GEOTECHNICAL ENGINEERING
PAVEMENT REPORT

ANAHEIM CAMPUS
WEST PARKING LOT
RENOVATION

LOCATED AT

1830 W. ROMNEYA DRIVE
ANAHEIM, CALIFORNIA

FOR

NORTH ORANGE COUNTY COMMUNITY
COLLEGE DISTRICT
1830 WEST ROMNEYA DRIVE
ANAHEIM, CALIFORNIA 92801

PROJECT: SA-5627-01

AUGUST 28, 2019

GEOTECHNICAL SOLUTIONS, INC.
GEOTECHNICAL & ENVIRONMENTAL
ENGINEERING

Geotechnical Solutions, Inc.
Geotechnical, Structural & Environmental Engineering

August 28, 2019

Project No. SA-5627-01

North Orange County Community College District
1830 West Romneya Drive
Anaheim, California 92801

Attention: Ms. Corazon C. Baldovino
Interim Manager

Re: Geotechnical Engineering Pavement Report
West Parking Lot Renovation & Irrigation System Upgrade
Anaheim Campus
1830 W. Romneya Drive
Anaheim, California

Ladies & Gentlemen:

As requested, we have provided the geotechnical engineering report for the proposed west parking Lot renovation program including upgrade irrigation system.

Proposed development consists of removing the existing pavement and replace with the new asphalt pavement at the existing west parking lot and upgrade existing irrigation system at 1830 West Romneya Drive in the City of Anaheim, California.

The accompanying Report is based on our recent subsurface exploration, laboratory testing, and our conclusions and recommendations for the geotechnical engineering aspects of the project design. Our services were performed using the standard of care ordinarily exercised in this locality, at the time when the report was prepared.

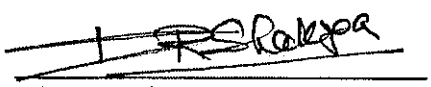
The investigation was made in accordance with generally accepted geotechnical engineering principles and procedures and included such field and laboratory tests considered necessary in the circumstances.

In the opinion of the undersigned, the accompanying report has been substantiated by data, observations, analysis, and opinions and presents fairly the design information requested by you.

We have appreciated this opportunity to be of service to you on this project.

Respectfully Submitted,

Geotechnical Solutions, Inc.



Dharma Shakya, PhD, PE, GE
Principal Geotechnical Engineer

Abraham S. Baha, PE, MASCE
Sr. Principal

Distribution: (pdf) North OC Community College District
(pdf) David Evans and Associates

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Introduction

The proposed project is basically located west of the Anaheim Campus, south of Anaheim Shores, east of North Leeward Way, and north of North Outrigger Way. Specifically, it is located at 1830 W. Romneya Drive in the City of Anaheim, California. The project consists of west parking lot renovation and improvements with driveways and sidewalks including upgrading the irrigation system.

Site Description

The existing west parking lot has been deteriorated and consists of lots of cracks and potholes and need immediate action and be replaced with the new pavement.

Presently this area is used as a parking lot. The pavement condition and drainage are in poor condition.

Proposed Construction

The proposed site work construction will consist of improvement of this parking lot by replacing it and upgrading the irrigation system as shown on the Site Map, Phase 3 (Plate B-1). Based on the site-specific investigation, we are providing specific recommendations regarding subgrade, aggregate base, asphalt concrete pavements, concrete pavements, concrete driveway (vehicular and non-vehicular), and trench bottom and backfill upgrading the existing irrigation system.

Field Investigation

Field exploration consisted of twelve (12) hollow stem auger borings, from 5-foot up to 50-foot deep in order to evaluate the subgrade soils condition for pavement design as shown on Plot Plan & Borings Location Map (Plate B-2). The logs of the borings are presented in Appendix A. The attached logs tabulate data based on laboratory classification tests and visual observation by the field engineer at the site. The soil

samples were collected for evaluating R-values for the pavement design and to determine laboratory tests for obtaining other geotechnical parameters.

Laboratory Testing

Laboratory testing was assigned following a review of the field investigation data and after considering the foundation elements to be evaluated. In general, this included physical testing to establish foundation bearing characteristics and selective classification tests. Test results are presented in Appendix A.

A. Mechanical Analysis

The texture composition of selected sample determined by the hydrometer test method is as follows:

Boring No.	Depth (ft)	Percent Sand	Percent Silt	Percent Clay
B-1	0-3	56	27	17
B-2	0-3	66	29	5
B-3	0-3	71	19	10
B-4	0-3	68	17	15
B-5	0-3	66	22	12
B-6	0-3	56	29	15
B-7	0-3	71	14	15
B-8	0-3	73	12	15
B-9	0-3	56	25	19
B-10	0-3	58	23	19

B-11	0-3	63	17	20
B-12	0-3	61	17	22

B. Expansion Test

Expansion Characteristics were determined by Expansion Index test method on typical bulk soil samples. The Expansion results are as follows:

Boring No.	Depth (ft)	Moisture Content (%)	Dry Density (pcf)	Expansion Index
8	0-3	9.5	111.8	0

According to the test results, the underlying soils are classified as non-expansive to very low expansive.

C. R-Value Test:

Representative samples of the subgrade soils were obtained and tested to determine the R-value. The materials are thought to be typical and presumed to be representatives of the subgrade soils. Tests were performed in general accordance with the latest revisions to the Department of Transportation, State of California, Material & Research Test Method No. 301. Pavement design recommendations are based on the latest Traffic Indices (TI's) and recently tested R-value.

Two (2) R-Value tests were conducted on representative samples of the near surface soil consisting of clayey sands. The specimens were tested in a state as near to full saturation as possible to simulate the condition the soil might attain at typical field density and under adverse moisture conditions. The R-Value for a representative soil from Boring B-6 @ 1'-3' was determined to be 45. Test results are as follows:

Test Number	Moisture @ Compaction (%)	Density (pcf)	Exudation Pressure (psi)	Stabilometer "R"-Value
a	12.2	114.9	200	38
b	10.9	110.9	520	58
c	11.4	116.1	390	50
	*Interpolated 300 psi by exudation			45*

Similarly, R-value from Sample B-9 at 1- to 3-feet depth was found to be 54.

Test Number	Moisture @ Compaction (%)	Density (pcf)	Exudation Pressure (psi)	Stabilometer "R"-Value
A	11.3	121.7	348	64
B	12.2	118.9	242	56
	10.3	123.3	556	74
	*Interpolated 300 psi by expansion			54*

Recommended Pavement Section

The pavement sections presented on the following page are based on the R-value data collected, the assumed TI values, and the guidelines presented in the latest revision to the California Department of Transportation "Highway Design Manual," latest edition.

