact:	November 29, 2017
Method of Communication:	Online
Summary of Communication:	According to records reviewed, the subject property is zoned General Business (C2) for commercial development by the City of Orange.

A copy of pertinent documents is included in Appendix B of this report.

4.1.9 Oil & Gas Exploration

Regulatory Agency Data	
Name of Agency:	California Division of Oil, Gas and Geothermal Resources (DOGGR)
Point of Contact:	DOGGR Online Search
Agency Address:	801 K Street, MS 12-30, Sacramento, California
Agency Phone Number:	(916) 445-1825
Date of Contact:	November 28, 2017
Method of Communication:	Online
Summary of Communication:	According to DOGGR, no oil or gas wells are located on or adjacent to the subject property.

A copy of pertinent documents is included in Appendix B of this report.

4.1.10 Assessor's Office

Regulatory Agency Data	
Name of Agency:	Orange County Treasurer Tax Collector (OCTTC)
Point of Contact:	Online Database Search
Agency Address:	625 North Ross Street, Santa Ana, California
Agency Phone Number:	(714) 834-3411
Date of Contact:	November 29, 2017
Method of Communication:	Online
Summary of Communication:	According to records reviewed, the subject property is identified by the following Assessor Parcel Numbers (APNs) including associated square footages and total size:

APN	SF	Acres
231-641-05	218	0.005
231-641-09	5,750	0.132
231-641-10	52,795	1.212
231-641-11	89,864	2.063
231-641-12	49,310	1.132
TOTAL:	197,937	4.544

The subject property is currently owned by the Alice Wagner Trust since 1946. The current Denny's building appears to have been constructed between 1966 and 1972. The current main Motel 6 building on the southern portion of the subject property appears to have been constructed between 1972 and 1977. The current second Motel 6 building on the eastern portion of the subject property appears to have been constructed between 1977 and 1980.

A copy of pertinent documents is included in Appendix B of this report.

4.2 Mapped Database Records Search

Information from standard federal, state, county, and city environmental record sources was provided by Environmental Data Resources, Inc. (EDR). Data from governmental agency lists are updated and integrated into one database, which is updated as these data are released. The information contained in this report was compiled from publicly available sources and the locations of the sites are plotted utilizing a geographic information system, which geocodes the site addresses. The accuracy of the geocoded locations is approximately +/-300 feet.

Using the ASTM definition of migration, Partner considers the migration of hazardous substances or petroleum products in any form onto the subject property during the evaluation of each site listed on the radius report, which includes solid, liquid, and vapor.

4.2.1 Regulatory Database Summary

Radius Report Data				
Database	**Search Radius (mile)**	**Subject Property**	**Adjacent Properties**	**Sites of Concern**
Federal NPL or Delisted NPL Site	1.00	N	N	N
Federal CERCLIS Site	0.50	N	N	N
Federal CERCLIS-NFRAP Site	0.50	N	N	N
Federal RCRA CORRACTS Facility	1.00	N	N	N
Federal RCRA TSDF Facility	0.50	N	N	N
Federal RCRA Generators Site (LQG, SQG, CESQG)	0.25	N	N	N
Federal IC/EC Registries	0.50	N	N	N
Federal ERNS Site	Subject Property	N	N/A	N/A
State/Tribal Equivalent NPL	1.00	N	N	N
State/Tribal Equivalent CERCLIS	1.00	N	N	N
State/Tribal Landfill/Solid Waste Disposal Site	0.50	N	N	N
State/Tribal Leaking Storage Tank Site	0.50	N	**Y**	N
State/Tribal Registered Storage Tank Sites (UST/AST)	0.25	N	**Y**	N
State/Tribal Voluntary Cleanup Sites (VCP)	0.50	N	N	N
State/Tribal Spills	0.50	N	N	N
Federal Brownfield Sites	0.50	N	N	N
State Brownfield Sites	0.50	N	N	N
EDR MGP	Varies	N	N	N
EDR US Hist Auto Station	Varies	N	N	N
EDR US Hist Cleaners	Varies	N	N	N

4.2.2 Subject Property Listings

The subject property is not identified in the regulatory database report.

4.2.3 *Adjacent Property Listings*

The adjacent property to the north is identified as a Leaking Underground Storage Tank (LUST), Historical UST and CA FID UST site in the regulatory database report, as discussed below:

- The adjacent property, identified as Mobil Service Station #18-ENA at 3011 West Chapman Avenue, was historically located to the north and hydraulically up-gradient in relation to the subject property. This facility was identified on the LUST database with a "Closed" release case (LUST ID T0605900213). According to records reviewed on the RWQCB GeoTracker online database and historical aerial photographs (Section 3.1), the facility was occupied by a retail gas station from at least 1972 to 1992. On February 27, 1987, a loss of gasoline was reported from a fuel line near the southernmost fuel island. The fuel line was subsequently repaired. In 1993, four USTs were removed from the site including two 10,000-gallon gasoline tanks, a 12,000-gallon diesel tank and a 1,000-gallon waste oil tank. In addition to the tanks, one clarifier and two floor hoists were also removed on March 18, 1993, under the supervision of the Orange Fire Department. During removal, the fiberglass tanks were found to be in good condition with no visible holes. Subsurface soil sample results identified total petroleum hydrocarbons (TPH) as gasoline (TPH-g), total recoverable petroleum hydrocarbons (TRPH) and xylene concentrations in the tank cavity. Additional subsurface soil samples collected identified TPH-g, TRPH, benzene, toluene, ethylbenzene and xylenes (BTEX) at maximum concentrations of 21,700, 5,900, 210, 1,300, 2,000 and 2,200 milligrams per kilogram (mg/kg), respectively. A soil vapor extraction system (SVE) was installed to mitigate soil impacts and was operated until November 1996. Five confirmation soil borings were installed and sampled for petroleum constituents in November 1996, which revealed TPH, benzene, toluene, ethylbenzene and xylenes at maximum concentrations of 5.9, 0.043, 0.0076, 0.12 and 1.1 mg/kg, respectively at depths ranging from 30 to 35 feet bgs. Soil samples collected at deeper depths from each of the soil borings did not reveal detectable impacts. Additionally, one soil boring was converted to a groundwater monitoring well and sampled for petroleum constituents. Depth to groundwater was measured at 79.8 feet bgs. The groundwater sample was non-detect for TPH, TRPH and BTEX constituents. The responsible party is identified as Mobil Oil Corporation, and regulatory closure was obtained on January 29, 1997. Based on the removal of the USTs, remediation of the impacted soil, absence of groundwater impacts and regulatory closure on behalf of the responsible party, this listing is not expected to represent a significant environmental concern and it is unlikely that a regulatory file review for this site would alter the findings of this assessment.

The adjacent property to the west is identified as a LUST, CHMIRS, HAZNET and NPDES site in the regulatory database report, as discussed below:

- The adjacent property, identified as UCI Medical Center at 101 The City Drive South, is located adjacent to the west and hydraulically cross-gradient of the subject property. This site reported a release of gasoline on October 6, 1992, which reportedly impacted soil only. The release was reported to the lead agency (RWQCB) on October 6, 1992. A second release (of diesel fuel) was reported on October 5, 1992, which reportedly also impacted soil only. The responsible party is

identified as UCI Medical Center, and regulatory closure was obtained for both releases on October 30, 1997. The facility was also listed as a CHMIRS site with Incident #13-5159, which was reported on August 20, 2013. The Orange Fire Department was notified of a sewage release from a blocked sewer line causing a release of material through a sewer manhole and spilled approximately 1,000 gallons into the parking lot. The storm drain was affected by the release; however, the Watershed Department of the Orange County Flood Control stated there was no release to the Santa Ana River. Cleanup of the spill was completed. The site was listed on the HAZNET database pertaining to the removal of documented asbestos-containing waste under manifest. Finally, the site was listed on the NPDES database, which regulates stormwater during construction activities. Based on the media impacted by the gasoline and diesel releases, the regulatory closure and the nature and closure of the sewage spill, these listings are not expected to represent a significant environmental concern and it is unlikely that a regulatory file review for this site would alter the findings of this assessment.

Based on the findings, vapor migration is not expected to represent a significant environmental concern at this time.

4.2.4 Sites of Concern Listings

No sites of concern are identified in the regulatory database report.

Based on the findings, vapor migration is not expected to represent a significant environmental concern at this time.

4.2.5 Orphan Listings

The EDR database identified six orphan sites; however, these sites does not appear to be within the vicinity of the subject property and therefore do not constitute a significant environmental concern.

A copy of the regulatory database report is included in Appendix C of this report.

5.0 USER PROVIDED INFORMATION AND INTERVIEWS

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the *Brownfields Amendments*), the *User* must conduct the following inquiries required by 40 CFR 312.25, 312.28, 312.29, 312.30, and 312.31. The *User* should provide the following information to the *environmental professional.* Failure to provide this information could result in a determination that *all appropriate inquiries* is not complete. The *User* is asked to provide information or knowledge of the following:

- Review Title and Judicial Records for Environmental Liens and AULs
- Specialized Knowledge or Experience of the User
- Actual Knowledge of the User
- Reason for Significantly Lower Purchase Price
- Commonly Known or *Reasonably Ascertainable* information
- Degree of Obviousness
- Reason for Preparation of this Phase I ESA

Fulfillment of these user responsibilities is key to qualification for the identified defenses to CERCLA liability. Partner requested our Client to provide information to satisfy User Responsibilities as identified in Section 6 of the ASTM guidance.

Pursuant to ASTM E1527-13, Partner requested the following site information from DCSG Developments (User of this report).

User Responsibilities

Item	Provided By User	Not Provided By User	Discussed Below	Does Not Apply
Environmental Pre-Survey Questionnaire			**X**	
Title Records, Environmental Liens, and AULs			**X**	
Specialized Knowledge			**X**	
Actual Knowledge			**X**	
Valuation Reduction for Environmental Issues			**X**	
Identification of Key Site Manager	**Section 5.1.3**			
Reason for Performing Phase I ESA	**Section 1.1**			
Prior Environmental Reports		**X**		
Other				**X**

5.1 Interviews

5.1.1 Interview with Owner

Mr. Chuck Payton, subject property owner representative, was not aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

According to Mr. Payton, the subject property was developed in the 1970s for hotel and restaurant use. Prior to that, the subject property was developed agriculturally as early as 1938 until circa the 1960s. Mr. Payton further stated that there are no USTs, ASTs, clarifiers, oil/water separators, groundwater monitoring wells, or hazardous substance use/storage/generation on the subject property to the best of his knowledge. Mr. Payton also stated that no dry-cleaning activities take place on the subject property.

5.1.2 Interview with Report User

Mr. Dennis Constanzo, report user, was not aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

According to Mr. Constanzo, the subject property was developed in the 1960s for hotel and restaurant use. Prior to that, the subject property was developed agriculturally as early as 1938 until circa the 1960s. Mr. Constanzo further stated that there are no USTs, ASTs, clarifiers, oil/water separators, groundwater monitoring wells, or hazardous substance use/storage/generation on the subject property to the best of his knowledge.

5.1.3 Interview with Key Site Manager

Mr. Dustin Zarend (Motel 6) and Mr. Saeed (Denny's), key site managers, indicated that they had no information pertaining to any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

According to Mr. Zarend and Mr. Saeed, there are no USTs, ASTs, clarifiers, oil/water separators, groundwater monitoring wells, or hazardous substance use/storage/generation on the subject property to the best of their knowledge. Mr. Zarend stated that there is no dry cleaning performed onsite and that laundry services for guests and hotel linens are used via washers and dryers. Mr. Saeed stated that waste grease and oil is stored temporarily in two above ground grease traps before an outside vendor transports and properly disposes of it offsite.

5.1.4 Interviews with Past Owners, Operators and Occupants

Interviews with past owners, operators and occupants were not conducted since information regarding the potential for contamination at the subject property was obtained from other sources.

5.1.5 Interview with Others

As the subject property is not an abandoned property as defined in ASTM 1527-13, interview with others were not performed.

5.2 User Provided Information

5.2.1 Title Records, Environmental Liens, and AULs

Partner was not provided with title records or environmental lien and AUL information for review as part of this assessment.

5.2.2 Specialized Knowledge

No specialized knowledge of environmental conditions associated with the subject property was provided by the User at the time of the assessment.

5.2.3 Actual Knowledge of the User

No actual knowledge of any environmental lien or AULs encumbering the subject property or in connection with the subject property was provided by the User at the time of the assessment.

5.2.4 Valuation Reduction for Environmental Issues

No knowledge of valuation reductions associated with the subject property was provided by the User at the time of the assessment.

5.2.5 Commonly Known or Reasonably Ascertainable Information

The User did not provide information that is commonly known or *reasonably ascertainable* within the local community about the subject property at the time of the assessment.

5.2.6 Previous Reports and Other Provided Documentation

No previous reports or other pertinent documentation was provided to Partner for review during the course of this assessment.

6.0 SITE RECONNAISSANCE

The weather at the time of the site visit was sunny and clear. Refer to Section 1.5 for limitations encountered during the field reconnaissance and Sections 2.1 and 2.2 for subject property operations. The table below provides the site assessment details:

Site Assessment Data	
Site Assessment Performed By:	Ramil G. Reyes
Site Assessment Conducted On:	November 21, 2017

The table below provides the subject property personnel interviewed during the field reconnaissance:

Site Visit Personnel for 2920 and 3000 West Chapman Avenue (Subject Property)			
Name	**Title/Role**	**Contact Number**	**Site Walk* Yes/No**
Mr. Dustin Zarend	Key Site Manager (Motel 6)	(714) 634-2441	Yes
Mr. Saeed	Key Site Manager (Denny's)	(714) 634-0161	Yes

* Accompanied Partner during the field reconnaissance activities and provided information pertaining to the current operations and maintenance of the subject property

No potential environmental concerns were identified during the onsite reconnaissance.

6.1 General Site Characteristics

6.1.1 Solid Waste Disposal

Solid waste generated at the subject property is disposed of in commercial dumpsters located in the center of the subject property between the Denny's and the main Motel 6 buildings. An independent solid waste disposal contractor, CR&R Environmental Services, removes solid waste from the subject property. Solid waste generated at the subject property includes food waste, waste cooking oil, household/hotel/office related trash, and general debris. Waste grease and oil generated from Denny's is stored in two 50-gallon capacity above ground grease traps, which are serviced by an outside vendor, JC's Grease Buyers, who properly disposes it offsite. No evidence of illegal dumping of solid waste was observed during the Partner site reconnaissance.

6.1.2 Sewage Discharge and Disposal

Sanitary discharges on the subject property are directed into the municipal sanitary sewer system. The City of Orange services the subject property vicinity. No wastewater treatment facilities or septic systems are observed or reported on the subject property.

6.1.3 Surface Water Drainage

Storm water is removed from the subject property primarily by sheet flow action across the paved surfaces towards storm water drains located throughout the subject property and in the public right of way. Site storm water from roofs, landscaped areas, and paved areas is directed to on-site concrete swales, which drain to the public right of way, and to on-site storm water drains. The subject property is connected to a municipal owned and maintained sewer system.

The subject property does not appear to be a designated wetland area, based on information obtained from the United States Fish & Wildlife Service; however, a comprehensive wetlands survey would be required in order to formally determine actual wetlands on the subject property. No surface impoundments, wetlands, natural catch basins, settling ponds, or lagoons are located on the subject property. No drywells were identified on the subject property.

6.1.4 Source of Heating and Cooling

Heating and cooling systems as well as domestic hot water equipment are fueled by electricity and natural gas provided by Southern California Edison (SCE) and Southern California Gas Company (SCGC), respectively. The mechanical system is comprised of rooftop-mounted packaged electric/natural gas split HVAC units (Denny's) and natural gas-fired boilers (Motel 6). Hot water is provided by central natural gas boiler units (Motel 6) and individual natural gas/electric hot water heaters (Denny's).

6.1.5 Wells and Cisterns

No aboveground evidence of wells or cisterns was observed during the site reconnaissance.

6.1.6 Wastewater

Domestic wastewater generated at the subject property is disposed by means of the sanitary sewer system. No industrial process is currently performed at the subject property.

6.1.7 Septic Systems

No septic systems were observed or reported on the subject property.

6.1.8 Additional Site Observations

No additional general site characteristics were observed during the site reconnaissance.

6.2 Potential Environmental Hazards

6.2.1 Hazardous Substances and Petroleum Products Used or Stored at the Site

Small quantities of general maintenance and janitorial supplies were found to be properly labeled and stored at the time of the assessment at each of the buildings with no signs of leaks, stains, or spills. The storage and use of maintenance supplies and janitorial products does not appear to pose a significant threat to the environmental integrity of the subject property at this time.