Typical categories of paved areas with corresponding traffic indices are listed as follows:

T.I. 6.0 Parking Stalls

T.I. 6.5 Driveways

T.I. 7.0 Fire Lane and Trash Enclosure

The recommended pavement sections provided below are intended as a minimum guideline. If thinner or highly variable pavement sections are constructed, increased maintenance and repair could be expected. If the ADT (average daily traffic) or ADTT

(average daily truck traffic) increases beyond that intended, as reflected by the TI used for design, increased maintenance and repair could be required for the pavement sections.

Consideration should be given to the increased potential for distress from overuse of paved street areas by heavy equipment and/or construction related traffic (e.g., concrete trucks, loaded supply trucks, etc.), particularly when the final section is not in place (i.e., topcoat). Best management construction practices should always be followed, especially during inclement weather.

Based on an "R" Value of 45, the following thickness of aggregate base was determined for parking and driveway areas.

Pavement Recommendations:

Subject to our review and testing of subgrade "R" values during grading, we recommend the following pavement section for the driveway and parking areas as a preliminary section for the recent R value of 45:

Traffic Condition	Assumed Traffic Index	Asphalt Concrete AC (inches)	Aggregate Base AB (inches)
Parking Stalls	6.0	4	6
Driveways	6.5	4	8
Heavy Trash & Fire Trucks	7.0	4	10

At the parking and driveway areas, the top 12 inches of subgrade should be scarified, moisture conditioned and recompacted to minimum 90% of the ASTM D-1557 Laboratory Standard immediately prior to placing the rock base and asphalt concrete. Rock-base material shall be class II aggregate base and to be compacted to 95 percent minimum.

Pavement Grading Recommendations

General

If adverse conditions are encountered during the preparation of subgrade materials, special construction methods may need to be employed. A representative of Geotechnical Solutions, Inc. (GSI) should be present for the preparation of subgrade, aggregate base, and asphalt concrete.

Subgrade Preparation

Existing asphalt concrete may be pulverized, mixed with existing base material and can be used as sub-base for parking and driveway areas including walkways and concrete vehicular lanes. All surficial deposits of loose soil material should be removed and excavate or scarified in place at top 12 inches below the base and recompacted as recommended.

Deleterious material, excessively wet or dry pockets, concentrated zones of oversized rock fragments, and any other unsuitable materials encountered during grading should be removed. The on-site materials should then be brought to the elevation of the proposed subgrade for the pavement. The subgrade should be proof rolled in order to ensure a uniform, firm and unyielding surface. All grading and fill placement should be observed by the project soils engineer and/or his representative.

Please note that the subgrade soil is generally sand and silty sand.

Compaction and rolling are required for the recommended base section. Minimum relative compaction required will be 95 percent of the laboratory maximum density as determined by ASTM Test Designation D-1557. Aggregate base should be in accordance with the Caltrans Class II base (minimum R-value=78) and sample should be brought for testing and approval prior to delivery to the site.

Rock-base material shall be crushed aggregate base to meet the requirements of 200-1.1 and 200-1.2 (miscellaneous crushed or processed base is not allowed). Aggregate base to be compacted to 95 percent minimum.

Asphalt Concrete Pavement

Asphalt concrete pavement should be Performance Grade PG 64-10, 1/2" maximum aggregate size and should be placed and compacted in two layers. The upper layer can have aggregate size as 3/8". Asphalt concrete shall be compacted by appropriate roller to minimum 95 percent of the Hveem Laboratory Test Standard.

Periodic maintenance of asphalt concrete within two to three years period must be done because cracks in asphalt concrete are very common due to temperature changes between summer and winter and day and night and due to moisture change since both asphalt concrete and concrete are permeable. Seal coating, slurry seal, filling the gaps – crack sealing or crack filling and some other methods are generally used during maintenance.

Concrete Pavement

Concrete pavement at the vehicular and walkways should be as follows:

Subgrade and Aggregate Base

The subgrade at top 18 inches should be compacted to 90 % of the maximum laboratory density as per ASTM D-1557. The subgrade may be very moist and may need to be aerated or replaced with granular material.

Aggregate base should be class II and should be compacted 95 percent of ASTM D1557 Laboratory Test Standard.

Concrete Pavement Section:

Description	Concrete Thickness	Aggregate Base	Reinforcement Both ways
Walkways	4 inches	4 inches	#3 Bars 12" c / c
Vehicular Area	6 inches	6 inches	#4 Bars 12" c / c
Fire Lane & Trash Area	6 inches	8 inches	#4 Bars 12" c / c

A concrete strength of 2,500 psi is acceptable. Expansion joints can be placed at 6 feet o.c. max. Class II cement with water cement ratio of maximum 0.50 may be used.

General Discussions

Both asphalt concrete and Portland Cement Concrete pavements are subject to deterioration due to temperature and moisture changes. Periodic and proper maintenance are the utmost important factors which play into the role for the longer life span.

Asphalt concrete is an excellent paving product, but it has significant environmental weaknesses that give it a limited lifespan. There are serious environmental issues with the heat produced by asphalt that has a negative impact on the Urban Heat Index (UHI).

Due to its black color, asphalt absorbs heat from the sun and retains it for long periods. This causes a significant increase in the UHI in surrounding metropolitan and urban areas and contributes to global warming.

Cracks in Asphalt Concrete and Portland Cement Concrete is very common due to temperature changes between summer and winter and day and night and due to moisture change since both asphalt concrete and Portland cement concrete are permeable. It expands and shrinks with changes in moisture and temperature. The overall tendency is to shrink, and this can cause cracking at an early age of the concrete. Irregular cracks are unsightly and difficult to maintain but generally do not affect the integrity of the concrete.

The most popular explanation for the asphalt concrete cracking is the freeze-thaw cycle in the winter. Asphalt concrete also cracks in the extreme sun, as it heats the concrete and causes it to expand. At the end of the day, the concrete contracts and regresses to its original, unbaked position.

It is very common for concrete to develop cracks, scaling, crazing and pitting. All concrete has tendency to crack, and it is not possible to produce completely crack-free concrete. Asphalt concrete should be sealed every three years to fill the gaps and prolong the life.

Curbs

Concrete curbs are subject to potential subgrade deflection and stress. It is recommended that these concrete elements should be minimum 4" thick extend 12 inches to the subgrade and placed over 4 inches of crushed rock. Subgrade of these areas to be scarified to a depth of 6 inches and compacted.

Walkways

Portland cement concrete walkways and/or asphalt concrete walkways at non-vehicle areas should be 4 inches of concrete with #3 bars at 12" o.c. both ways or 3 inches of asphalt concrete over 4 inches of aggregate base. Subgrade of these areas to be treated as mentioned in asphalt concrete section.

Exterior Concrete Flatwork (Non-vehicular use)

In order to reduce the potential for unsightly cracking, concrete sidewalks, patio-type slabs and concrete sub-slabs to be covered with decorative pavers should be at least 4 inches thick and provided with construction joints or expansion joints every 6 feet or less.

Exterior Concrete (Vehicular Use)

Exterior concrete vehicular lanes including driveway slabs, curbs and gutters are subject to potential subgrade deflection and distress. It is recommended that these concrete elements be minimum 6 inches thick, reinforced with #4 bars at 12 inches on center and placed over 6 inches of aggregate base. Subgrade for these areas should be treated as mentioned in the asphalt concrete pavement section of our report, providing expansion joints 6 feet or less.

Trash Enclosure and Other Secondary Structures

The trash enclosure wall and any other secondary structures may be supported by conventional continuous and/or isolated pad footings, bearing on at least 12 inches of certified compacted fill below the bottom of the footing.

Footings placed at least 12 inches below finish subgrade and/or 3 feet x 3 feet spread footings, 18 inches deep may be designed for an allowable bearing value of 1,500 pounds per square foot (psf). The footing width should be a minimum of 12 inches. An increase of 200 psf are allowed for each additional foot of increase in depth to a maximum value of 2,000 psf.

This allowable bearing value is for dead plus live load and may be increased by one-third for combined dead, live, and transient loads such are wind or seismic forces.

All footings at minimum shall be incorporated with 2#5 bars at top and 2#5 bars at the bottom.

Total settlement is estimated to be less than ½ inch for loading of 2 kips per square foot. Differential settlement will be less than 1/3 of an inch maximum for a horizontal distance of 30 feet.

Isolated column footings should be connected to other foundation elements with reinforced grade beams.

Floor Slabs

Based on test results, the underlying surface soils are very low expansive, therefore it is recommended to maintain subgrade soil at near optimum moisture content during precise grading and/or by periodic watering following grading and incorporated slab reinforcement of No. 3 bars 16 inches center to center cross pattern. The slab thickness should be 4 inches minimum. However, the thickness and reinforcement requirements of the slab should be evaluated by the project structural engineer.

Irrigation System Upgrade

It is planned to upgrade existing irrigation system. The bottom of trench should be observed to place pipes on competent subgrade. The pipes should be placed over existing sandy materials or place at least 2 inches of sand at the bottom. Backfill should be with on-site materials compacted to minimum 90 percent of ASTM D1557 Laboratory Test Standard up to finish subgrade.

Site Grading

The site grading may consist of demolishing or pulverizing the existing asphalt pavement and earthwork for removal and recompaction as required.

At least top 12 inches of subgrade soil should be scarified and compacted to minimum 90% of the ASTM D-1557 laboratory Test Standard for all the areas within walkways, parking lots, and driveways. The horizontal limits of overexcavation should extend to a minimum horizontal distance of 2-feet beyond the perimeter of the proposed flatwork improvements where possible.

Prior to compacting subgrade soil, exposed bottom surfaces should be observed and approved by the Geotechnical Engineer of Record, watered or air dried as necessary to achieve near optimum moisture conditions, and then compacted to a minimum relative compaction of 90 or 95 percent where applicable. The laboratory maximum dry density

and optimum moisture content for each change in soil type should be determined in accordance with Test Method ASTM D-1557.

Please note that the bottom of excavation may be too wet and in yielding condition depending on time of construction and rain condition, if that is the case it should be aerated by waiting and discing or stabilizing providing at least 12 inches of aggregate base subject to inspection and approval of Geotechnical engineer of Record.

Following are noted for site grading requirements:

1. Prior to any grading, all construction debris shall be removed and hauled away from the site.

2. Any site grading shall be performed under observation by a geotechnical engineer or his representative.

3. Any new fill shall be brought to near optimum moisture, placed in layers not exceeding six inches thick, and compacted to at least 90 or 95 percent where applicable for subgrade per current ASTM-D1557 standards.

4. Any imported soil if required, shall consist of clean, granular, non-expansive soil, free of vegetation and other debris with an Expansion Index of 20 or less. · No soil or aggregate base shall be imported to the site without prior approval by the Geotechnical Engineer.

5. No jetting or water tamping of fill soils shall be permitted.

6. At all times, the contractor shall have a responsible field superintendent on the project in full charge of the work, with authority to make decisions. He shall cooperate fully with the Geotechnical Engineer in carrying out the work.

7. No excavation should be performed, and no fill should be placed, spread or rolled during unfavorable weather. If work is interrupted by rain, operations should not be

resumed until the Geotechnical Engineer indicates that conditions will permit satisfactory results.

8. Compaction of foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved by a representative of GSI, Inc.

9. Utility trenches should be properly backfilled in accordance with the requirements of the latest Green Book. The pipe should be bedded with clean sands (Sand Equivalent greater than 30 or more) to a depth of at least 6-inches over the pipe, and the bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of GSI, Inc.). The use of gravel is not acceptable unless used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. The use of minimum 2-sack slurry is also acceptable, if required.

10. Prior to placing any bedding materials or pipes, the excavation bottom must be observed and approved in writing by the Geotechnical Engineer (a representative of Geotechnical Solutions, Inc.).

11. A pre-grading meeting should be established prior to grading, in the presence of the Owner, Architect, Geotechnical Engineer, Contractor and the controlling agency having jurisdiction, to review the project and schedule.

Surface Drainage

Positive surface drainage systems consisting of a combination of sloped concrete flatwork, sheet flow gradients, swales, surface area drains (where needed) should be provided to collect and direct all surface water to the adjacent streets. Ground surfaces

should be at a minimum gradient of 2 percent. Surface waters should not be allowed to collect or pond on paved areas, planter areas and any other level areas of the site.

Planters near the structure should be avoided, and if used, the base of the planters should be waterproofed. Landscape irrigation should be controlled, and proper drainage should be provided to avoid water intrusion beneath any structures.

Landscaping planters adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Where landscaping is planned adjacent to the pavement, we recommend construction of a cutoff wall along the edge of the pavement that extends at least 6 inches below the bottom of the base materials.

Construction Observation

Construction observation and field-testing services are an essential continuation of our prior studies to confirm and correlate our findings and recommendations with the actual subsurface conditions exposed during construction, and to confirm that suitable fill soils are placed and properly compacted.

At a minimum, we recommend that the Geotechnical Engineer and/or representative be present to observe and provide testing during the following construction activities:

- Pre-grade meeting;

- Site grading;

- Overexcavation and bottom observations;

- Excavations for compacted fill;

- Observations of subgrade bearing materials and place3ment of subgrade.

- Placement of Base materials;

- Laying of asphalt layers

- Placement of all fill, backfill, and pavement structural sections;

- Backfilling of utility trenches, pits, and trenches.

Additional Services

This office will be available for further consultation and review of as built and proposed plans. Our additional services include, but are not necessarily limited to the following:

(a) Review of grading plans.