Partner identified bulk quantities of hazardous substances used, stored, and/or generated on the subject property as noted in the following table:

Hazardous Substances and/or Petroleum Products Noted Onsite

Substance	Container Size	Location	Nature of Use	Disposal Method
Waste grease/used cooking oil	2x 50-gallon aboveground grease traps	Next to kitchen area	Store/collect waste grease/oil	Transported off-site by JC's Grease Buyers monthly

The materials were found to be properly labeled and stored at the time of the assessment with no signs of leaks, stains, or spills. Secondary containment is provided. Based on the nature of use, overall small quantities observed, presence of secondary containment, and lack of violations on-file with the local fire department, these materials are not expected to represent a significant environmental concern.

6.2.2 Aboveground & Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)

Partner observed two 50-gallon capacity aboveground grease traps for the storage of used cooking oil/waste grease on the subject property. The grease traps are located on the next to the kitchen area of the Denny's restaurant of the subject property. The grease traps are equipped with secondary containment. No staining, leaks or spills were noted in the vicinity of the grease traps, and no releases have been reported to the local fire or health department.

Copies of pertinent documents are included in Appendix B of this report.

6.2.3 Evidence of Releases

No spills, stains or other indications that a surficial release has occurred at the subject property were observed.

6.2.4 Polychlorinated Biphenyls (PCBs)

Older transformers and other electrical equipment could contain PCBs at a level that subjects them to regulation by the U.S. EPA. PCBs in electrical equipment are controlled by United States Environmental Protection Agency regulations 40 CFR, Part 761. Under the regulations, there are three categories into which electrical equipment can be classified: 1) Less than 50 parts per million (ppm) of PCBs – *"Non-PCB;"* 2) 50 ppm-500 ppm – *"PCB-Contaminated;"* and, 3) Greater than 500 ppm – *"PCB-Containing."* The manufacture, process, or distribution in commerce or use of any PCB in any manner other than in a totally enclosed manner was prohibited after January 1, 1977.

The on-site reconnaissance addressed indoor and outdoor transformers that may contain PCBs. Two pad-mounted transformers were observed on the subject property. The transformers are not labeled indicating PCB content. No staining or leakage was observed in the vicinity of the transformers. Partner contacted a customer service representative of Southern California Edison (SCE), who confirmed that SCE maintains ownership and operational responsibility for the transformers. Based on the good condition of the equipment, the transformers are not expected to represent a significant environmental concern.

Additionally, no other potential PCB-containing equipment (interior transformers, oil-filled switches, hoists, lifts, dock levelers, hydraulic elevators, balers, etc.) was observed on the subject property during Partner's reconnaissance.

6.2.5 Strong, Pungent or Noxious Odors

No strong, pungent or noxious odors were evident during the site reconnaissance.

6.2.6 Pools of Liquid

No pools of liquid were observed on the subject property during the site reconnaissance.

6.2.7 *Drains, Sumps and Clarifiers*

No drains, sumps, or clarifiers, other than those associated with storm water removal, were observed on the subject property during the site reconnaissance.

6.2.8 *Pits, Ponds and Lagoons*

No pits, ponds or lagoons were observed on the subject property.

6.2.9 *Stressed Vegetation*

No stressed vegetation was observed on the subject property.

6.2.10 *Additional Potential Environmental Hazards*

No additional environmental hazards, including landfill activities or radiological hazards, were observed.

6.3 Non-ASTM Services

6.3.1 *Asbestos-Containing Materials (ACMs)*

Asbestos is the name given to a number of naturally occurring, fibrous silicate minerals mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1926.1101 requires certain construction materials to be *presumed* to contain asbestos, for purposes of this regulation. All thermal system insulation (TSI), surfacing material, and asphalt/vinyl flooring that are present in a building constructed prior to 1981 and have not been appropriately tested are "presumed asbestos-containing material" (PACM).

The subject property buildings were constructed in the 1960s (Denny's building) and 1970s (Motel 6 buildings). Partner has conducted a limited, visual evaluation of accessible areas for the presence of suspect ACMs at the subject property. The objective of this visual survey was to note the presence and condition of suspect ACM observed. Please refer to the table below for identified suspect ACMs:

Suspect ACMs

Suspect ACM	Location	Friable Yes/No	Physical Condition
Drywall Systems	Throughout Buildings Interiors	No	Good
Floor Tiles	Throughout Buildings Interiors	No	Good
Floor Tile Mastic	Throughout Buildings Interiors	No	Good
Spray-Applied Acoustical Material	Throughout Buildings Interiors	Yes	Good
Stucco	Throughout Buildings Exteriors	Yes	Good

The limited visual survey consisted of noting observable materials (materials which were readily accessible and visible during the course of the site reconnaissance) that are commonly known to potentially contain asbestos. This activity was not designed to discover all sources of suspect ACM, PACM, or asbestos at the site; or to comply with any regulations and/or laws relative to planned disturbance of building materials such as renovation or demolition, or any other regulatory purpose. Rather, it is intended to give the User an indication if significant (significant due to quantity, accessibility, or condition) potential sources of ACM or

PACM are present at the subject property. Additional sampling, assessment, and evaluation will be warranted for any other use.

Partner was not provided building plans or specifications for review, which may have been useful in determining areas likely to have used ACM.

According to the US EPA, ACM and PACM that is intact and in good condition can, in general, be managed safely in-place under an Operations and Maintenance (O&M) Program until removal is dictated by renovation, demolition, or deteriorating material condition. Prior to any disturbance of the construction materials within this facility, a comprehensive ACM survey is recommended.

6.3.2 Lead-Based Paint (LBP)

Lead is a highly toxic metal that affects virtually every system of the body. LBP is defined as any paint, varnish, stain, or other applied coating that has 1 mg/cm^2 (or 5,000 ug/g or 0.5% by weight) or more of lead. Congress passed the Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as "Title X", to protect families from exposure to lead from paint, dust, and soil. Under Section 1017 of Title X, intact LBP on most walls and ceilings is not considered a "hazard," although the condition of the paint should be monitored and maintained to ensure that it does not become deteriorated. Further, Section 1018 of this law directed the Housing and Urban Development (HUD) and the US EPA to require the disclosure of known information on LBP and LBP hazards before the sale or lease of most housing built before 1978.

Based on the age of the subject property buildings (pre-1978), there is a potential that LBP is present. Interior and exterior painted surfaces were observed in good condition and therefore not expected to represent a "hazard," although the condition of the paint should be monitored and maintained to ensure that it does not become deteriorated.

6.3.3 Radon

Radon is a colorless, odorless, naturally occurring, radioactive, inert, gaseous element formed by radioactive decay of radium (Ra) atoms. The US EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, according to the table below:

EPA Radon Zones		
EPA Zones	**Average Predicted Radon Levels**	**Potential**
Zone 1	Exceed 4.0 pCi/L	Highest
Zone 2	Between 2.0 and 4.0 pCi/L	Moderate
Zone 3	Less than 2.0 pCi/L	Low

It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the US EPA recommends site-specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures. Radon sampling was not conducted as part of this assessment. Review of the US EPA Map of

Radon Zones places the subject property in Zone 3. Based upon the radon zone classification, radon is not considered to be a significant environmental concern.

6.3.4 Lead in Drinking Water

According to available information, a public water system operated by the Orange County Water District (OCWD) serves the subject property vicinity. According to a representative of the OCWD, shallow groundwater beneath the subject property is not utilized for domestic purposes. The City of Orange obtains approximately 75% of its water from ground water sources via 15 active wells. The ground water basin is managed by the OCWD. According to the City of Orange and the 2016 Annual Water Quality Report, water supplied to the subject property is in compliance with all State and Federal regulations pertaining to drinking water standards, including lead and copper. Water sampling was not conducted to verify water quality.

6.3.5 Mold

Molds are microscopic organisms found virtually everywhere, indoors and outdoors. Mold will grow and multiply under the right conditions, needing only sufficient moisture (e.g.in the form of very high humidity, condensation, or water from a leaking pipe, etc.) and organic material (e.g., ceiling tile, drywall, paper, or natural fiber carpet padding).

Partner observed accessible, interior areas for the subject property buildings for significant evidence of mold growth with the exceptions detailed in Section 1.5 of this report; however, this ESA should not be used as a mold survey or inspection. Additionally, this limited assessment was not designed to assess all areas of potential mold growth that may be affected by mold growth on the subject property. Rather, it is intended to give the client an indication as to whether or not conspicuous (based on observed areas) mold growth is present at the subject property. This evaluation did not include a review of pipe chases, mechanical systems, or areas behind enclosed walls and ceilings.

No obvious indications of water damage or mold growth were observed during Partner's visual assessment.

6.4 Adjacent Property Reconnaissance

The adjacent property reconnaissance consisted of observing the adjacent properties from the subject property premises. No items of environmental concern were identified on the adjacent properties during the site assessment, including hazardous substances, petroleum products, ASTs, USTs, evidence of releases, PCBs, strong or noxious odors, pools of liquids, sumps or clarifiers, pits or lagoons, stressed vegetation, or any other potential environmental hazards.

7.0 FINDINGS AND CONCLUSIONS

Findings

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- Partner did not identify any recognized environmental conditions during the course of this assessment.

A *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- Partner did not identify any controlled recognized environmental conditions during the course of this assessment.

A *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- Partner did not identify any historical recognized environmental conditions during the course of this assessment.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, warrant further discussion. The following was identified during the course of this assessment:

- Due to the age of the subject property buildings, there is a potential that asbestos-containing material (ACM) and/or lead-based paint (LBP) are present. Overall, all suspect ACMs and painted surfaces were observed in good condition and do not pose a health and safety concern to the occupants of the subject property at this time. The identified suspect ACMs would need to be sampled to confirm the presence or absence of asbestos prior to any renovation or demolition activities to prevent potential exposure to workers and/or building occupants.

Conclusions, Opinions and Recommendations

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 of 2920 and 3000 West Chapman Avenue in the City of Orange, Orange County, California (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed no evidence of recognized environmental conditions in connection with the subject property; however, environmental issues were identified. Based on the conclusions of this assessment, Partner recommends no further investigation of the subject property at this time.

8.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Partner has performed a Phase I Environmental Site Assessment of the property located at 2920 and 3000 West Chapman Avenue in the City of Orange, Orange County, California in general conformance with the scope and limitations of the protocol and the limitations stated earlier in this report. Exceptions to or deletions from this protocol are discussed earlier in this report.

By signing below, Partner declares that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR §312. Partner has the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*. Partner has developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Prepared By:

Ramil G. Reyes, REPA
Environmental Professional

Reviewed By:

Miles D. Livermore
Senior Author

9.0 REFERENCES

Reference Documents

American Society for Testing and Materials, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Designation: E1527-13.

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Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, accessed via internet, November 2017

United States Department of Agriculture, Natural Resources Conservation Service, accessed via internet, November 2017

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United States Environmental Protection Agency, EPA Map of Radon Zones (Document EPA-402-R-93-071), accessed via the internet, November 2017

United States Geological Survey, accessed via the Internet, November 2017

United States Geological Survey Topographic Map 1995, 7.5 minute series, accessed via internet, November 2017

APPENDIX F

GEOTECHNICAL REPORT

Converse Consultants
Geotechnical Engineering
Environmental & Groundwater Science
Inspection & Testing Services

GEOTECHNICAL INVESTIGATION AND WATER PERCOLATION TEST REPORT

APPROXIMATELY 2.0-ACRE NEW PARK SITE
2850 WEST CHAPMAN AVENUE
CITY OF ORANGE, ORANGE COUNTY, CALIFORNIA

CONVERSE PROJECT NO. 23-32-133-01



Prepared For:

MIG
109 W. Union Avenue
Fullerton, CA 92832

Presented By:

CONVERSE CONSULTANTS
3176 Pullman Street, Suite 108
Costa Mesa, CA 92626

September 27, 2024

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

September 27, 2024

Mr. Steve Lang, PLA
Principal
MIG
109 W. Union Avenue
Fullerton, CA 92832

Subject: **GEOTECHNICAL INVESTIGATION AND WATER PERCOLATION TEST REPORT**
Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
Converse Project No. 23-32-133-01

Dear Mr. Lang:

Converse Consultants (Converse) is pleased to submit this geotechnical investigation and water percolation test report to assist with the design and construction of a new park, located at 2850 West Chapman Avenue, City of Orange, Orange County, California. The report was prepared in accordance with our proposal dated August 24, 2023, and the Agreement Between MIG, Inc. and Converse Consultants for City of Orange New Park in West Orange Design Services #5627.00 (RFP NO. 23-24.06) dated November 16, 2023.

Based upon our field investigation, laboratory data, and analyses, the project site is considered feasible from a geotechnical standpoint, provided the recommendations presented in this report are incorporated into the design and development of the project.

We appreciate the opportunity to be of service to MIG and the City of Orange. Should you have any questions, please do not hesitate to contact us at 909-474-2847.

CONVERSE CONSULTANTS

Hashmi S. E. Quazi, PhD, PE, GE
Principal Engineer

Dist.: 1-Electronic Pdf /Addressee
AZ/SM/HSQ/kvg

PROFESSIONAL CERTIFICATION

This report has been prepared by the following professionals whose seals and signatures appear hereon.

The findings, recommendations, specifications, and professional opinions contained in this report were prepared in accordance with the generally accepted professional engineering and engineering geologic principle and practice in this area of Southern California. We make no other warranty, either expressed or implied.

Aleksey Zhukov
Staff Engineer

Stephen McPherson, GIT
Staff Geologist



Hashmi S. E. Quazi, PhD, PE, GE
Principal Engineer

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Appendix A.....*Field Exploration*
Appendix B.....*Laboratory Testing Program*
Appendix C.....*Percolation Testing*

1.0 INTRODUCTION

This report presents the results of our geotechnical investigation and water percolation tests performed for the Approximately 2.0-acre New Park Site project, located at 2850 West Chapman Avenue, City of Orange, Orange County, California. The approximate location of the site is shown on Figure No. 1, *Approximate Site Location Map*.

The purposes of this investigation were to determine the nature and engineering properties of the subsurface soils and to provide recommendations for site earthwork, and design and construction of the proposed improvements.

This report is prepared for the project described herein and is intended for use solely by MIG, the City of Orange, and their authorized agents for design purposes. It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the contractors should be responsible for making their own interpretation of the data contained in this report.

2.0 PROJECT DESCRIPTION

The project consists of the proposed development of a new park in the City of Orange on the County of Orange Flood Control property to meet the needs of the community on the west side of the City of Orange, California.

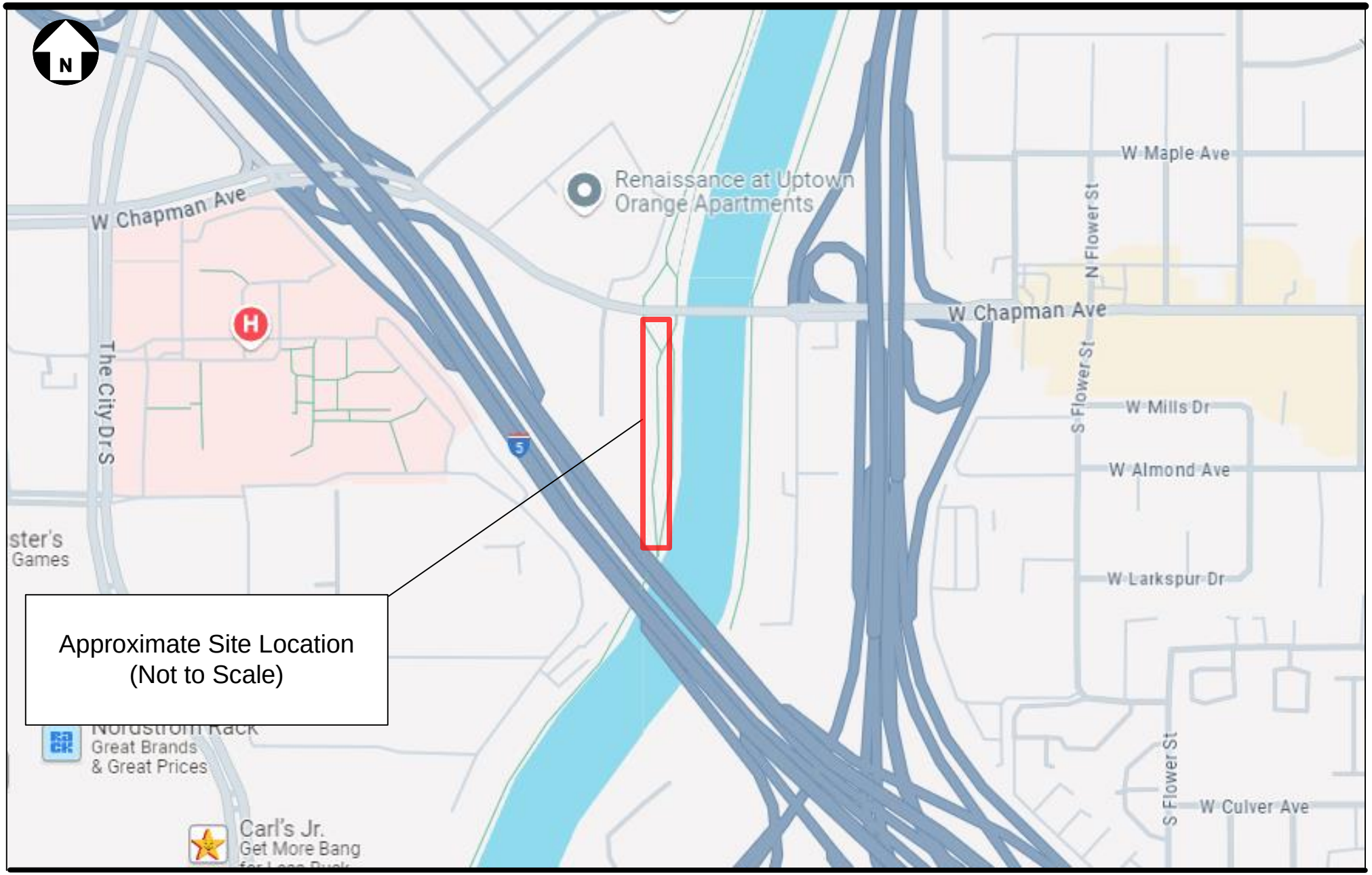
It will include, but not be limited to the following:

- ADA concrete paving
- Fencing
- Monumentation/trail signage
- LED area lighting
- Electrical infrastructure
- Security cameras
- Asphalt paved parking lot
- Active game tables and chairs
- Kids play features
- Demo garden
- Dog amenity

3.0 SITE DESCRIPTION

The proposed new 2.0-acre park site is located at 2850 West Chapman Avenue, City of Orange, Orange County, California. The undeveloped portion of the site is surrounded by a fence with paved trail running across its length.