(b) Consultation with other consultants as required during this study.

(c) Observation and testing during construction, as needed.

Remarks

The Conclusions and recommendations contained herein are based on the findings and observations made at the test hole locations of our previous reports. It is not unusual to find conditions between and beyond such locations, which differ from the conditions encountered. If conditions are encountered during construction, which appear to differ from those previously disclosed, this office should be notified to consider the need for modifications. On-site construction observations and wherever appropriate, tests should be performed during construction by a representative of this office to evaluate compliance with the design concepts, specifications, and recommendations contained herein.

This report has been compiled for the exclusive use of NOCCCD, their agents, or representative. It shall not be transferred to, or used by, other parties, or applied to any project on this site other than described herein without consent and /or thorough review by this office.

Limitations

This report is issued with the understanding that it is the responsibility of the owner or his representative to see that the information and recommendations contained herein are called to the attention of the other members of the design team for the project and that the applicable information is incorporated into the plans, and that the necessary steps are taken to see that the contractors and the subcontractors carry out such recommendations. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes outside of our control. The validity of the recommendations of this report assumes that Geotechnical Solutions, Inc. will be retained to provide these services. The scope of our services did not include any investigation for the presence or absence of hazardous or toxic materials in the soil, surface water, groundwater or air, on or below or around this site.

Geotechnical Solutions, Inc.

References

California Building Code, 2016, California Code of Regulations, Title 24, Volume 2 of Part 2.

California Department of Water Resources groundwater well data **http://wdl.water.ca.gov.**

California Geological Survey 2008, Guidelines for Evaluating and Mitigating Seismic Hazards in California: California Department of Conservation, Division of Mines and Geology, Special Publication 117A.

California Department of Transportation "Highway Design Manual," latest edition.

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California Building Code, 2016, California Code of Regulations, Title 24, Volume 2 of Part 2.

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California Geological Survey 2008, Guidelines for Evaluating and Mitigating Seismic Hazards in California: California Department of Conservation, Division of Mines and Geology, Special Publication 117A.

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Appendix A

Plates

- Vicinity Map
- Site Plan – Phase 3
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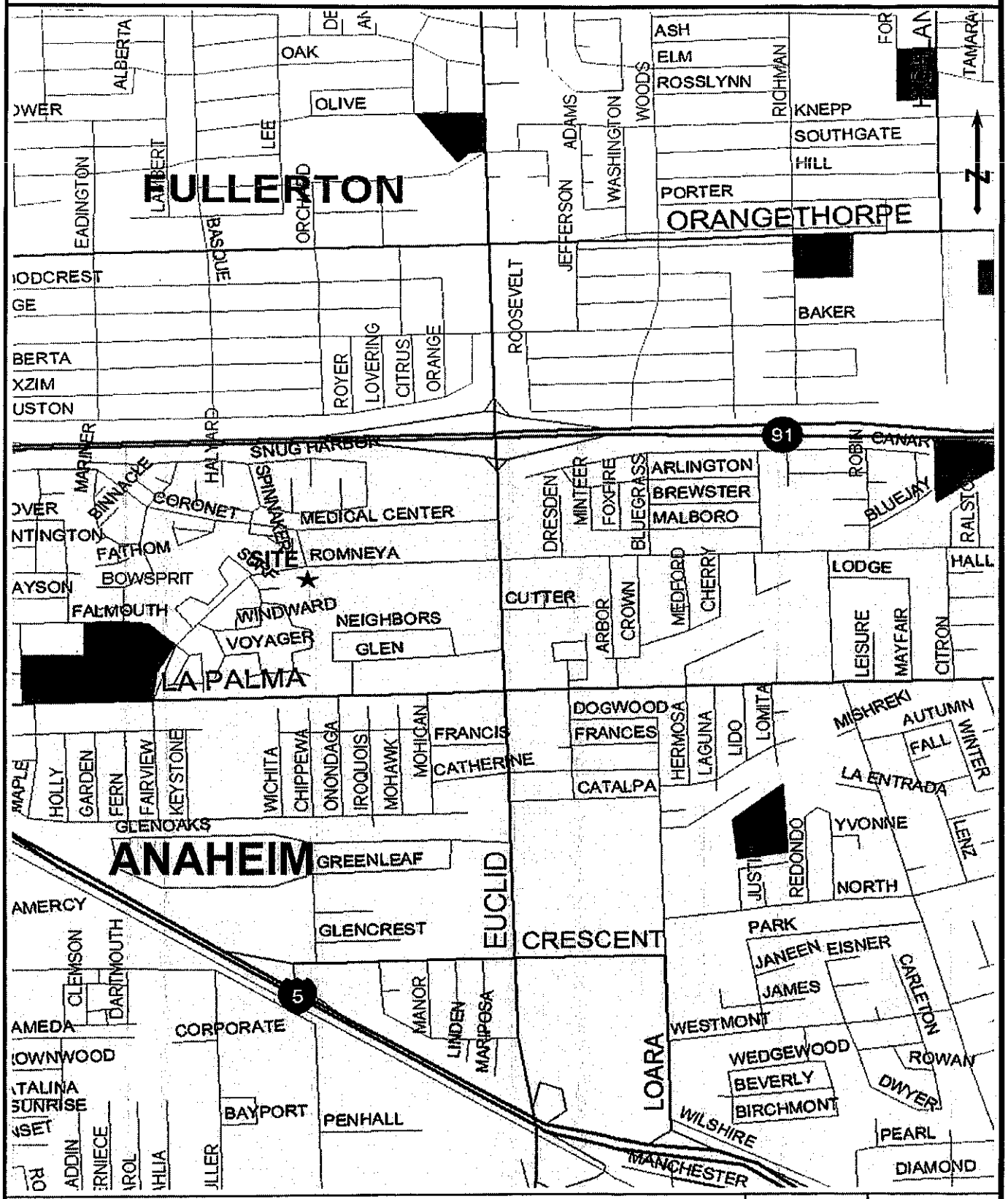
- Topographic Map
- Google Map
- Site Regional Geology Map
- Seismic Hazard Zone map
- Historical High Groundwater Map
- Quaternary Geology Map
- Log of Test Borings

VICINITY MAP



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1830 W. Romneya Drive, Anaheim, California 92801	Plate:	A

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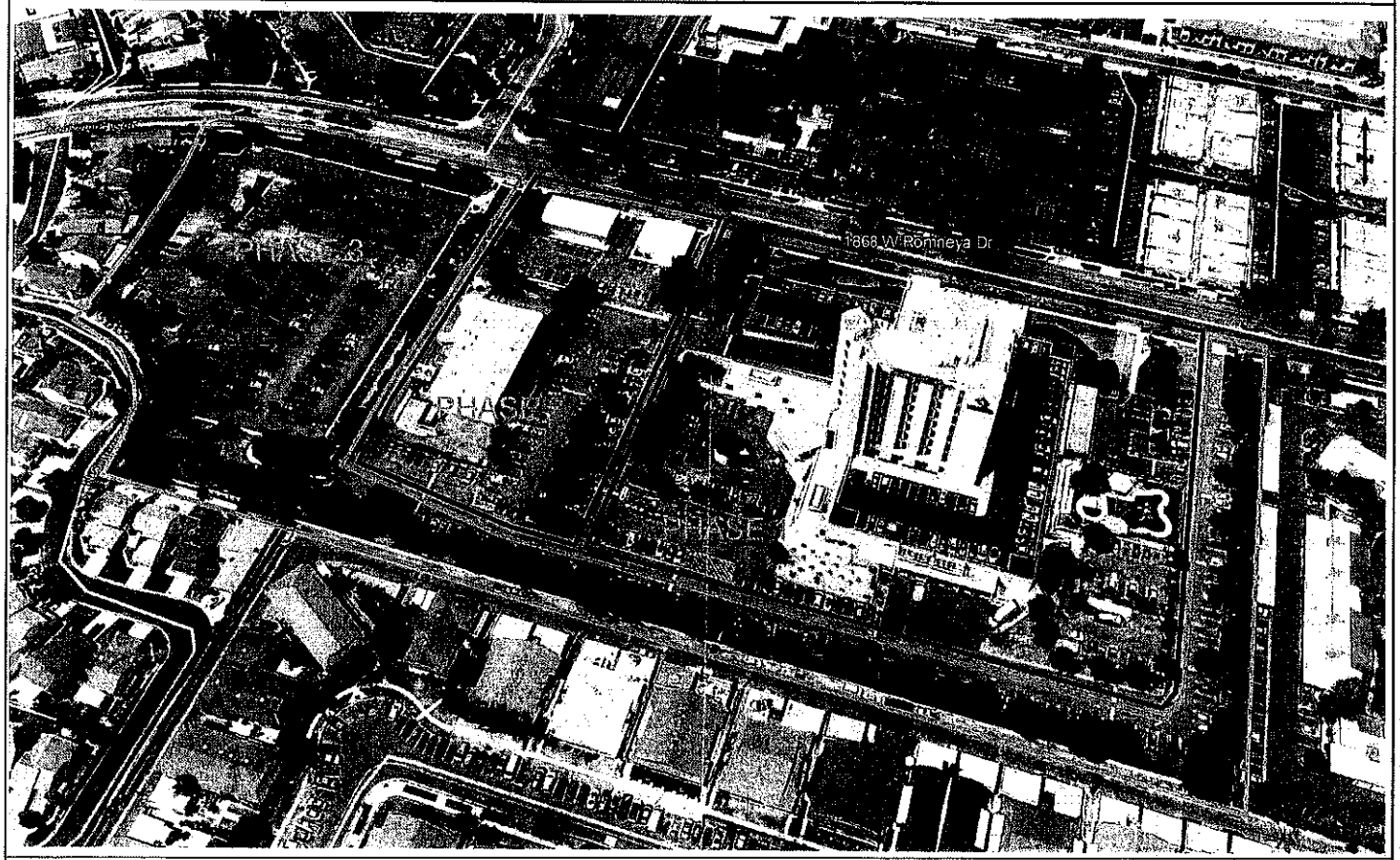
SITE PLAN - PHASE 3



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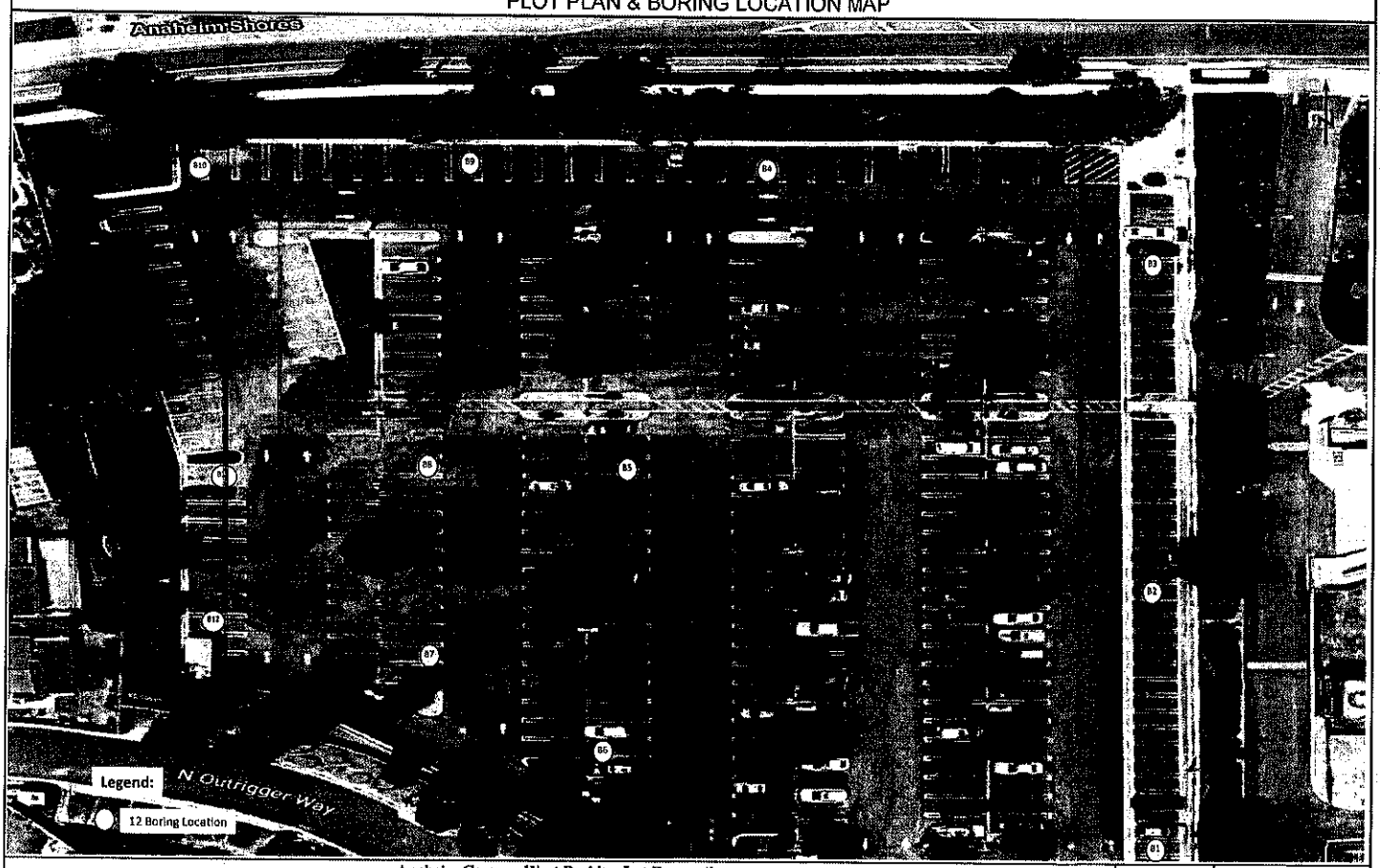
PLOT PLAN & BORING LOCATION MAP