The site is bounded by W. Chapman Ave. to the north, Santa Ana River Trail to the east, Santa Ana Fwy to the south, and undeveloped land to the west. The approximate



Project: Approximately 2.0-acre New Park Site

Location: 2850 West Chapman Avenue
City of Orange, Orange County, California

For: MIG

Approximate Site Location Map

Project No.
23-32-133-01

Converse Consultants

Figure No.
1

elevation of the site varies between 132 and 140 feet above mean sea level (AMSL). The coordinates for the project site are approximately 33.7865° north latitude and 117.8831° west longitude. There are trees, sparse vegetation, and underground utilities within the fenced area. *Photographs Nos. 1 and* 2 depict the current the site conditions.



Photograph No. 1: Current site conditions near PT-02 facing south.



Photograph No. 2: Current site conditions near BH-01 facing north.

4.0 SCOPE OF WORK

The scope of this investigation includes the following tasks presented below.

4.1 Project Set-up

As part of the project set-up, our staff performed the following tasks.

- Prepared the boring and percolation test locations map and submitted it for your review and approval and coordinated site access.
- Conducted a site reconnaissance and staked/marked the boring and percolation test locations such that drill rig access to all the locations was available.
- Notified Underground Service Alert (USA) at least 48 hours prior to drilling to clear the borings and percolation test locations of any conflict with existing underground utilities.
- Engaged a California-licensed driller to drill exploratory borings.

4.2 Subsurface Exploration

Four exploratory borings (BH-01 through BH-04) and two percolation test holes (PT-01 and PT-02) were drilled on August 27, 2024, to investigate the subsurface conditions within the footprint of the proposed improvements. The borings were drilled to depths between 4.7 and 26.5 feet below ground surface (bgs). Boring details are presented in Drawings Nos. A-2 through A-7, *Logs of Borings.*

After logging and sampling, test holes PT-01 and PT-02 were set up for percolation testing. The depth of PT-02 was restricted to 4.7 feet bgs due to caving in the test hole. Details about the percolation tests are presented in Appendix C, *Percolation Testing*.

The borings were advanced using a truck-mounted drill rig equipped with 8-inch diameter hollow-stem augers for soils sampling.

The approximate locations of the borings are shown on Figure No. 2, *Approximate Boring and Percolation Test Locations Map.* A detailed discussion of the subsurface exploration program is presented in Appendix A, *Field Exploration*.

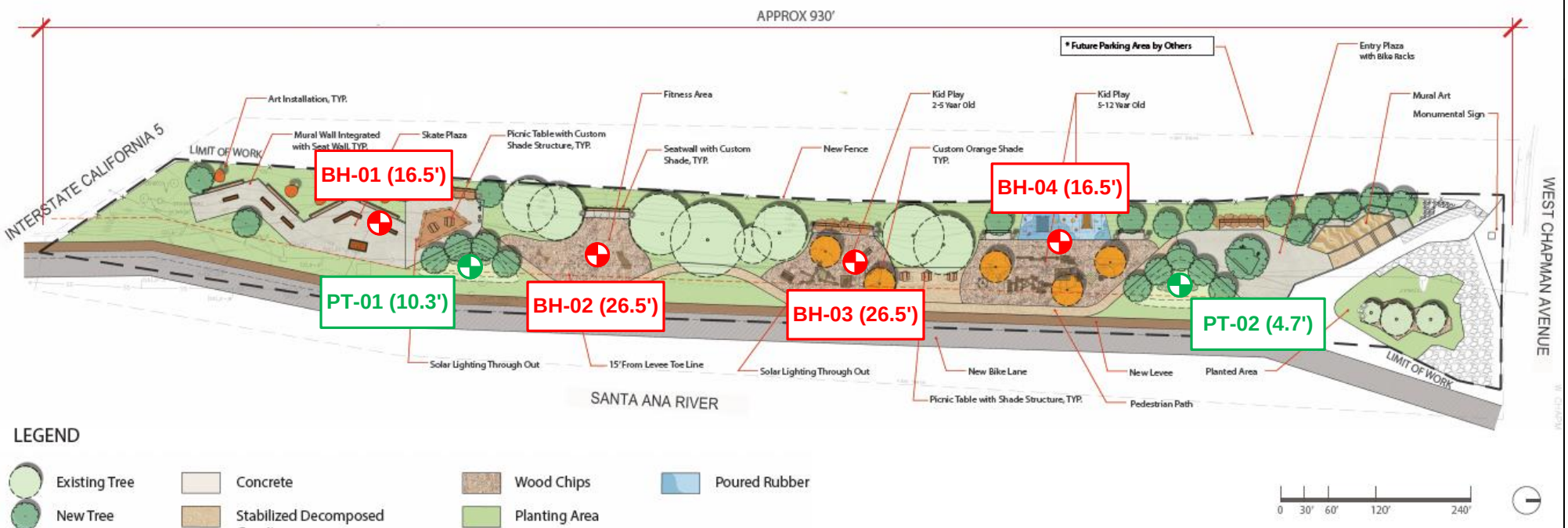
4.3 Laboratory Testing

Representative samples of the site soils were tested in the laboratory to aid in the soil classification and to evaluate the relevant engineering properties. These tests included the following.

- *In-situ* moisture contents and dry density (ASTM D2216 and ASTM D2937)
- Soil expansion index (ASTM D4829)
- R-value (California Test 301)

OVERALL SITE PLAN CONCEPT

CITY OF ORANGE NEW PARK
2850 WEST CHAPMAN AVENUE, ORANGE, CA 92868



Converse Legend

BH-04 (16.5') Number (Depth) and Approximate Location of Exploratory Borings

PT-02 (4.7') Number (Depth) and Approximate Location of Percolation Tests

Project: Approximately 2.0-acre New Park Site
Location: 2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Approximate Boring and Percolation Tests Locations Map

Project No.
23-32-133-01

Converse Consultants

Figure No.
2

- Soil corrosivity (California Tests 422, 417, and 643)
- Collapse potential (ASTM D4546)
- Atterberg Limits (ASTM Standard D4318)
- Percent finer than sieve No. 200 (ASTM D1140)
- Grain size distribution (ASTM D6913)
- Maximum dry density and optimum moisture content (ASTM D1557)
- Direct shear (ASTM D3080)

For *in-situ* moisture and dry density data, see the Logs of Borings in Appendix A, *Field Exploration*. For a description of the laboratory test methods and test results, see Appendix B, *Laboratory Testing Program*.

4.4 Report Preparation

Data and information obtained from the document review, field exploration, and laboratory testing program were compiled and evaluated. Geotechnical analyses of the compiled data were performed, and this report was prepared to present our findings, conclusions, and recommendations for the proposed improvements.

5.0 SITE CONDITIONS

The subsurface conditions encountered at the site during our field investigation are described in the following sections.

5.1 Subsurface Profile

Alluvium: Based on the exploratory borings and laboratory test results, the subsurface alluvium soils at the site consisted primarily of a mixture of gravel, sand, silt, and clay. Gravel up to 2.5-inches in largest dimension was observed in the borings.

For a detailed description of the subsurface materials encountered in the exploratory borings, see Drawings No. A-2 through A-7 *Logs of Borings,* in Appendix A, *Field Exploration.*

5.2 Groundwater

Groundwater was not encountered during the field investigation up to the explored depth of 26.5 feet bgs. Converse used the generalized coordinates of 33.7866 N, 117.8831 W for the following section.

For comparison, regional groundwater data from the GeoTracker database (SWRCB, 2024) was reviewed to evaluate the current and historical groundwater levels from sites within approximately a 1.0-mile radius of the project site. Data from the search is provided below.

- TOSCO - 76 #6297 (Site No. # T0605901992) located approximately 1785 feet northeast of the project site reported groundwater at depths ranging from 59.10 to 84.41 bgs between 1997 to 2012.
- THRIFTY OIL #375 (T0605900850) located approximately 2979 feet southwest of the project site reported groundwater at depths ranging from 35.92 to 44.12 bgs between 1999 to 2005.
- EXXON SERVICE STATION #3843 (Site No. # T0605900295) located approximately 4845 feet southwest of the project site reported groundwater at depths ranging from 51.15 to 70.97 bgs between 1998 to 2008.
- SHELL OIL STATION (Site No. # T0605975292) located approximately 4845 feet southwest of the project site reported groundwater at depths ranging from 50.80 to 71.39 bgs between 2003 to 2009.
- UNOCAL #5618 (Site No. # T0605901216) located approximately 2885 feet southwest of the project site reported groundwater at depths ranging from 37.04 to 47.73 bgs between 1992 to 2002.

The National Water Information System (USGS, 2024) was reviewed to evaluate current and historical groundwater levels from sites within approximately a 1.0-mile radius of the project site. Data from that search is provided below.

Table No. 1, Summary of USGS Groundwater Depth Data

Alignment No.	Location	Groundwater Depth Range (ft. bgs)	Date Range
334716117525301	Southwest corner of West Chapman Ave. and S. Anita Ave; approximately 643 feet northeast of the project site	106	1986
334646117534701	In between Lewis and South Lewis St, North of OCDE ACCESS; approximately 5022 feet southwest of the project site.	103	1973
334626117532401	In Memory Park, North of Vista del Rio Apartments West of the City Drive south; approximately 5202 feet southwest of the project site.	94	1976
334746117531501	South of E. Orangewood Ave. and east of Hutton Companies; approximately 3784 northwest of the project site.	78.66 to 136.0	1972-1981
334753117525901	North of E. Orangewood Ave. east of the George and south of Angel Stadium; approximately 4,158 feet north of project site.	85	1999

The California Department of Water Resources database (DWR, 2024) was reviewed for historical groundwater data from sites within a 1.0-mile radius of the project site. One site was identified within a 1.0-mile radius of the project site that contained groundwater elevation data. Details of that record are provided in the following list.

- Well No. 04S10W25G001S (Station 337995N1178787W001), located approximately 4881 feet northeast of the project site, reported groundwater at a depth ranging from 58.8 to 105.86 feet bgs between 1988 and 2024
- Well No. 04S10W35K001S (Station 337795N1178982W001), located approximately 5272 feet southwest of the project site, reported groundwater at a depth ranging from 77.4 to 103.3 feet bgs between 1969 and 1973.
- Well No. 04S10W35B004S (Station 337854N1178952W001), located approximately 3688 feet southwest of the project site, reported groundwater at a depth ranging from 145 to 210 feet bgs between 2008 and 2010.
- Well No. 04S10W35A003S (Station 337889N1178892W001), located approximately 2024 feet northwest of the project site, reported groundwater at a depth ranging from 81 to 83.3 feet bgs in 1969.
- Well No. 04S10W26J002S (Station 337932N1178916W001), located approximately 3588 feet northwest of the project site, reported ground water at a depth ranging from 113 to 257 feet bgs between 1971 to 1988.
- Well No. 04S10W26J001S (Station 337945N1178924W001), located approximately 3943 feet northwest of the project site, reported groundwater at a depth ranging from 102 to 110 feet bgs in 1972.
- Well No. 04S10W25E001S (Station 337961N1178893W001), located approximately 3936 northwest of the project site, reported ground water at a depth ranging from 78.66 to 132.5 feet bgs between 1969 and 1982.

Based on available data, the historical high groundwater level reported at wells within approximately one mile of the site was 31.5 bgs. Current groundwater is expected to be deeper than about 26.5 feet bgs. Therefore, groundwater is not expected to be encountered during the construction of the project. It should be noted that the groundwater level could vary depending upon the seasonal precipitation and possible groundwater pumping activity in the site vicinity. Shallow perched groundwater may be present locally, particularly following precipitation.

5.3 Collapse Potential

Soil deposits subjected to collapse/hydro-consolidation generally exist in regions of moisture deficiency. Collapsible soils are generally defined as soils that have potential to suddenly decrease in volume upon increase in moisture content even without an increase in external loads. Moreover, some soils may have a different degree of collapse/hydro-consolidation based on the amount of proposed fill or structure loads. Soils susceptible to collapse/hydro-consolidation include wind-blown silt, weakly cemented sand, and silt where the cementing agent is soluble (e.g., soluble gypsum, halite), alluvial or colluvial deposits within semi-arid to arid climate, and certain weathered bedrock above the groundwater table.

Granular soils may have a potential to collapse upon wetting in arid climate regions. Collapse/hydro-consolidation may occur when the soluble cements (carbonates) in the

soil matrix dissolve, causing the soil to densify from its loose/low density configuration from deposition.

The degree of collapse of a soil can be defined by the collapse potential value, which is expressed as a percentage of collapse of the total sample using the Collapse Potential Test (ASTM D4546). According to the ASTM guideline, the severity of collapse potential is commonly evaluated by the following Table No. 2, *Collapse Potential Values*.

Table No. 2, Collapse Potential Values

Collapse Potential Value (%)	Severity of Problem
0	None
0.1 to 2	Slight
2.1 to 6.0	Moderate
6.0 to 10.0	Moderately Severe
>10	Severe

Based on the laboratory test results (collapse potentials of 0.0 and 0.1 percent), none to slight collapse potential is anticipated at the site. Collapse potential distress is typically considered a concern when collapse potential is over 2% (LA County, 2013).

5.4 Expansive Soils

Expansive soils are characterized by their ability to undergo significant volume changes (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from precipitation, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors and may result in unacceptable settlement or heave of structures or concrete slabs supported on grade. Depending on the extent and location below finish subgrade, expansive soils can have a detrimental effect on structures. Based on the laboratory test result, the expansion index of the upper 5 feet of site soils was 3, corresponding to very low expansion potential.

5.5 Excavatability

The subsurface materials at the site are expected to be excavatable by conventional heavy-duty earth moving and trenching equipment. However, excavation will be difficult if concentration of gravel is encountered.

The phrase “conventional heavy-duty excavation equipment” is intended to include commonly used equipment such as excavators, scrapers, and trenching machines. It does not include hydraulic hammers (“breakers”), jackhammers, blasting, or other specialized equipment and techniques used to excavate hard earth materials. The selection of appropriate excavation equipment models should be done by an experienced earthwork contractor.

5.6 Subsurface Variations

Based on results of the subsurface exploration and our experience, some variations in the continuity and nature of subsurface conditions within the site should be anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth material, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations.

6.0 LABORATORY TEST RESULTS

Results of the various laboratory tests are presented in Appendix B, *Laboratory Testing Program,* except for the results of *in-situ* moisture and dry density tests which are presented on the Logs of Borings in Appendix A, *Field Exploration.* The results are also discussed below.

6.1 Physical Testing

The results of laboratory tests on samples obtained from the site are presented below.

- *In-situ* Moisture and Dry Density (Alluvium) – *In-situ* dry density and moisture content of the alluvial site soils were determined in accordance with ASTM Standard D2216 and D2937. The dry densities of the site's alluvial soils ranged from 88 to 121 pcf with moisture contents ranging from 1 to 34 percent. Results are presented in the log of borings in Appendix A, *Field Exploration.*
- Expansion Index (EI) - One representative soil sample was tested to evaluate the expansion potential in accordance with ASTM Standard D4829. The test result showed an EI of 3, corresponding to very low expansion potential.
- R-Value (R) - One representative bulk sample was tested in accordance with Caltrans Test Method 301. The result of the R-value test was 75.
- Collapse Potential (CL) - The collapse potential of two relatively undisturbed samples were tested under a vertical stress of up to 2.0 kips per square foot (ksf) in accordance with the ASTM Standard D4546 test method. The test results showed a collapse potential of 0.0 and -0.1, indicating none to slight collapse potential.
- Atterberg Limits (PI) - Atterberg Limits test was performed on one representative soil sample in accordance with ASTM Standard D4318 to aid in the classification of the on-site soils. The test result is shown on Drawing No. B-1, *Atterberg Limits Test Result,* in Appendix B, Laboratory Testing Program.
- Percent Finer than Sieve No. 200 (FC): - One test was performed on a selected soil sample to aid in the classification of the on-site soils and to estimate other engineering parameters. Testing was performed in general accordance with the ASTM Standard D1140 test method. The test result is presented in the boring log and in Appendix B Laboratory Testing Program.

- Grain Size Analysis (PA) - Two representative soil samples were tested to determine the relative grain size distribution in accordance with the ASTM Standard D6913. The test results are graphically presented in Drawing No. B-2, *Grain Size Distribution Results.*
- Maximum Dry Density and Optimum Moisture Content (CP) – The moisture-density relationship of a representative soil sample was tested in according to ASTM Standard D1557 and the result is presented in Drawing No. B-3, *Moisture-Density Relationship Result*, in Appendix B, *Laboratory Testing Program.* The laboratory maximum dry density was 131.5 pounds per cubic feet (pcf) with optimum moisture content of 8.5 percent. With rock correction, the dry density was 134.4 pounds per cubic feet (pcf) with optimum moisture content of 7.8 percent.
- Direct Shear (DS) - One direct shear test was performed in accordance with ASTM Standard D3080 on relatively undisturbed ring samples. The result of the direct shear test is presented in Drawing No B-4, *Direct Shear Test Result* in Appendix B, *Laboratory Testing Program*.

6.2 Chemical Testing - Corrosivity Evaluation

One representative soil sample was tested to determine minimum electrical resistivity, pH, and chemical content, including soluble sulfate and chloride concentrations. The purpose of these tests was to determine the corrosion potential of site soils when placed in contact with common construction materials. These tests were performed by Keegan Lab, (Pomona, CA) in accordance with California Tests 643, 422, and 417. The test results are presented in Appendix B, *Laboratory Testing Program* and summarized below.

- The pH measurement of the sample was 8.0.
- The soluble sulfate content of the sample was 89 ppm (0.0089 percent by weight).
- The chloride concentration of the sample was 17 ppm.
- The minimum electrical resistivity (wet condition) of the sample when saturated was 2,610 ohm-cm.

7.0 PERCOLATION TESTING

Two percolation tests (PT-01 and PT-02) were performed on August 28, 2024, to evaluate water infiltration rate. The measured percolation test data and calculations are represented in Appendix C, *Percolation Testing*. The estimated infiltration rates at each test hole are presented in the following table.

Table No. 3, Estimated Infiltration Rates

Percolation Test	Depth of Boring* (feet)	Predominant Soil Types (USCS)	Design Percolation Rate (inches/hour)
PT-01	10.3	Silty Sand (SM)	0.21
PT-02	4.7	Sand with Silt (SW-SM)	3.59

(* Approximate depth)

A design infiltration rate of 0.21 and 3.59 (inches/hour) can be used for depths of 10.3 and 4.7 feet for PT-01 and PT-02 respectively. Please note that infiltration rates may change if the soil type and location of the proposed system changes. If that is the case, then additional percolation testing is required to be performed in the required location.

8.0 FAULTING AND SEISMICITY

The approximate distance and seismic characteristics of nearby faults as well as seismic design coefficients are presented in the following subsections.

8.1 Faulting

The proposed site is situated in a seismically active region. As is the case for most areas of Southern California, ground-shaking resulting from earthquakes associated with nearby and more distant faults may occur at the project site. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the site.

The project site is not located within a currently mapped State of California Earthquake Fault Zone for surface fault rupture. Table No. 4, *Summary of Regional Faults,* summarizes selected data of known faults capable of seismic activity within 100 kilometers of the site. The generalized coordinates 33.7866 N, 117.8831 W were used for the search. The data presented below was calculated using the National Seismic Hazard Maps Database (USGS, 2008) and other published geologic data.

Table No. 4, Summary of Regional Faults

Fault Name and Section	Closest Distance (km)	Slip Sense	Length (km)	Slip Rate (mm/year)	Maximum Magnitude
Puente Hills (Coyote Hills)	10.07	thrust	17	0.7	6.90
San Joaquin Hills	10.47	thrust	27	0.5	7.10
Elsinore	15.64	strike slip	241	n/a	7.79
Newport Inglewood Connected alt 2	15.93	strike slip	208	1.3	7.50
Newport Inglewood Connected alt 1	16.12	strike slip	208	1.3	7.50
Newport-Inglewood, alt 1	16.12	strike slip	65	1	7.20
Puente Hills (Santa Fe Springs)	20.36	thrust	11	0.7	6.70

Fault Name and Section	Closest Distance (km)	Slip Sense	Length (km)	Slip Rate (mm/year)	Maximum Magnitude
Newport-Inglewood (Offshore)	21.88	strike slip	66	1.5	7.00
Chino, alt 1	25.16	strike slip	24	1	6.70
Chino, alt 2	25.25	strike slip	29	1	6.80
San Jose	28.03	strike slip	20	0.5	6.70
Puente Hills (LA)	30.29	thrust	22	0.7	7.00
Palos Verdes Connected	32.85	strike slip	285	3	7.70
Palos Verdes	32.85	strike slip	99	3	7.30
Elysian Park (Upper)	37.18	reverse	20	1.3	6.70
Sierra Madre	38.77	reverse	57	2	7.20
Sierra Madre Connected	38.77	reverse	76	2	7.30
Cucamonga	40.16	thrust	28	5	6.70
Raymond	42.23	strike slip	22	1.5	6.80
Clamshell-Sawpit	44.7	reverse	16	0.5	6.70
Verdugo	45.72	reverse	29	0.5	6.90
Hollywood	48.95	strike slip	17	1	6.70
Santa Monica Connected alt 2	51.59	strike slip	93	2.4	7.40
Coronado Bank	56.29	strike slip	186	3	7.40
Santa Monica, alt 1	58.13	strike slip	14	1	6.60
Santa Monica Connected alt 1	58.13	strike slip	79	2.6	7.30
San Jacinto	62.03	strike slip	241	n/a	7.88
Malibu Coast, alt 1	65.24	strike slip	38	0.3	6.70
Malibu Coast, alt 2	65.24	strike slip	38	0.3	7.00
S. San Andreas	66.3	strike slip	548	n/a	8.18
Sierra Madre (San Fernando)	66.55	thrust	18	2	6.70
Anacapa-Dume, alt 2	67.16	thrust	65	3	7.20
San Gabriel	69.44	strike slip	71	1	7.30
Cleghorn	69.82	strike slip	25	3	6.80
Northridge	73.91	thrust	33	1.5	6.90
Anacapa-Dume, alt 1	78.29	thrust	51	3	7.20
North Frontal (West)	81.66	reverse	50	1	7.20
Santa Susana, alt 1	82.24	reverse	27	5	6.90
Rose Canyon	85.1	strike slip	70	1.5	6.90
Holser, alt 1	93.12	reverse	20	0.4	6.80
Simi-Santa Rosa	94.55	strike slip	39	1	6.90

(Source: https://earthquake.usgs.gov/cfusion/hazfaults_2008_search/)

8.2 CBC Seismic Design Parameters

Seismic parameters based on the 2022 California Building Code (CBSC, 2022) and ASCE 7-16 are provided in the following table. These parameters were determined using the generalized coordinates for the location and the Seismic Design Maps ATC online tool.

Table No. 5, CBC Seismic Design Parameters

Parameter	Value
Site Coordinates	33.7865 N, 117.8831 W
Risk Category	II
Site Class	D
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_S	1.365g
Mapped 1-second Spectral Response Acceleration, S_1	0.485g
Site Coefficient (from Table 1613.5.3(1)), F_a	1.0
Site Coefficient (from Table 1613.5.3(2)), F_v	1.815
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	1.365g
MCE 1-second period Spectral Response Acceleration, S_{M1}	0.880g
Design Spectral Response Acceleration for short period S_{DS}	0.910g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.587g
Peak Ground Acceleration, PGA_M	0.633g

8.3 Secondary Effects of Seismic Activity

In general, secondary effects of seismic activity include surface fault rupture, soil liquefaction, landslides, lateral spreading, and settlement due to seismic shaking, tsunamis, seiches, and earthquake-induced flooding. The site-specific potential for each of these seismic hazards is discussed in the following sections.

Surface Fault Rupture: The project site is not located within a currently designated State of California Earthquake Fault Zone (CGS, 2007). There are no active faults projecting toward or extending across the project site. The potential for surface rupture resulting from the movement of nearby major faults is not known but is considered low.

Liquefaction: Liquefaction is defined as the phenomenon in which a cohesionless soil mass within the upper 50 feet of the ground surface suffers a substantial reduction in its shear strength, due to the improvement of excess pore pressures. During earthquakes, excess pore pressures in saturated soil deposits may develop as a result of induced cyclic shear stresses, resulting in liquefaction.

Soil liquefaction generally occurs in submerged granular soils and non-plastic silts during or after strong ground shaking. There are several general requirements for liquefaction to occur and they are as follows.

- Soils must be submerged.
- Soils must be loose to medium-dense.
- Ground motion must be intense.
- Duration of shaking must be sufficient for the soils to lose shear resistance.

Based on review of Seismic Hazard Zones map for the Anaheim Quadrangle (1998), the project site is located within a liquefaction zone by State of California (CGS, 1998).

Seismic Settlement: Dynamic dry settlement may occur in loose, granular, unsaturated soils during a large seismic event. Classification of the samples and sampling blow counts indicate that the site medium dense, to dense and clayey soil is present. The potential for dry seismic settlement is considered low.

Landslides: Seismically induced landslides and slope failures are common occurrences during or soon after large earthquakes. The project site is not located within a currently designated State of California Landslide Zone (CGS, 2007), due to the flat nature of the site and the distance away from any foothills, the potential for seismically induced landslides affecting the proposed site is very low.

Lateral Spreading: Seismically induced lateral spreading involves primarily lateral movement of earth materials over underlying materials which are liquefied due to ground shaking. It differs from slope failure in that complete ground failure involving large movement does not occur due to the relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with predominantly horizontal movement of the soil mass involved. The topography at the project site and in the immediate vicinity is flat in nature. Due to the low risk of liquefaction and dense nature of the soil materials, the risk of lateral spreading is considered low.

Tsunamis: Tsunamis are large waves generated in open bodies of water by fault displacement or major ground movement. The project site is located outside of the hazard area of the tsunami danger location according to the California Department of Conservation (CDS, 2024). The risk of would be low due to the inland position of the project site.

Seiches: Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Due to the site being a far distance from bodies of water, seiches are not considered to be a risk.

Earthquake-Induced Flooding: Dams or other water-retaining structures may fail as a result of large earthquakes. The project site is located within a State of California designated dam inundation area (DSOD, 2023). Both dams at Villa Park, No. 1012-0

and Santiago Creek, No. 75-0, have the potential for earthquake-induced flooding. The risk of earthquake-induced flooding at the project site due to failure of offsite dams is considered extremely high.

9.0 EARTHWORK RECOMMENDATIONS

Earthwork recommendations for the project are presented below.

9.1 General

This section contains our general recommendations regarding earthwork and grading for the proposed new park amenities. These recommendations are based on the results of our field exploration, laboratory tests, our experience with similar projects, and data evaluation as presented in the preceding sections. These recommendations may require modification by the geotechnical consultant based on findings during the final investigation or observation of the actual field conditions during grading.

All existing underground utilities and appurtenances should be located at the site. Such utilities should either be protected in-place or removed and replaced during construction as required by the project specifications. All excavations should be conducted in such a manner as not to cause loss of bearing and/or lateral support of existing structures or utilities.

All debris, deleterious material, demolished material, and artificial fill (if any) and surficial soils containing roots and perishable materials should be stripped and removed from the site. Deleterious material, including organics, concrete, and debris generated during excavation, should not be placed as fill.

The final bottom surfaces of all excavations should be observed and approved by the project geotechnical consultant prior to placing any fill. Based on these observations, localized areas may require remedial grading deeper than indicated herein. Therefore, some variations in the depth and lateral extent of excavation recommended in this report should be anticipated.

9.2 Overexcavation/Removal

Structural footings, slabs, and pavements should be uniformly supported by compacted fill. In order to provide uniform support, structural areas should be overexcavated, scarified, and recompacted as follows.

Table No. 6, Overexcavation Depths

Structure/Pavement	Minimum Excavation Depth
Footings	18 inches below footing bottoms, or 3 feet below existing ground surface, whichever is deeper
Pavement	12 inches below pavement or 2.0 feet below existing ground surface, whichever is deeper

The depth of over excavation below the footings and pavements should be uniform. The over excavation should extend to at least 2 feet beyond the footprint of the footings and slabs and 1-foot beyond the edge of the pavement. The over excavation bottom should be scarified and compacted as described in Section 9.4, *Compacted Fill Placement*.

If isolated pockets of very soft, loose, eroded, or pumping soil are encountered, the unstable soil should be excavated as needed to expose undisturbed, firm, and unyielding soils.

The contractor should determine the best manner to conduct the excavations, such that there are no losses of bearing and/or lateral support to the existing structures or utilities. Consideration should be given to using slot cuts or other excavation methods which preserve lateral support during excavation operations near the existing structures.

9.3 Engineered/Structural Fill

No fill or aggregate base should be placed until excavations and/or natural ground preparation have been observed by the geotechnical consultant. The native soils encountered within the site are generally considered suitable for re-use as compacted fill. Excavated soils should be processed, including cleaning roots and debris, removal of oversized particles, mixing, and moisture conditioning, before placing as compacted fill. On-site soils used as fill should meet the following criteria.

- No particles larger than 3 inches in largest dimension.
- Rocks larger than 1 inch should not be placed within the upper 12 inches of subgrade soils.
- Free of all organic matter, debris, or other deleterious material.
- Expansion index of 30 or less.
- Contain less than 30 percent by weight retained in 3/4-inch sieve.
- Contain less than 40 percent fines (passing #200 sieve).

Based on field investigation and laboratory testing results, on-site soils may be suitable as structural/engineered fill materials provided corrosion recommendations presented in Section 11.9, *Soil Corrosivity* are implemented.

Any imported fills should be tested and approved by the geotechnical representative prior to delivery to the site. Imported materials, if required, should meet the above criteria prior to being used as compacted fill.

9.4 Compacted Fill Placement

All surfaces to receive structural fills should be scarified to a depth of 6 inches. The soil should be moisture conditioned to within ±3 percent of optimum moisture content for coarse soils and 0 to 2 percent above optimum moisture content for fine soils. The scarified soils should be recompacted to at least 90 percent of the laboratory maximum dry density.

Fill soils should be thoroughly mixed, and moisture conditioned to within ±3 percent of optimum moisture content for coarse soils and 0 to 2 percent above optimum moisture content for fine soils. Fill soils should be evenly spread in horizontal lifts not exceeding 8 inches in uncompacted thickness.

All fill placed at the site should be compacted to at least 90 percent of the laboratory maximum dry densities as determined by ASTM Standard D1557 test method unless a higher compaction is specified herein. At least the upper 1 feet of subgrade soils underneath pavements intended to support vehicle loads should be scarified, moisture conditioned and compacted to at least 95 percent of the laboratory maximum dry density.

Fill materials should not be placed, spread, or compacted during unfavorable weather conditions. When site grading is interrupted by heavy rain, filling operations should not resume until the geotechnical consultant approves the moisture and density conditions of the previously placed fill.

9.5 Shrinkage and Subsidence

The volume of excavated and recompacted soils may be expected to decrease as a result of grading. The shrinkage would depend on, among other factors, the depth of cut and/or fill, and the grading method and equipment utilized. For preliminary estimation, shrinkage factors for various units of earth material at the site may be taken as presented below.

- An average shrinkage factor (defined as a percentage of soil volume reduction when moisture conditioned and compacted to the average of 92 percent relative compaction) of 13 percent can be used for the upper 10 feet of soils for preliminary earthwork planning.
- Subsidence (defined as the settlement of native materials from the equipment load applied during grading) would depend on the construction methods including type of equipment utilized. For estimation purposes, ground subsidence may be taken as 0.1 to 0.15 feet.