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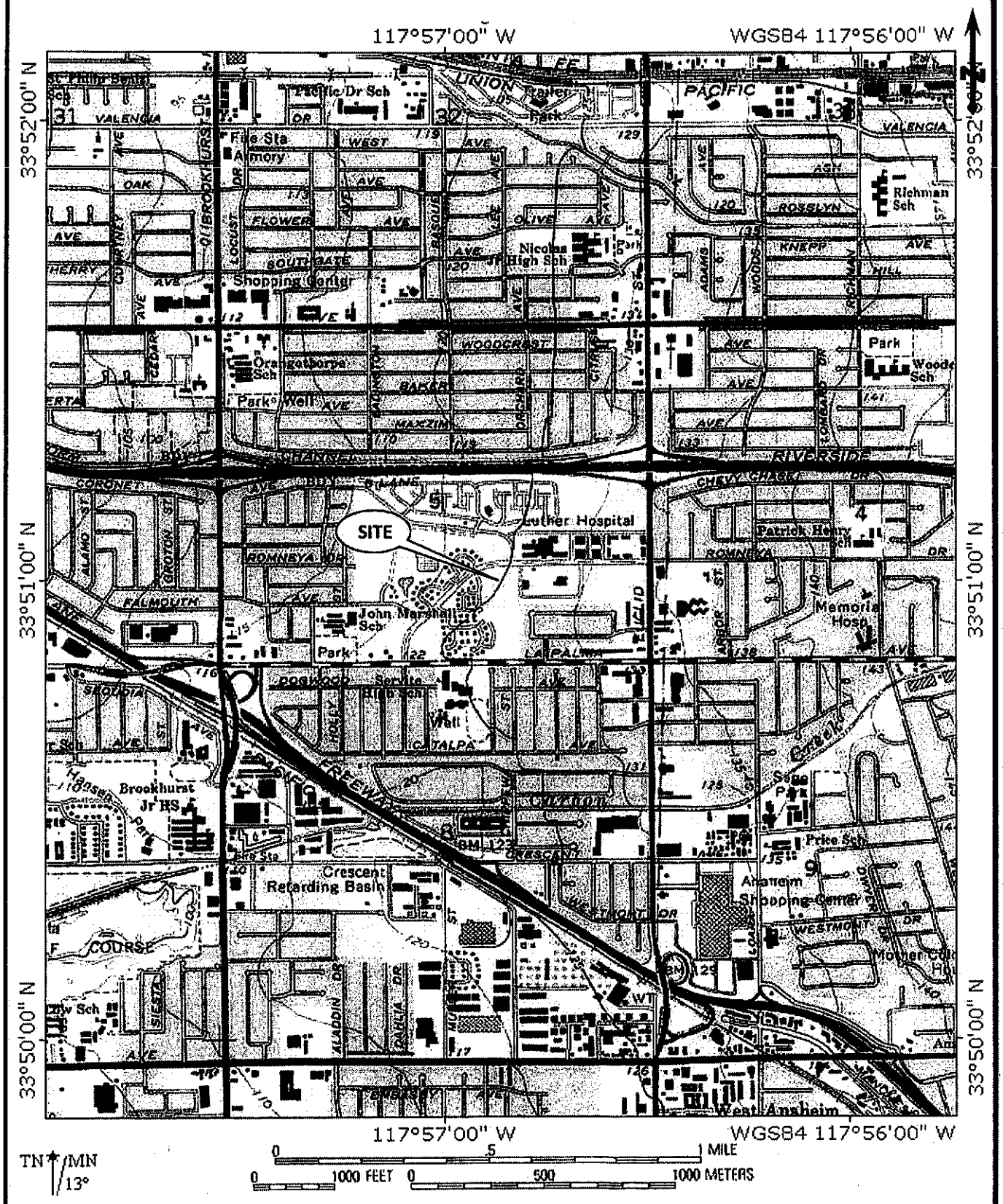
TOPOGRAPHIC MAP



Scale: 1" = 2,000'

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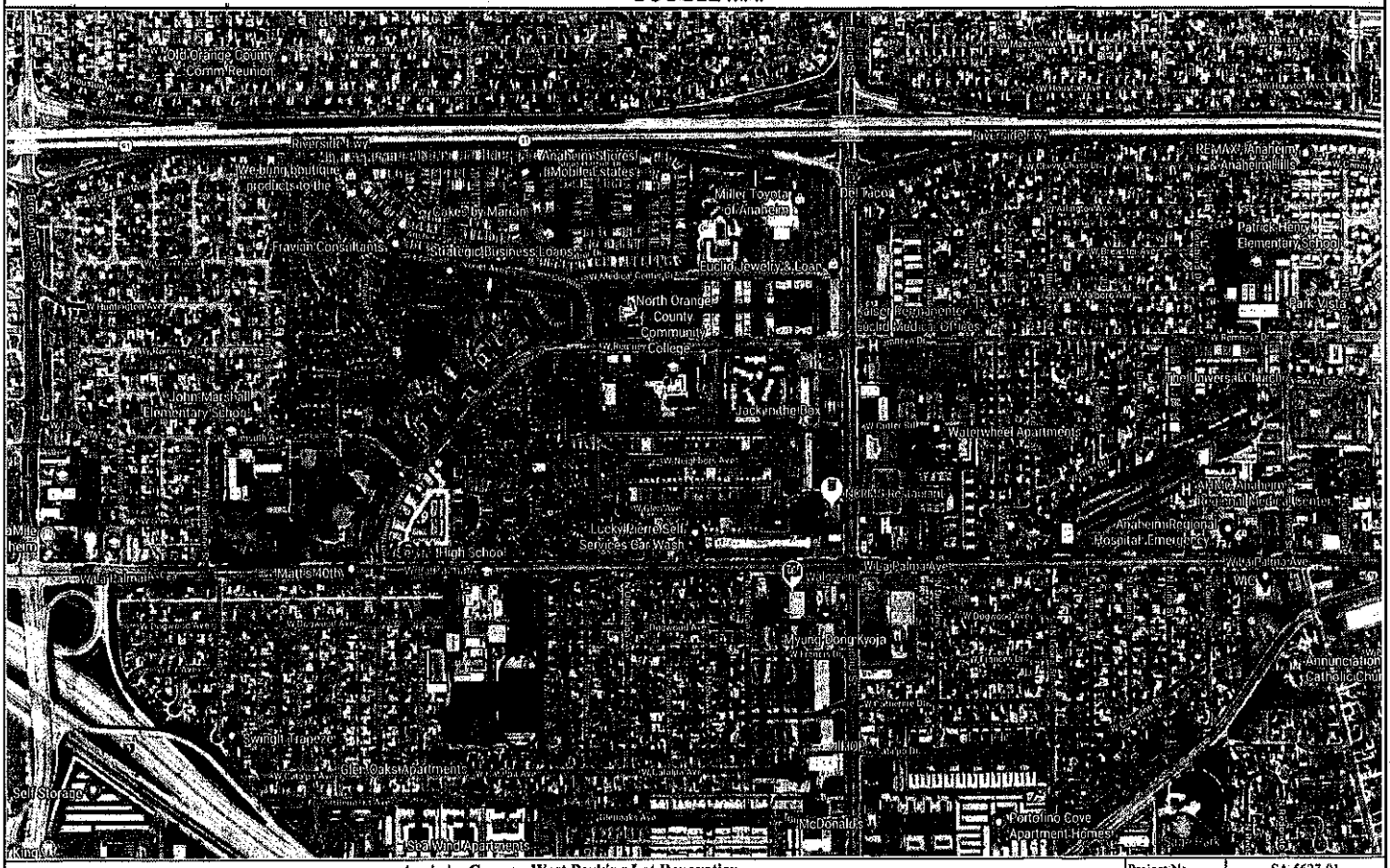
GOOGLE MAP