Although these values are only approximate, they represent our best estimates of the factors to be used to calculate lost volume that may occur during grading. If more accurate shrinkage and subsidence factors are needed, it is recommended that field-testing using the actual equipment and grading techniques be conducted.

9.6 Site Drainage

Adequate positive drainage should be provided away from the structures and excavation areas to prevent ponding and to reduce percolation of water into the foundation soils. The building pad should have a gradient of at least 2 percent towards drainage facilities. The drainage gradient should be 1 percent for paved areas and 2 percent for landscaped areas. Surface drainage should be directed to suitable non-erosive devices.

10.0 UTILITY TRENCH BACKFILL

The following sections present earthwork recommendations for utility trench backfill, including subgrade preparation and trench zone backfill.

Open cuts adjacent to existing roadways or structures are not recommended within a 1:1 (horizontal: vertical) plane extending down and away from the roadway or structure perimeter (if any).

Soils from the trench excavation should not be stockpiled more than 6 feet in height or within a horizontal distance from the trench edge equal to the depth of the trench. Soils should not be stockpiled behind the shoring, if any, within a horizontal distance equal to the depth of the trench, unless the shoring has been designed for such loads.

10.1 Pipeline Subgrade Preparation

The final subgrade surface should be level, firm, uniform, and free of loose materials and properly graded to provide uniform bearing and support to the entire section of the pipe placed on bedding material. Protruding oversize particles larger than 2 inches in dimension, if any, should be removed from the trench bottom and replaced with compacted on-sites materials.

Any loose, soft and/or unsuitable materials encountered at the pipe subgrade should be removed and replaced with an adequate bedding material. During the digging of depressions for proper sealing of the pipe joints, the pipe should rest on a prepared bottom for as near its full length as is practicable.

10.2 Pipe Bedding

Bedding is defined as the material supporting and surrounding the pipe to 1 foot above the pipe. Recommendations for pipe bedding are provided below.

To provide uniform and firm support for the pipe, compacted granular materials such as clean sand, gravel or ¾-inch crushed aggregate, or crushed rock may be used as pipe bedding material. Typically, soils with sand equivalent value of 30 or more are used as pipe bedding material. The pipe designer should determine if the soils are suitable as pipe bedding material.

The type and thickness of the granular bedding placed underneath and around the pipe, if any, should be selected by the pipe designer. The load on the rigid pipes and deflection of flexible pipes and, hence, the pipe design, depends on the type and the amount of bedding placed underneath and around the pipe.

Bedding materials should be vibrated in-place to achieve compaction. Care should be taken to densify the bedding material below the springline of the pipe. Prior to placing the pipe bedding material, the pipe subgrade should be uniform and properly graded to provide uniform bearing and support to the entire section of the pipe placed on bedding material.

Migration of fines from the surrounding native and/or fill soils must be considered in selecting the gradation of any imported bedding material. We recommend that the pipe bedding material should satisfy the following criteria to protect migration of fine materials.

i. $\frac{D15(F)}{D85(B)} \leq 5$

ii. $\frac{D50(F)}{D50(B)} < 25$

iii. Bedding Materials must have less than 5 percent passing No. 200 sieve (0.0074 mm) to avoid internal movement of fines.

Where,

F	=	Bedding Material
B	=	Surrounding Native and/or Fill Soils
*D*15(F)	=	Particle size through which 15% of bedding material will pass
*D*85(B)	=	Particle size through which 85% of surrounding soil will pass
*D*50(F)	=	Particle size through which 50% of bedding material will pass
*D*50(B)	=	Particle size through which 50% of surrounding soil will pass

If the above criteria do not satisfy, commercially available geofabric used for filtration purposes (such as Mirafi 140N or equivalent) may be wrapped around the bedding material encasing the pipe to separate the bedding material from the surrounding native or fill soils.

10.3 Trench Zone Backfill

The trench zone is defined as the portion of the trench above the pipe bedding extending up to the final grade level of the trench surface. Excavated sites soil free of oversize particles and deleterious matter may be used to backfill the trench zone. Detailed trench backfill recommendations are provided below.

- Trench excavations to receive backfill should be free of trash, debris or other unsatisfactory materials at the time of backfill placement.
- Trench zone backfill should be compacted to at least 90 percent of the laboratory maximum dry density as per ASTM D1557 test method. At least the upper 1 foot of trench backfill underlying pavement should be compacted to at least 95 percent of the laboratory maximum dry density as per ASTM D1557 test method.
- Particles larger than 1 inch should not be placed within 12 inches of the pavement subgrade. No more than 30 percent of the backfill volume should be larger than ¾-inch in the largest dimension. Gravel should be well mixed with finer soil. Rocks larger than 3 inches in the largest dimension should not be placed as trench backfill.
- Trench backfill should be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers or mechanical tampers to achieve the density specified herein. The backfill materials should be brought to within ± 3 percent of optimum moisture content for coarse-grained soil, and between optimum and 2 percent above optimum for fine-grained soil, then placed in horizontal layers. The thickness of uncompacted layers should not exceed 8 inches. Each layer should be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.
- The contractor should select the equipment and processes to be used to achieve the specified density without damage to adjacent ground, structures, utilities and completed work.
- The field density of the compacted soil should be measured by the ASTM D1556 (Sand Cone) or ASTM D6938 (Nuclear Gauge) or equivalent.
- Observations and field tests should be performed by the project soils consultant to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort should be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.
- It should be the responsibility of the contractor to maintain safe working conditions during all phases of construction.
- Trench backfill should not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations should not resume until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are in compliance with project specifications.

11.0 DESIGN RECOMMENDATIONS

Design recommendations are presented in the following sections.

11.1 General Evaluation

The various design recommendations provided in this section are based on the assumptions that in preparing the site, the above earthwork recommendations will be implemented.

11.2 Shallow Foundation Design Parameters

The proposed improvements may be supported on continuous and/or isolated stiffened spread footings. The design of the shallow foundations should be based on the recommended parameters presented in the table below.

Table No. 7, Recommended Foundation Parameters

Parameter	Value
Minimum continuous spread footing width	18 inches
Minimum isolated footing width	18 inches
Minimum continuous or isolated footing depth of embedment below lowest adjacent grade	18 inches
Allowable net bearing capacity	2,500 psf

The allowable bearing capacity can be increased by 500 psf with each foot of additional embedment and 100 psf with each foot of additional width up to a maximum of 3,500 psf.

The net allowable bearing values indicated above are for the dead loads and frequently applied live loads and are obtained by applying a factor of safety of 3.0 to the net ultimate bearing capacity. If normal code requirements are applied for design, the above vertical bearing value may be increased by 33 percent for short duration loadings, which will include loadings induced by wind or seismic forces.

11.3 Lateral Earth Pressures and Resistance to Lateral Loads

In the following subsections, the lateral earth pressures and resistance to lateral loads are estimated by using on-site native soils strength parameters obtained from laboratory testing.

11.3.1 Active Earth Pressures

The active earth pressure behind any buried wall or foundation depends primarily on the allowable wall movement, type of backfill materials, backfill slopes, wall or foundation inclination, surcharges, and any hydrostatic pressures. The recommended lateral earth pressures without surcharge for the site are presented in the following table.

Table No. 8, Active and At-Rest Earth Pressures

Loading Conditions	Lateral Earth Pressure (psf/ft depth)
Active earth conditions (wall is free to deflect at least 0.001 radian)	50
At-rest (wall is restrained)	68
Seismic earth pressure (psf)	23 H

* H = height of the buried wall

These pressures assume a level ground surface around the structure for a distance greater than the structure height, no surcharge, and no hydrostatic pressure. If water pressure is allowed to build up behind the structure, the active pressures should be reduced by 50 percent and added to a full hydrostatic pressure to compute the design pressures against the structure.

11.3.2 Passive Earth Pressure

Resistance to lateral loads can be assumed to be provided by a combination of friction acting at the base of foundations and by passive earth pressure. A coefficient of friction of 0.35 between concrete and soil may be used with the dead load forces. An allowable passive earth pressure of 225 psf per foot of depth may be used for the sides of footings poured against recompacted soils. A factor of safety of 1.5 was applied in calculating passive earth pressure. The maximum value of the passive earth pressure should be limited to 2,250 psf for compacted fill.

Vertical and lateral bearing values indicated above are for the total dead loads and frequently applied live loads. If normal code requirements are applied for design, the above vertical bearing and lateral resistance values may be increased by 33 percent for short duration loading, which will include the effect of wind or seismic forces.

Due to the low overburden stress of the soil at shallow depth, the upper 1 foot of passive resistance should be neglected unless the soil is confined by pavement or slab.

11.4 Drilled Pier Foundations

The light posts can also be supported on drilled pier foundations deriving their support primarily through skin friction. The piers may be designed for compression using an allowable skin friction value of 150 psf for a minimum of 12 feet deep below the finished grade. This value may be increased by 33 percent for transient wind and seismic forces. For pier design in tension, 50 percent of the recommended allowable skin friction values in compression may be used. The drilled pier should have a minimum diameter of 24 inches. For design purposes, the upper 2 feet of the soil should be neglected in determining the skin friction and point of fixity can be considered in the toe of pier.

The equivalent lateral earth pressure equal to 225 pounds per square foot per foot of depth may be used for the design.

11.5 Drilled Pier Foundation Installation Recommendations

It is the responsibility of the contractor to select proper construction equipment and method to correctly install the piers based on his own interpretation of the information presented in this report.

Groundwater was not encountered in the exploratory boreholes up to depth of 26.5 feet bgs and due to the presence of sandy soil with gravel, there is some possibility of caving. However, casing, or other methods approved by the project geotechnical consultant, may be used to support the sides of the excavation. Casing should be used at the discretion of the contractor. The casing should be advanced as drilling proceeds by drilling with a flight or bucket auger smaller in diameter than the inside of the casing. Occasional hammering may be required to advance the casing within the excavation. The casing, when used, should not be left in place as the pier designs are based on skin friction only. The casing should be pulled as the concrete is being poured, while always maintaining a head of concrete inside the casing. The contractor should have equipment on-site with sufficient pulling capacity to pull the casing at the proper time. The casing should have an outside diameter no less than the specified diameter of the pier.

The bottoms of the excavations should be cleaned of any loose cuttings before placing concrete. All applicable state and federal OSHA safety regulations must be satisfied during construction.

Drilled pier installation shall be performed under continuous observation by the project geotechnical consultant to confirm that the subsurface soils are similar to the soils encountered during our field investigation, which have formed the basis of our pier design recommendations. The contractor shall provide access and necessary facilities, including droplights, at his expense, to accommodate pier observations.

Drilled pier installation shall be performed such that compliance with all safety rules and requirements is achieved.

11.6 Soil Parameters for Pipe Design

Structural design requires proper evaluation of all possible loads acting on pipe. The stresses and strains induced on buried pipe depend on many factors, including the type of soil, density, bearing pressure, angle of internal friction, coefficient of passive earth pressure, and coefficient of friction at the interface between the backfill and native soils. The recommended values of the various soil parameters for design are provided in the following table.

Table No. 9, Soil Parameters for Pipe Design

Soil Parameters	Value
Average compacted fill total unit weight (assuming 92% relative compaction), γ (pcf)	132
Angle of internal friction of soils, ϕ	30
Soil cohesion, c (psf)	50
Coefficient of friction between concrete and native soils, fs	0.35
Coefficient of friction between PVC pipe and native soils, fs	0.25
Bearing pressure against native soils (psf)	2,500
Coefficient of passive earth pressure, Kp	2.88
Coefficient of active earth pressure, Ka	0.35
Modulus of Soil Reaction E' (psi)	1,500

11.7 Bearing Pressure for Anchor and Thrust Blocks

An allowable net bearing pressure presented in Table No. 9, *Soil Parameters for Pipe Design* may be used for anchor and thrust block design against alluvial soils. Such thrust blocks should be at least 18 inches wide.

11.8 Settlement

The total settlement of shallow footings from static structural loads and short-term settlement of properly compacted fill is anticipated to be 1 inch or less. The differential settlement resulting from static loads is anticipated to be 0.5 inches or less over a horizontal distance of 40 feet.

11.9 Soil Corrosivity

The results of chemical testing of one representative soil sample were evaluated for corrosivity with respect to common construction materials such as concrete and steel. The test results are presented in Appendix B, *Laboratory Testing Program,* and general discussion pertaining to soil corrosivity is presented below.

The sulfate contents of the sampled soil correspond to American Concrete Institute (ACI) exposure category S0 for these sulfate concentrations (ACI 318-14, Table 19.3.1.1). Concrete type restrictions are specified for exposure category S0 (ACI 318-14, Table 19.3.2.1). A minimum compressive strength of 2,500 psi is recommended.

We anticipate that concrete structures such as footings, slabs, and flatwork will be exposed to moisture from precipitation and irrigation. Based on the site locations and the results of chloride testing of the site soils, we do not anticipate that concrete structures will be exposed to external sources of chlorides, such as deicing chemicals, salt, brackish water, or seawater. ACI specifies exposure category C1 where concrete is exposed to moisture, but not to external sources of chlorides (ACI 318-14, Table 19.3.1.1). ACI provides concrete design recommendations in ACI 318-14, Table 19.3.2.1, including a compressive strength of at least 2,500 psi and a maximum chloride content of 0.3 percent.

According to Romanoff, 1957, the following table provides general guideline of soil corrosion based on electrical resistivity.

Table No. 10, Correlation Between Resistivity and Corrosion

Soil Resistivity (ohm-cm) per Caltrans CT 643	Corrosivity Category
Over 10,000	Mildly corrosive
2,000 – 10,000	Moderately corrosive
1,000 – 2,000	corrosive
Less than 1,000	Severe corrosive

The measured value of the minimum electrical resistivity of the sample when saturated was 2,610 Ohm-cm. This indicates that the soil tested of the site is moderately corrosive to ferrous metals in contact with the soils (Romanoff, 1957). Converse does not practice in the area of corrosion consulting. If needed, a qualified corrosion consultant should provide appropriate corrosion mitigation measures for any ferrous metals in contact with the site and site soils.

11.10 Flexible Pavement Recommendations

One soil sample was tested to determine the R-value of the subgrade soils. Based on laboratory testing, R-value was 75. For pavement design, an R-value of 50 was assumed for the design of flexible pavement. For pavement design, we have utilized design Traffic Indices (TIs) ranging from 5 to 8.

Based on the above information, asphalt concrete and aggregate base thickness results are presented using the Caltrans Highway Design Manual (Caltrans, 2021), Chapter 630 with a safety factor of 0.2 for asphalt concrete/aggregate base section and 0.1 for full depth asphalt concrete section. Preliminary asphalt concrete pavement sections are presented in the following table.

Table No. 11, Recommended Preliminary Pavement Sections

R-value	Traffic Index (TI)	Pavement Section		
		Option 1		Option 2
		Asphalt Concrete (inches)	Aggregate Base (inches)	Full AC Section (inches)
50	5	3.0	4.0	4.5
	6	3.5	4.0	5.5
	7	4.0	4.5	7.0
	8	5.0	5.0	8.0

At or near the completion of grading, subsurface samples should be tested to evaluate the actual subgrade R-value for final pavement design.

Prior to placement of aggregate base, appropriate earthworks should be performed according to specifications provided in Section 9.0 *Earthwork Recommendations.*

Base materials should conform with Section 200-2.2,"*Crushed Aggregate Base*," of the current Standard Specifications for Public Works Construction (SSPWC; Public Works Standards, 2021) and should be placed in accordance with Section 301.2 of the SSPWC.

Asphaltic concrete materials should conform to Section 203 of the SSPWC and should be placed in accordance with Section 302.5 of the SSPWC.

11.11 Concrete Flatwork

Except as modified herein, concrete walks, driveways, access ramps, curb and gutters should be constructed in accordance with Section 303-5, *Concrete Curbs, Walks, Gutters, Cross-Gutters, Alley Intersections, Access Ramps, and Driveways*, of the Standard Specifications for Public Works Construction (Public Works Standards, 2021).

The subgrade soils under the above structures should consist of compacted fill placed as described in this report. Prior to placement of concrete, the upper 2 feet of subgrade soils should be moisture conditioned to within 3 percent of optimum moisture content for coarse-grained soils and 0 and 2 percent above optimum for fine-grained soils.

The cement concrete thickness of driveways for passenger vehicles should be at least 4 inches, or as required by the civil or structural engineer. Transverse control joints for driveways should be spaced not more than 10 feet apart. Driveways wider than 12 feet should be provided with a longitudinal control joint.

Concrete walks subjected to pedestrian and bicycle loading should be at least 4 inches thick, or as required by the civil or structural engineer. Transverse joints should be spaced 15 feet or less and should be cut to a depth of one-fourth the slab thickness.

Positive drainage should be provided away from all driveways and sidewalks to prevent seepage of surface and/or subsurface water into the concrete base and/or subgrade.

12.0 CONSTRUCTION RECOMMENDATIONS

Temporary sloped excavation recommendations are presented in the following sections.

12.1 General

Prior to the start of construction, all existing underground utilities should be located at the project site. Such utilities should either be protected in-place or removed and replaced during construction as required by the project specifications.

Sloped excavations may not be feasible in locations adjacent to existing utilities or pavement. Recommendations pertaining to temporary excavations are presented in this section.

Excavations near existing utilities or pavement may require vertical side wall excavation. Where the side of the excavation is a vertical cut, it should be adequately supported by temporary shoring to protect workers and any adjacent structures.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the geotechnical consultant and the competent person designated by the contractor. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

12.2 Temporary Sloped Excavations

Temporary open-cut trenches may be constructed with side slopes as recommended in the following table. Temporary cuts encountering soft and wet fine-grained soils; dry loose, cohesionless soils or loose fill from trench backfill may have to be constructed at a flatter gradient than presented in the following table.

Table No. 12, Slope Ratios for Temporary Excavations

Soil Type	OSHA Soil Type	Depth of Cut (feet)	Recommended Maximum Slope (Horizontal: Vertical) [1]
Sand (SP), Sand with Silt (SP-SM), Silty Sand (SM), Sandy Silt (ML), and Clay with Sand (CL)	C	0-4	Vertical
		4-10	1.5:1

[1] Slope ratio is assumed to be constant from top to toe of slope, with level adjacent ground.

Shallow excavations up to 4 feet bgs can be vertical. For steeper temporary construction slopes or deeper excavations, or unstable soil encountered during the excavation, shoring or trenches should be provided by the contractor to protect the workers in the excavation. Design recommendations for temporary shoring can be provided if necessary.

Surfaces exposed in slope excavations should be kept moist but not saturated to retard raveling and sloughing during construction. Adequate provisions should be made to protect the slopes from erosion during periods of rainfall. Surcharge loads, including construction materials, should not be placed within 5 feet of the unsupported slope edge. Stockpiled soils with a height higher than 6 feet will require greater distance from trench edges.

13.0 GEOTECHNICAL SERVICES DURING CONSTRUCTION

The project geotechnical consultant should review plans and specifications as the project design progresses. Such review is necessary to identify design elements, assumptions, or new conditions which require revisions or additions to our geotechnical recommendations.

The project geotechnical consultant should be present to observe conditions during construction. Testing should be performed to determine density and moisture of the compacted soils. Geotechnical observation and testing should be performed as needed to verify compliance with project specifications. Additional geotechnical recommendations may be required based on subsurface conditions encountered during construction.

14.0 CLOSURE

This report is prepared for the project described herein and is intended for use solely by MIG, the City of Orange, and their authorized agents, to assist in the design and construction of the proposed project. Our findings and recommendations were obtained in accordance with generally accepted professional principles practiced in geotechnical engineering. We make no other warranty, either expressed or implied.

Converse Consultants is not responsible or liable for any claims or damages associated with interpretation of available information provided to others. Site exploration identifies actual soil conditions only at those points where samples are taken, when they are taken. Data derived through sampling and laboratory testing is extrapolated by Converse employees who render an opinion about the overall soil conditions. Actual conditions in areas not sampled may differ. In the event that changes to the project occur, or additional, relevant information about the project is brought to our attention, the recommendations contained in this report may not be valid unless these changes and additional relevant information is reviewed, and the recommendations of this report are modified or verified in writing. In addition, the recommendations can only be finalized by observing actual subsurface conditions revealed during construction. Converse cannot be held responsible for misinterpretation or changes to our recommendations made by others during construction.

As the project evolves, continued consultation and construction monitoring by a qualified geotechnical consultant should be considered an extension of geotechnical investigation services performed to date. The geotechnical consultant should review plans and specifications to verify that the recommendations presented herein have been appropriately interpreted, and that the design assumptions used in this report are valid. Where significant design changes occur, Converse may be required to augment or modify the recommendations presented herein. Subsurface conditions may differ in some locations from those encountered in the explorations, and may require additional analyses and, possibly, modified recommendations.

Design recommendations given in this report are based on the assumption that the recommendations contained in this report are implemented. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the actual site conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

15.0 REFERENCES

AMERICAN CONCRETE INSTITUTE (ACI), 2014, Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary, October 2014.

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Appendix A

Field Exploration

APPENDIX A

FIELD EXPLORATION

Our field investigation included a site reconnaissance and a subsurface exploration program consisting of drilling soil borings and conducting water percolation tests. During the site reconnaissance, the surface conditions were noted, and the borings were marked at locations approved by Mr. Oscar Johnson with MIG. The boring locations were established in the field using approximate distances from existing features as a guide and should be considered accurate only to the degree implied by the method used to locate them.

Four exploratory borings (BH-01 through BH-04) and two percolation test holes (PT-01 and PT-02) were drilled on August 27, 2024, to investigate the subsurface conditions within the footprint of the proposed improvements. The borings and test holes were drilled to depths between 4.7 and 26.5 feet below ground surface (bgs). Borings details are presented in Table No. A-1, *Summary of Borings* and Drawings Nos. A-2 through A-7, *Logs of Borings.*

Table No. A-1, Summary of Borings

Boring No.	Boring Depth (ft, bgs)		Groundwater Depth (ft, bgs)	Date Completed
	Proposed	Completed		
BH-01	15.0	16.5	Not Encountered	8/27/2024
BH-02	25.0	26.5	Not Encountered	8/27/2024
BH-03	25.0	26.5	Not Encountered	8/27/2024
BH-04	15.0	16.5	Not Encountered	8/27/2024
PT-01	10.0	10.3	Not Encountered	8/27/2024
PT-02	5.0	4.7	Not Encountered	8/27/2024

After logging and sampling, test holes PT-01 and PT-02 were set up for percolation testing. The depth of PT-02 was restricted to 4.7 feet bgs due to caving in the test hole. Details about the percolation tests are presented in Appendix C, *Percolation Testing*.

The borings were advanced using a truck-mounted drill rig equipped with 8-inch diameter hollow-stem augers for soils sampling. Encountered materials were continuously logged by a Converse Engineer and classified in the field by visual classification in accordance with the Unified Soil Classification System. Where appropriate, the field descriptions and classifications have been modified to reflect laboratory test results.

Relatively undisturbed samples were obtained using California Modified Samplers (2.4 inches inside diameter and 3.0 inches outside diameter) lined with thin sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops

of a 140-pound driving weight falling 30 inches. Blow counts at each sample interval are presented on the boring logs. Samples were retained in brass rings (2.4 inches inside diameter and 1.0 inch in height) and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Bulk samples of typical soil types were also obtained in plastic bags.

The exact depths at which material changes occur cannot always be established accurately. Unless a more precise depth can be established by other means, changes in material conditions that occur between drive samples are indicated on the logs at the top of the next drive sample.

Following the completion of logging and sampling, the borings BH-01 through BH-04 were backfilled with soil cuttings mixed with cement and compacted by pushing down with an auger using the drill rig weight. After completion of percolation testing, the pipes were removed from PT-01 and PT-02 and test holes were backfilled with soil cuttings and compacted. If construction is delayed, the surface of the borings may settle over time. We recommend the owner monitor the boring locations and backfill any depressions that might occur or provide protection around the boring locations to prevent trip and fall injuries from occurring near the area of any potential settlement.

For a key to soil symbols and terminology used in the boring logs, refer to Drawing Nos. A-1a and A-1b, *Unified Soil Classification and Key to Boring Log Symbols*. For logs of borings, see Drawing Nos. A-2 through A-7, *Logs of Borings*. All elevations are based on Google Earth.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE			GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE			SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

FIELD AND LABORATORY TESTS

C	Consolidation (ASTM D 2435)
CL	Collapse Potential (ASTM D 4546)
CP	Compaction Curve (ASTM D 1557)
CR	Corrosion, Sulfates, Chlorides (CTM 643-99; 417; 422)
CU	Consolidated Undrained Triaxial (ASTM D 4767)
DS	Direct Shear (ASTM D 3080)
EI	Expansion Index (ASTM D 4829)
M	Moisture Content (ASTM D 2216)
OC	Organic Content (ASTM D 2974)
P	Permeablility (ASTM D 2434)
PA	Particle Size Analysis (ASTM D 6913 [2002])
PI	Liquid Limit, Plastic Limit, Plasticity Index (ASTM D 4318)
PL	Point Load Index (ASTM D 5731)
PM	Pressure Meter
PP	Pocket Penetrometer
R	R-Value (CTM 301)
SE	Sand Equivalent (ASTM D 2419)
SG	Specific Gravity (ASTM D 854)
SW	Swell Potential (ASTM D 4546)
TV	Pocket Torvane
UC	Unconfined Compression - Soil (ASTM D 2166)
	Unconfined Compression - Rock (ASTM D 7012)
UU	Unconsolidated Undrained Triaxial (ASTM D 2850)
UW	Unit Weight (ASTM D 2937)
WA	Passing No. 200 Sieve

BORING LOG SYMBOLS

SAMPLE TYPE

- STANDARD PENETRATION TEST — Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method
- DRIVE SAMPLE — 2.42" I.D. sampler (CMS).
- DRIVE SAMPLE — No recovery
- BULK SAMPLE
- GROUNDWATER WHILE DRILLING
- GROUNDWATER AFTER DRILLING

DRILLING METHOD SYMBOLS

Auger Drilling | Mud Rotary Drilling | Dynamic Cone or Hand Driven | Diamond Core

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No. **23-32-133-01**

Drawing No. **A-1a**

CONSISTENCY OF COHESIVE SOILS

Descriptor	Unconfined Compressive Strength (tsf)	SPT Blow Counts	Pocket Penetrometer (tsf)	CA Sampler	Torvane (tsf)	Field Approximation
Very Soft	<0.25	< 2	<0.25	<3	<0.12	Easily penetrated several inches by fist
Soft	0.25 - 0.50	2 - 4	0.25 - 0.50	3 - 6	0.12 - 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 - 1.0	5 - 8	0.50 - 1.0	7 - 12	0.25 - 0.50	Can be penetrated several inches by thumb with moderate effort
Stiff	1.0 - 2.0	9 - 15	1.0 - 2.0	13 - 25	0.50 - 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2.0 - 4.0	16 - 30	2.0 - 4.0	26 - 50	1.0 - 2.0	Readily indented by thumbnail
Hard	>4.0	>30	>4.0	>50	>2.0	Indented by thumbnail with difficulty

APPARENT DENSITY OF COHESIONLESS SOILS

Descriptor	SPT N_{60}- Value (blows / foot)	CA Sampler
Very Loose	<4	<5
Loose	4- 10	5 - 12
Medium Dense	11 - 30	13 - 35
Dense	31 - 50	36 - 60
Very Dense	>50	>60

MOISTURE

Descriptor	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OF PROPORTION OF SOILS

Descriptor	Criteria
Trace (fine)/ Scattered (coarse)	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

SOIL PARTICLE SIZE

Descriptor		Size
Boulder		> 12 inches
Cobble		3 to 12 inches
Gravel	Coarse	3/4 inch to 3 inches
	Fine	No. 4 Sieve to 3/4 inch
Sand	Coarse	No. 10 Sieve to No. 4 Sieve
	Medium	No. 40 Sieve to No. 10 Sieve
	Fine	No. 200 Sieve to No. No. 40 Sieve
Silt and Clay		Passing No. 200 Sieve

PLASTICITY OF FINE-GRAINED SOILS

Descriptor	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled, and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll, and not much time is required to reach the plastic limit; it cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

CEMENTATION/ Induration

Descriptor	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

NOTE: This legend sheet provides descriptions and associated criteria for required soil description components only. Refer to Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010), Section 2, for tables of additional soil description components and discussion of soil description and identification.

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No. **23-32-133-01**

Drawing No. **A-1b**

Log of Boring No. BH-01

Date Drilled: 8/27/2024 Logged by: Aleksey Zhukov Checked By: Hashmi Quazi

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 132 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		ALLUVIUM: **SILTY SAND (SM):** fine to coarse-grained, few gravel up to 2.5" in maximum dimension, moist, brown.						CR, CP, EI
5		**SANDY SILT (ML):** fine-grained sand, few clay, stiff, moist, dark gray with hint of orange oxidation spotting.			6/8/11	32	88	CL
		CLAY WITH SAND (CL): fine-grained sand, stiff, moist, black.			3/5/10	23	100	PI
10		**SANDY CLAY (CL):** fine-grained sand, little silt, stiff, moist, brown with orange oxidation.			4/6/7	16	111	
15		**- 15':** medium stiff, brownish gray with orange oxidation.			6/3/7	32	88	
		End of boring at 16.5 feet below ground surface. No groundwater was encountered. Boring was backfilled with soil cuttings mixed with cement and compacted with augers using the drill rig weight on 8/27/24.						

Converse Consultants

Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No. 23-32-133-01

Drawing No. A-2

Log of Boring No. BH-02

Date Drilled: 8/27/2024 Logged by: Aleksey Zhukov Checked By: Hashmi Quazi

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 133 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM: **SILTY SAND (SM):** fine to coarse-grained, few gravel up to 1.5" in maximum dimension, moist, brown.						
5		**- 5':** scattered gravel up to 0.5" in maximum dimension, few clay, medium dense, dark brown	■		7/11/13	12	121	
10		**SANDY SILT (ML):** fine-grained sand, few clay, stiff, moist, dark brown with hint of orange oxidation.	■	▨	8/8/10	21	103	FC=55.8%
15		**- 15':** micaceous.	■		8/10/13	23	100	
20		**SILT WITH SAND (ML):** fine-grained sand, little clay, stiff, very moist, tannish gray.	■		3/5/11	26	94	
25		**SILTY SAND (SM):** medium-grained, few clay, micaceous, medium, dense, very moist, tannish brown with orange oxidation streaking.	■		7/7/7	27	95	
		End of boring at 26.5 feet below ground surface. No groundwater was encountered. Boring was backfilled with soil cuttings mixed with cement and compacted with augers using the drill rig weight on 8/27/24.						

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Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No. **23-32-133-01**

Drawing No. **A-3**

Log of Boring No. BH-03

Date Drilled: 8/27/2024 Logged by: Aleksey Zhukov Checked By: Hashmi Quazi

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 134 Depth to Water (ft, bgs): NOT ENCOUNTERED

SUMMARY OF SUBSURFACE CONDITIONS

This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Depth (ft)	Graphic Log	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
	ALLUVIUM: **SILTY SAND (SM):** fine to coarse-grained, few gravel up to 1.5" in maximum dimension, moist, brown.						
5	**SAND (SP):** fine to coarse-grained, few gravel up to 0.5" in maximum dimension, trace silt, medium dense, dry to moist, yellow brown.	■		8/15/16	2	104	CL
	- 7.5': fine to medium-grained, no gravel, trace clay, loose, dry.	■		2/2/6	1		*Disturbed
10	**SANDY SILT (ML):** fine-grained sand, few clay, stiff, moist, brown.	■		5/6/10	20	107	
15	**SILTY SAND (SM):** fine-grained, medium dense, moist, tannish brown.	■	▨	5/9/13	12	102	
20	**- 20':** loose, inreasing moisture content, light brown.	■		3/5/7	24	101	
25	**CLAY (CL):** trace fine-grained sand, little silt, medium stiff, moist, brownish gray with orange and black oxidation streaking.	■		4/7/4	34	87	
	End of boring at 26.5 feet below ground surface. No groundwater was encountered. Boring was backfilled with soil cuttings mixed with cement and compacted with augers using the drill rig weight on 8/27/24.						

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Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No. 23-32-133-01

Drawing No. A-4

Log of Boring No. BH-04

Date Drilled: 8/27/2024 Logged by: Aleksey Zhukov Checked By: Hashmi Quazi

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 135 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		ALLUVIUM: **SAND WITH SILT (SP-SM):** fine to coarse-grained, few gravel up to 1" in maximum dimension, moist, yellowish brown.						
5		**SILTY SAND (SM):** fine to coarse-grained, scattered gravel up to 0.75" in maximum dimension, medium dense, moist, yellow brown.	■		10/11/11	6	113	DS
		SAND WITH GRAVEL (SP): fine to coarse-grained, gravel up to 1" in maximum dimension, medium dense, moist, yellow brown.		▨	5/8/6			*No Recovery
10		**- 10':** gravel up to 2" in maximum dimension, loose.	■		2/4/8	10	114	
		SILT WITH SAND (ML): fine-grained sand, few clay, moist, dark brown.						
15		**SILTY SAND (SM):** fine-grained, medium dense, moist, brown.	■		5/8/12	20	100	
		End of boring at 16.5 feet below ground surface. No groundwater was encountered. Boring was backfilled with soil cuttings mixed with cement and compacted with augers using the drill rig weight on 8/27/24.						