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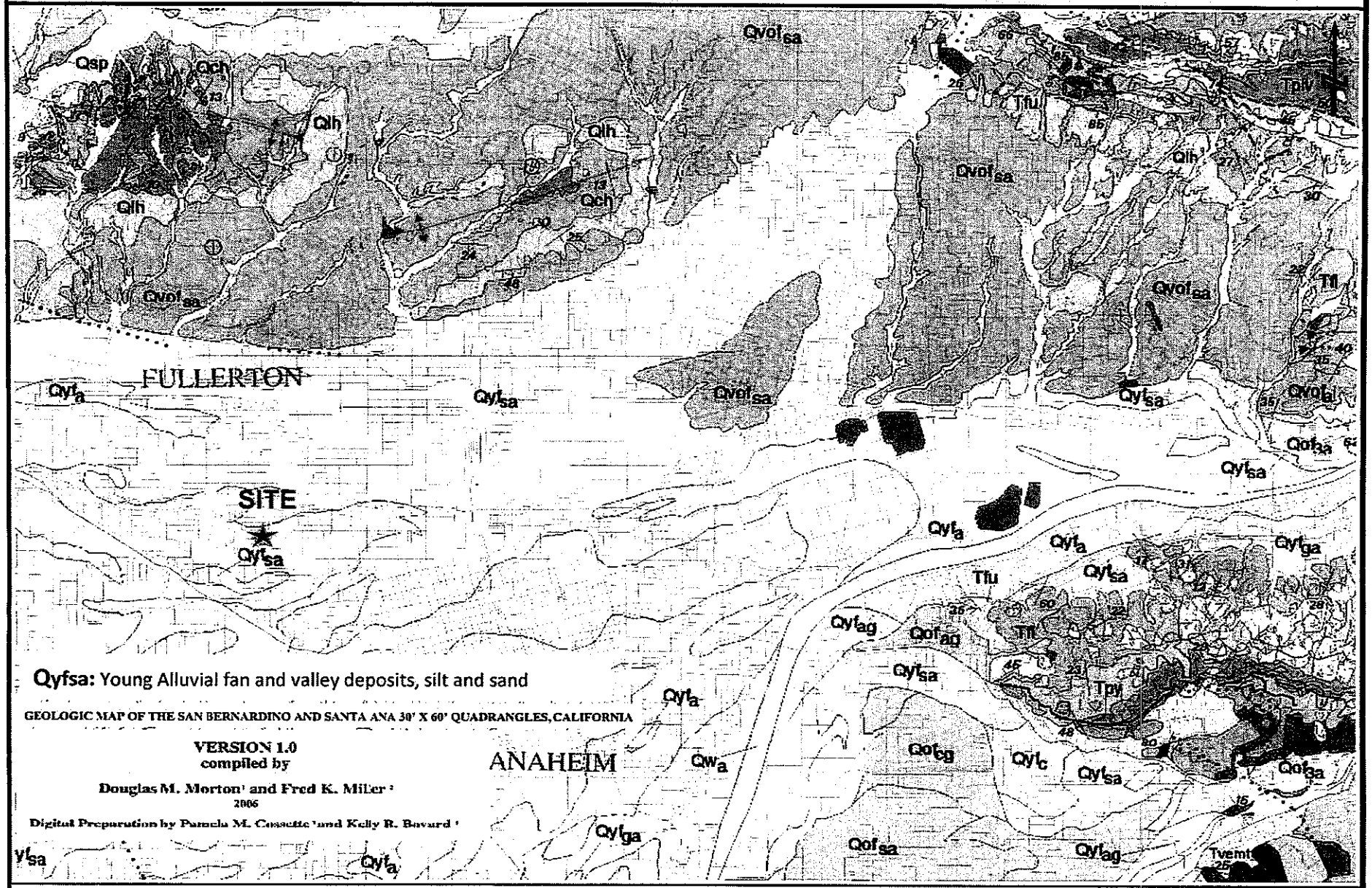
SITE REGIONAL GEOLOGY MAP