Converse Consultants

Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No. 23-32-133-01

Drawing No. A-5

Log of Boring No. PT-01

Date Drilled: 8/27/2024 Logged by: Aleksey Zhukov Checked By: Hashmi Quazi

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop:

Ground Surface Elevation (ft): 133 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM: **SILTY SAND (SM):** fine to coarse-grained, few gravel up to 2" in maximum dimension, moist, brown.						
5		**- 5':** scattered gravel up to 0.75" in maximum dimension, few clay, dark brown.						PA
10		End of boring at 10.3 feet bgs. Groundwater was not encountered. Borehole was used for percolation testing. After completeion of percolation testing, pipe was removed from borehole, backfilled with soil cuttings and compacted on 8/28/2024.						

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Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No. 23-32-133-01

Drawing No. A-6

Log of Boring No. PT-02

Date Drilled: 8/27/2024 Logged by: Aleksey Zhukov Checked By: Hashmi Quazi

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop:

Ground Surface Elevation (ft): 134 Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		ALLUVIUM: **SAND WITH SILT (SW-SM):** fine to coarse-grained, few gravel up to 1.5" in maximum dimension, moist, tannish brown.						PA, R
		End of boring at 4.7 feet bgs. Groundwater was not encountered. Borehole was used for percolation testing. After completeion of percolation testing, pipe was removed from borehole, backfilled with soil cuttings and compacted on 8/28/2024.						

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Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No. 23-32-133-01

Drawing No. A-7

Appendix B

Laboratory Testing Program

APPENDIX B

LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their physical properties and engineering characteristics. The amount and selection of tests were based on the geotechnical parameters required for this project. Test results are presented herein and on the *Logs of Borings*, in Appendix A, *Field Exploration*. The following is a summary of the various laboratory tests conducted for this project.

***In-Situ* Moisture Content and Dry Density**

In-situ dry density and moisture content tests were performed on relatively undisturbed ring samples, in accordance with ASTM Standard D2216 and D2937 to aid soils classification and to provide qualitative information on strength and compressibility characteristics of the site soils. For test results, see the *Logs of Borings* in Appendix A, *Field Exploration*.

Expansion Index (EI)

One representative bulk sample was tested to evaluate the expansion potential of material encountered at the site in accordance with ASTM D4829 Standard. The test result is presented in the following table.

Table No. B-1, Expansion Index Test Result

Boring No.	Depth (feet)	Soil Classification	Expansion Index	Expansion Potential
BH-01	0-5	Silty Sand (SM)	3	Very Low

R-Value (R)

One representative bulk soil sample was tested in accordance with California Test Method CT301 for resistance value (R-value). The test provides a relative measure of soil strength for use in pavement design. The test result is presented in the following table.

Table No. B-2, R-Value Test Result

Boring No.	Depth (feet)	Soil Classification	Measured R-value
PT-02	0-4.7	Sand with Silt (SP-SM)	75

Soil Corrosivity (CR)

One representative soil sample was tested to determine minimum electrical resistivity, pH, and chemical content, including soluble sulfate and chloride concentrations. The purpose of the test was to determine the corrosion potential of site soils when placed in contact with common construction materials. The test was performed by Keegan Lab (Pomona, CA) in accordance with Caltrans Test Methods 643, 422, and 417. Test result is presented in the following table.

Table No. B-3, Summary of Soil Corrosivity Test Result

Boring No.	Depth (feet)	pH	Soluble Sulfates (CA 417) (ppm)	Soluble Chlorides (CA 422) (ppm)	Min. Resistivity (CA 643) (Ohm-cm)
BH-01	0-5	8.0	89	17	2,610

Collapse Potential (CL)

To evaluate the moisture sensitivity (collapse/swell potential) of the encountered soils, two collapse tests were performed on a relatively undisturbed ring samples in accordance with the ASTM Standard D4546 laboratory procedure. The samples were loaded to approximately 2 kips per square foot (ksf), allowed to stabilize under load, and then submerged. The test results are presented in the following table.

Table No. B-4, Collapse Test Results

Boring No.	Depth (feet)	Soil Classification	Percent Swell (+) Percent Collapse (-)	Collapse Potential
BH-01	5.0-6.5	Sandy Silt (ML)	-0.0	None
BH-03	5.0-6.5	Sand (SP)	-0.1	Slight

Atterberg Limits (PI)

The Atterberg Limits test was performed on one representative sample to assist in the classification of the soils in accordance with the ASTM Standard D4318 test method. The test result is presented in Drawing No. B-1, *Atterberg Limits Result*.

Table No. B-5, Atterberg Limits Test Result

Boring No.	Depth (feet)	Soil Description	Liquid Limit	Plastic Limit	Plasticity Index
BH-01	7.5-9.0	Clay with Sand (CL)	34	21	13

Percent Passing #200 Sieve (FC=)

One percent passing (#200 sieve) test was performed on a select sample in accordance with ASTM Standard D1140. The result is presented in the following table.

Table No. B-6, Percentage Passing #200 Sieve Results

Boring No.	Depth (feet)	Description	Passing #200 Sieve (%)
BH-02	10-15	Sandy Silt (ML)	55.8

Grain-Size Analyses (PA)

To assist in soil classification, mechanical grain-size analyses were performed on two select samples in accordance with the ASTM Standard D6913. Grain-size curves are shown in Drawing No. B-2, *Grain Size Distribution Results* and summarized in the following table.

Table No. B-7, Grain Size Distribution Test Results

Boring No.	Depth (feet)	Soil Classification	% Gravel	% Sand	%Silt	%Clay
PT-01	5-10	Silty Sand (SM)	2.0	64.4	33.6	
PT-02	0-4.7	Sand with Silt (SW-SM)	6.0	83.4	10.6	

Maximum Dry Density and Optimum Moisture Content (CP)

Laboratory maximum dry density-optimum moisture content relationship test was performed on one representative bulk sample. This test was conducted in accordance with the ASTM Standard D1557 test method. The test result is presented in Drawing No. B-3, *Moisture-Density Relationship Result,* and summarized in the following table.

Table No B-8, Summary of Moisture-Density Relationship Result

Boring No.	Depth (feet)	Soil Classification	Optimum Moisture (%)	Maximum Density (lb/cft)
BH-01	0-5	Silty Sand (SM), Brown	131.5 (134.4*)	8.5 (7.8*)

(* Rock correction: BH-01 = 9.5%)

Direct Shear (DS)

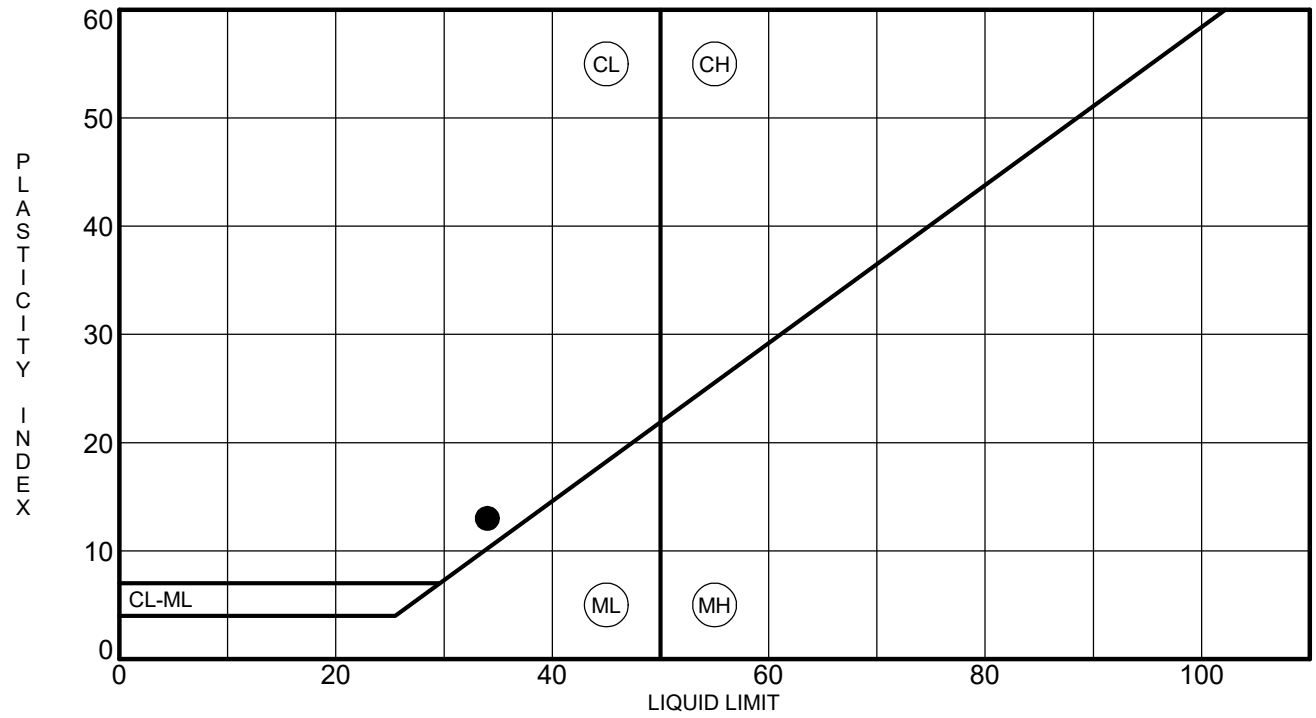
One direct shear test was performed on relatively undisturbed sample under soaked moisture conditions in accordance with ASTM D3080. For each test, three samples contained in brass sampler rings were placed, one at a time, directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. Each sample was then sheared at a constant strain rate of 0.02 inches/minute. Shear deformation was recorded until a maximum of about 0.25-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear strength parameters. For test data, including sample density and moisture content, see Drawing No. B-4*, Direct Shear Test Result,* and the following table.

Table No. B-9, Summary of Direct Shear Test Result

Boring No.	Depth (feet)	Soil Description	Ultimate Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-04	5.0-6.5	Silty Sand (SM)	29	110

Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period.



Symbol	Boring No.	Depth (ft)	LL (%)	PL (%)	PI (%)	Description
●	**BH-01**	**7.5-9.0**	**34**	**21**	**13**	**CLAY WITH SAND (CL)**

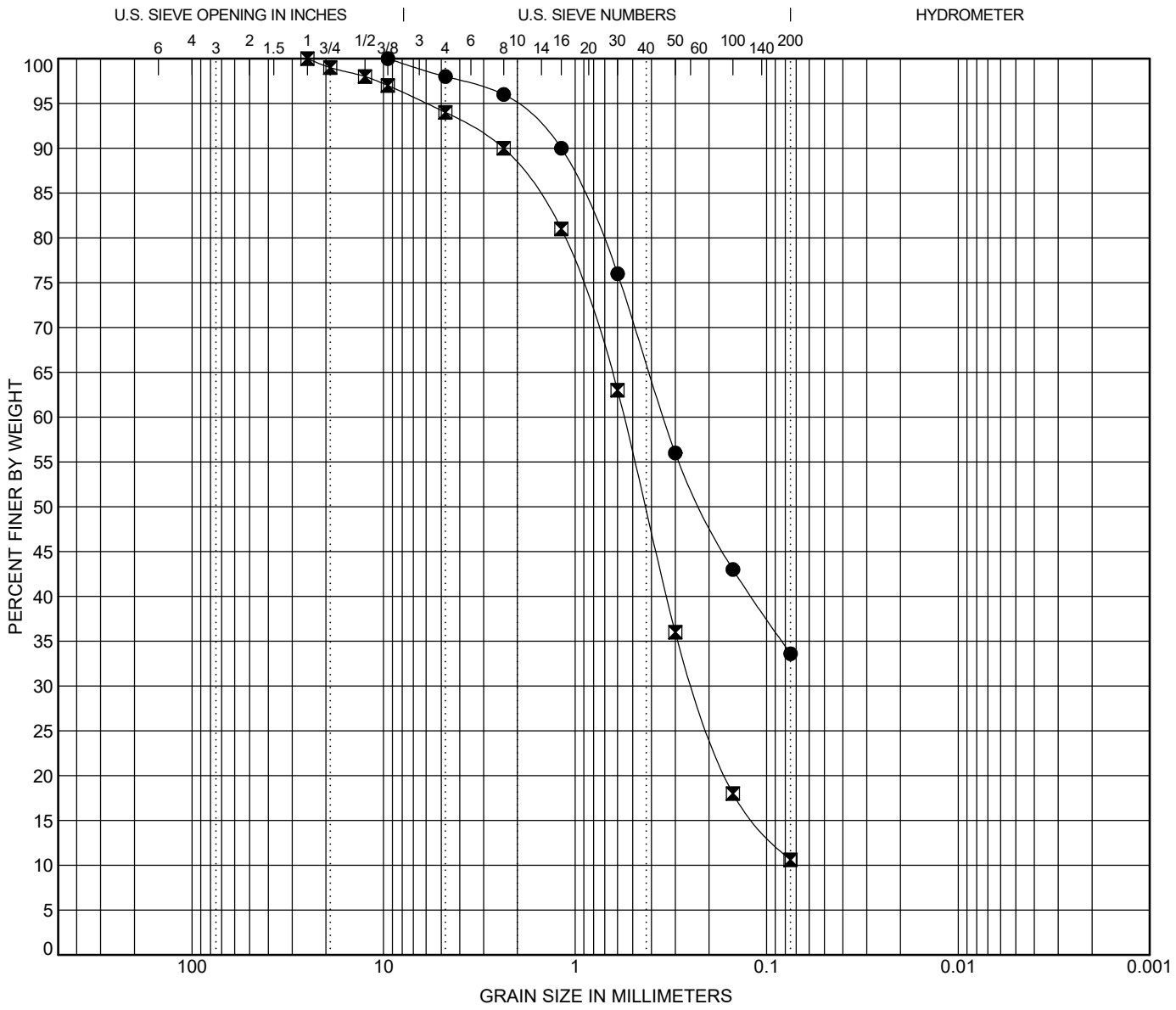
ATTERBERG LIMITS RESULT

Converse Consultants

Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No.
23-32-133-01

Drawing No.
B-1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	**PT-01**	**5-10**	**SILTY SAND (SM)**					
⊠	**PT-02**	**0-4.7**	**SAND WITH SILT (SW-SM)**				**1.44**	**7.84**

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**PT-01**	**5-10**	**9.5**	**0.345**			**2.0**	**64.4**	**33.6**	
⊠	**PT-02**	**0-4.7**	**25**	**0.556**	**0.238**		**6.0**	**83.4**	**10.6**	

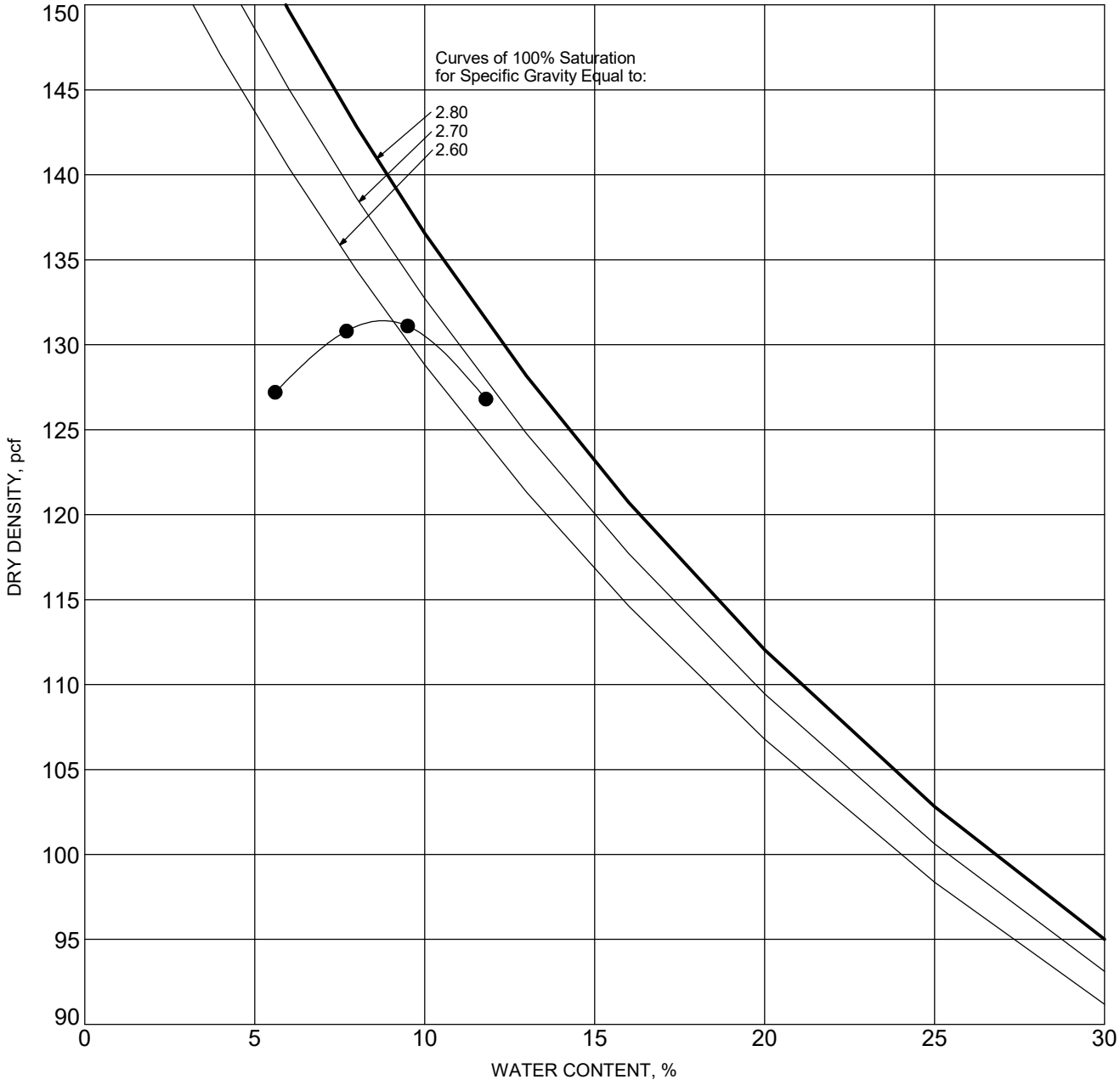
GRAIN SIZE DISTRIBUTION RESULTS

Converse Consultants

Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No. **23-32-133-01**

Drawing No. **B-2**



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	**BH-01**	**0-5**	**SILTY SAND (SM), BROWN**	**D1557 Method A**	**8.5 (7.8*)**	**131.5 (134.4*)**

(* Rock correction: BH-01 = 9.5%)

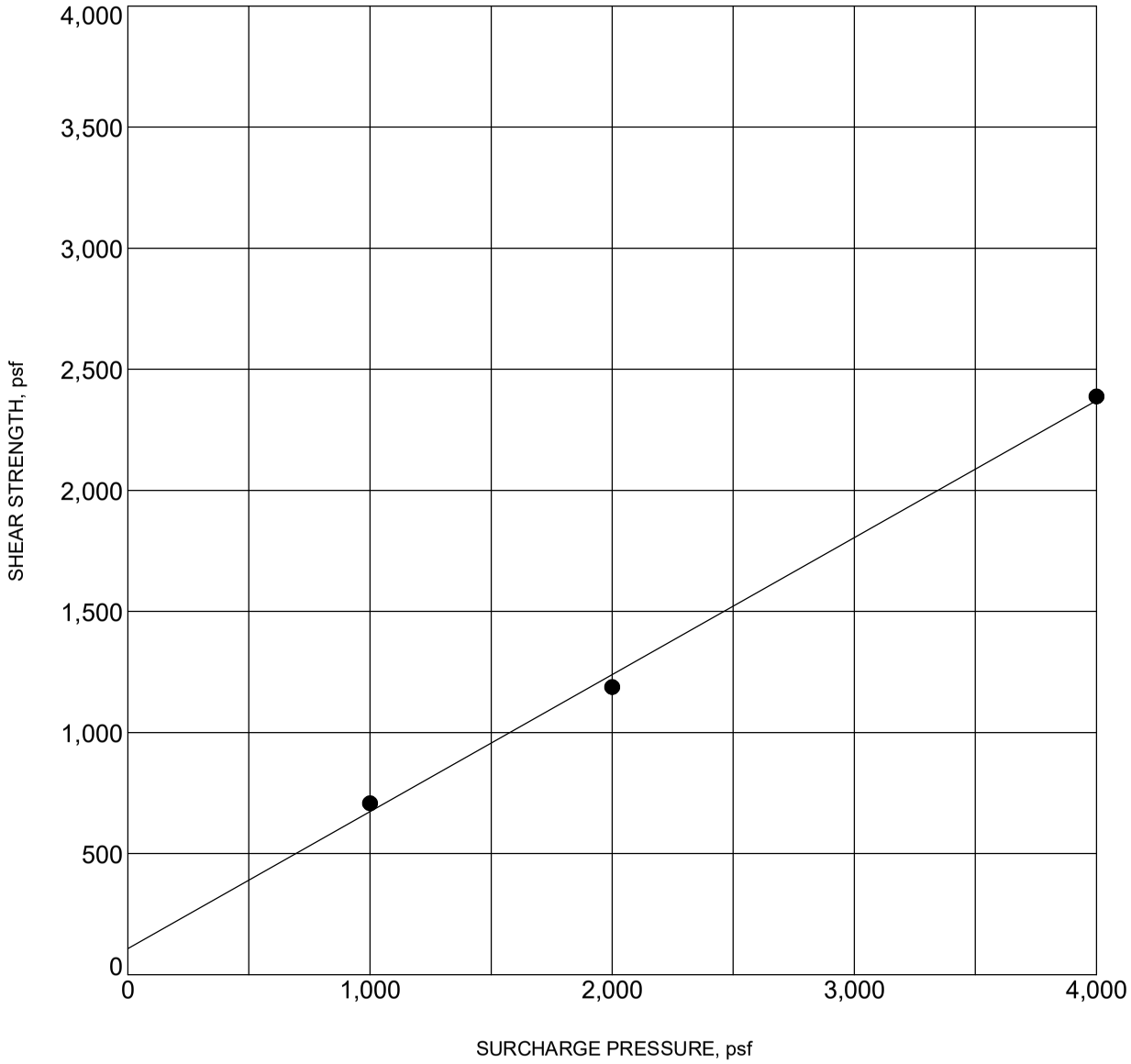
MOISTURE-DENSITY RELATIONSHIP RESULT

Converse Consultants

Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No. **23-32-133-01**

Drawing No. **B-3**



BORING NO.	:	**BH-04**	DEPTH (ft)	:	**5.0-6.5**
DESCRIPTION	:	**SILTY SAND (SM)**			
COHESION (psf)	:	**110**	FRICTION ANGLE (degrees):		**29**
MOISTURE CONTENT (%)	:	**6**	DRY DENSITY (pcf)	:	**113**

NOTE: Ultimate Strength.

DIRECT SHEAR TEST RESULT

Converse Consultants

Approximately 2.0-acre New Park Site
2850 West Chapman Avenue
City of Orange, Orange County, California
For: MIG

Project No. **23-32-133-01**

Drawing No. **B-4**

Appendix C

Percolation Testing



APPENDIX C

PERCOLATION TESTING

Percolation testing were performed at two locations (PT-01 and PT-02), on August 28, 2024, in general accordance with the Technical Guidance Document (TGD) for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans (WQMP), Appendix VII, Infiltration Rate Evaluation Protocol and Factor of Safety Recommendations (Orange County, 2013) for using a percolation testing method to estimate infiltration rates.

Upon completion of drilling the test holes, an approximately 2-inch-thick gravel layer was placed at the bottom of each hole and a 3.0-inch diameter perforated pipe was installed above the gravel to the ground surface. The boring annulus around the pipe was filled with gravel. The purpose of the pipe and gravel was to reduce the potential for erosion and caving due to the addition of water to the hole.

Each test hole was presoaked by filling with water to at least 5 times the radius of the test hole. After pre-soaking, water was added until the water levels were as near the required testing depth as could be achieved. The water levels were measured to the nearest 1/10-foot and recorded every 10 minutes for PT-01 and PT-02. Following the completion of percolation testing, the pipes were removed from the test holes, and they were backfilled with soil cuttings and compacted.

Percolation rates describe the movement of water horizontally and downward into the soil from a boring. Infiltration rates describe the downward movement of water through a horizontal surface, such as the floor of a retention basin. Percolation rates are related to infiltration rates but are generally higher and require conversion before use in design. The percolation test data was used to estimate infiltration rates using the Porchet Inverse Borehole Method, in accordance with the Orange County technical guidelines. A factor of safety of 2 was applied to the measured infiltration rates to account for subsurface variations, uncertainty in the test method, and future siltation. The infiltration structure designer should determine whether additional design-related safety factors are appropriate.

The measured percolation test data, calculations and estimated infiltration rates are shown on Plates Nos. 1 through 4. The estimated infiltration rates at the test holes are presented in the following table.

Table C-1, Estimated Infiltration Rates

Percolation Test	Depth (feet)	Soil Type	Infiltration Rate (inches/hour) (FOS 2)
PT-01	10.3	Silty Sand (SM)	0.21
PT-02	4.7	Sand with Silt (SW-SM)	3.59

A design infiltration rate of 0.21 and 3.59 (inches/hour) can be used for depths of 10.3 and 4.7 feet for PT-01 and PT-02 respectively. Please note that infiltration rates may change if the soil type and location of the proposed system changes. If that is the case, then additional percolation testing is required to be performed in the required location.

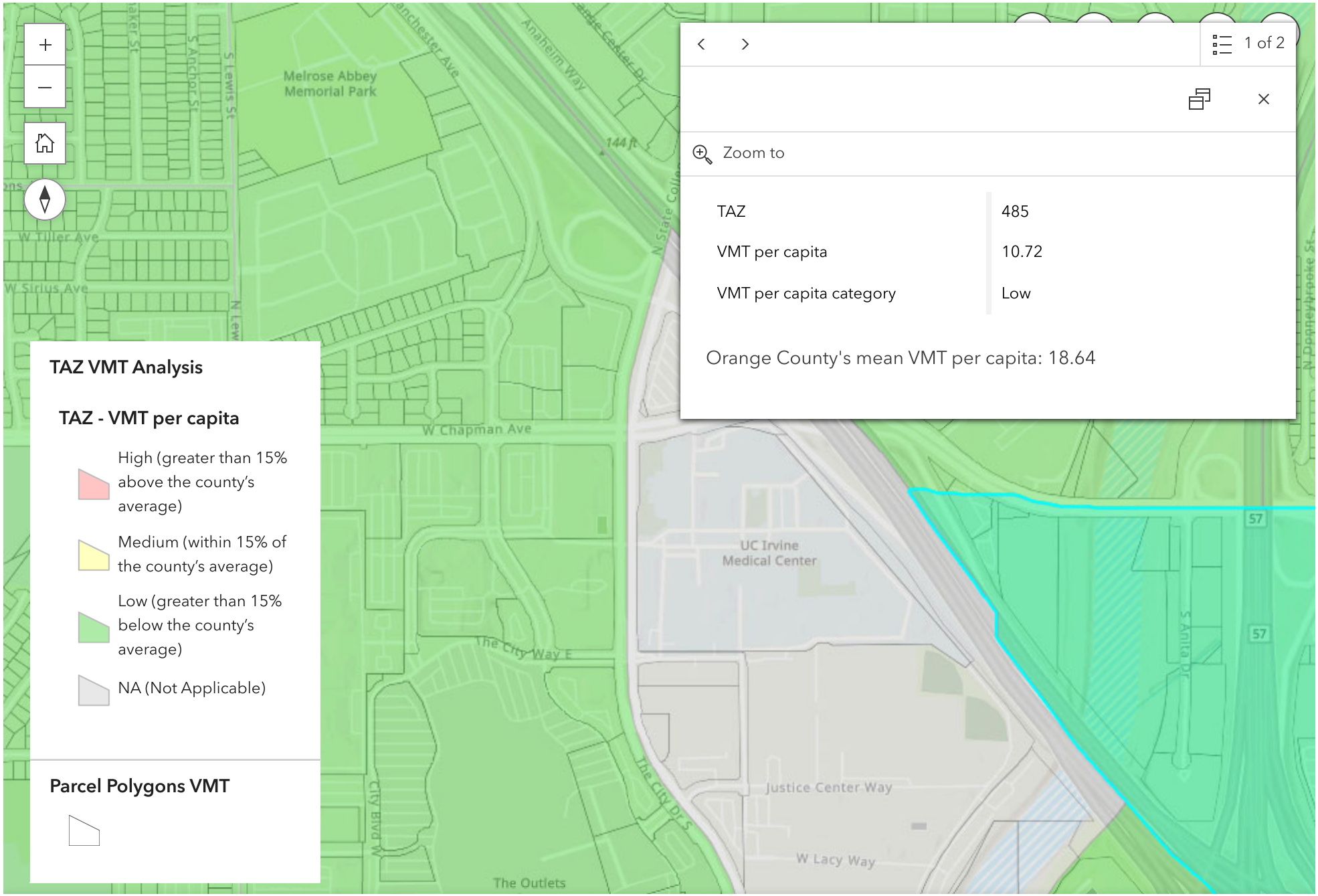
APPENDIX G

VMT SCREENING INFO

VMT Screening Tool

Orange County Council of Governments

Find address or place

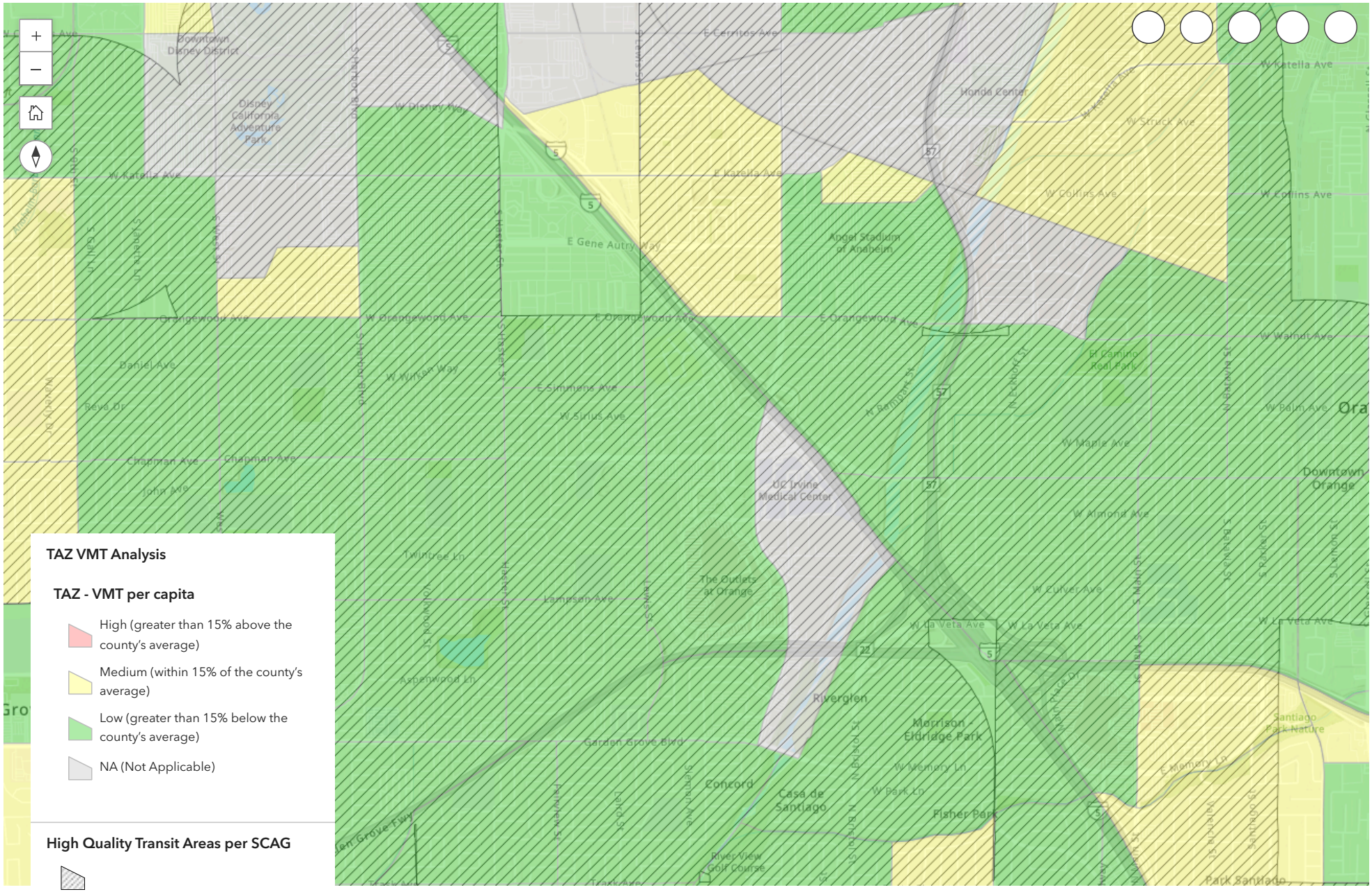


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OCCOG
Orange County Council of Governments

VMT Screening Tool

Find address or place



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