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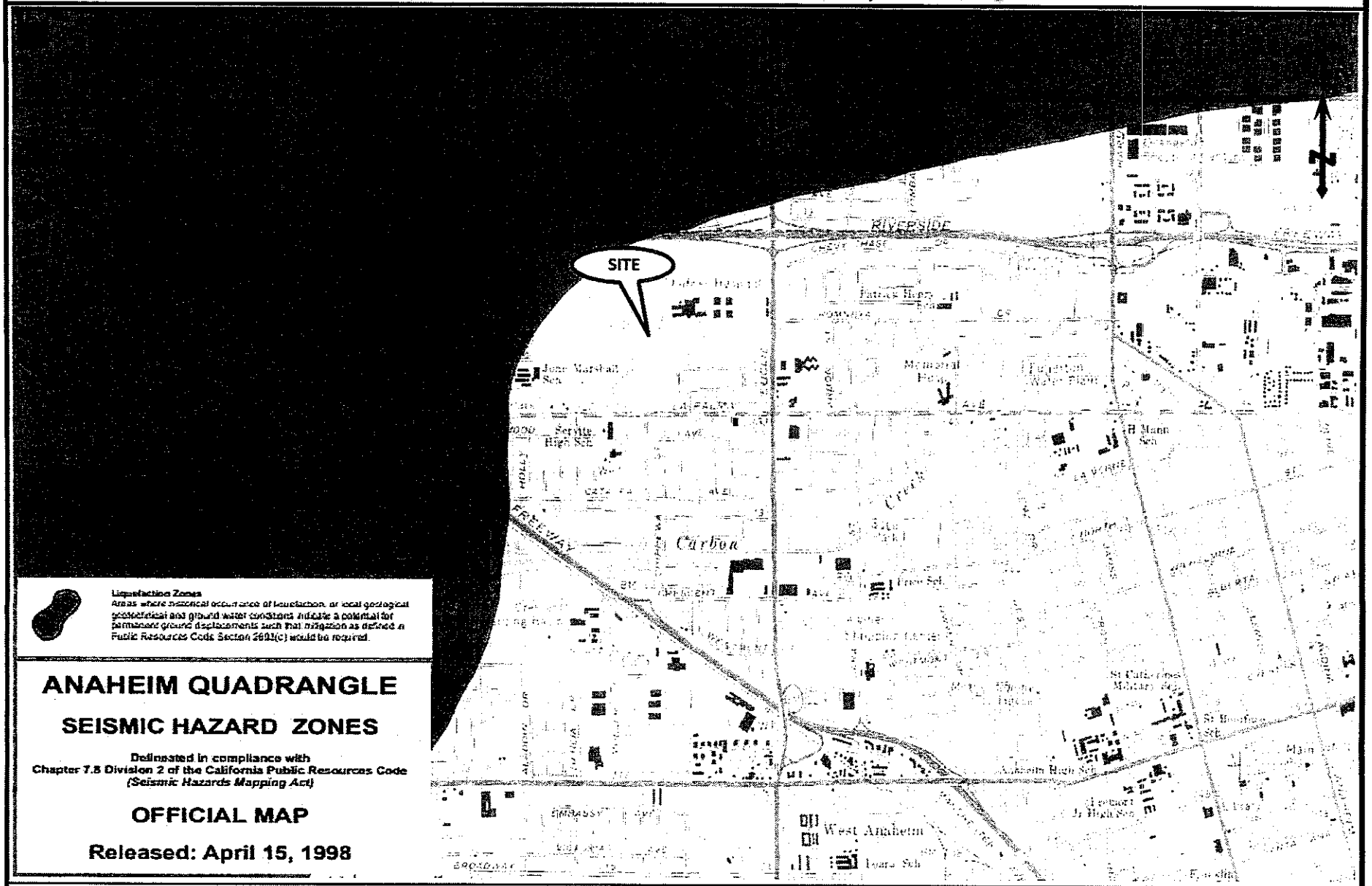
Seismic Hazard Zone Map



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Historically High Groundwater Map

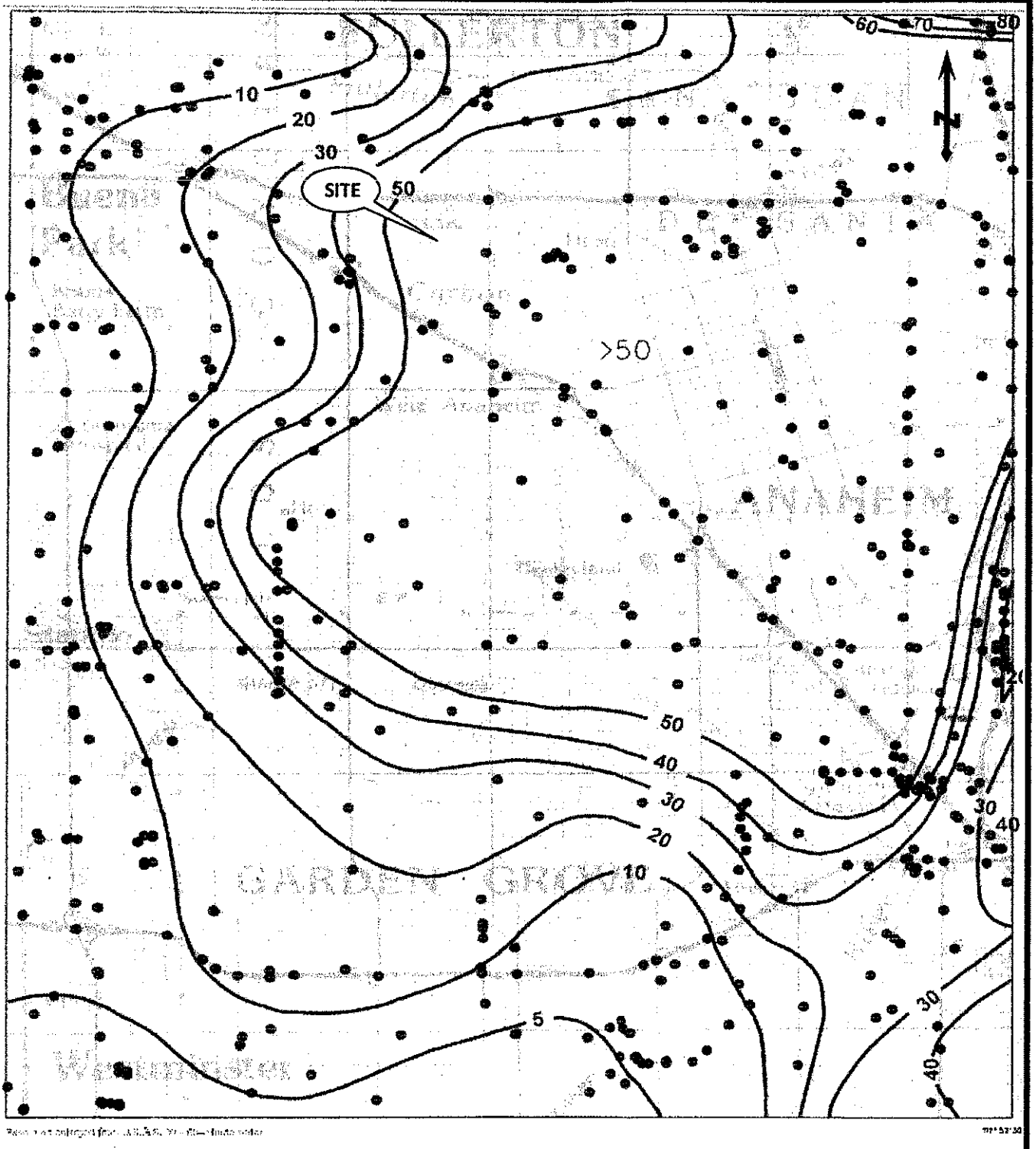

Plate 1.2 Historically Highest Ground Water Contours and Borehole Log Data Locatio nute Quadrangle.

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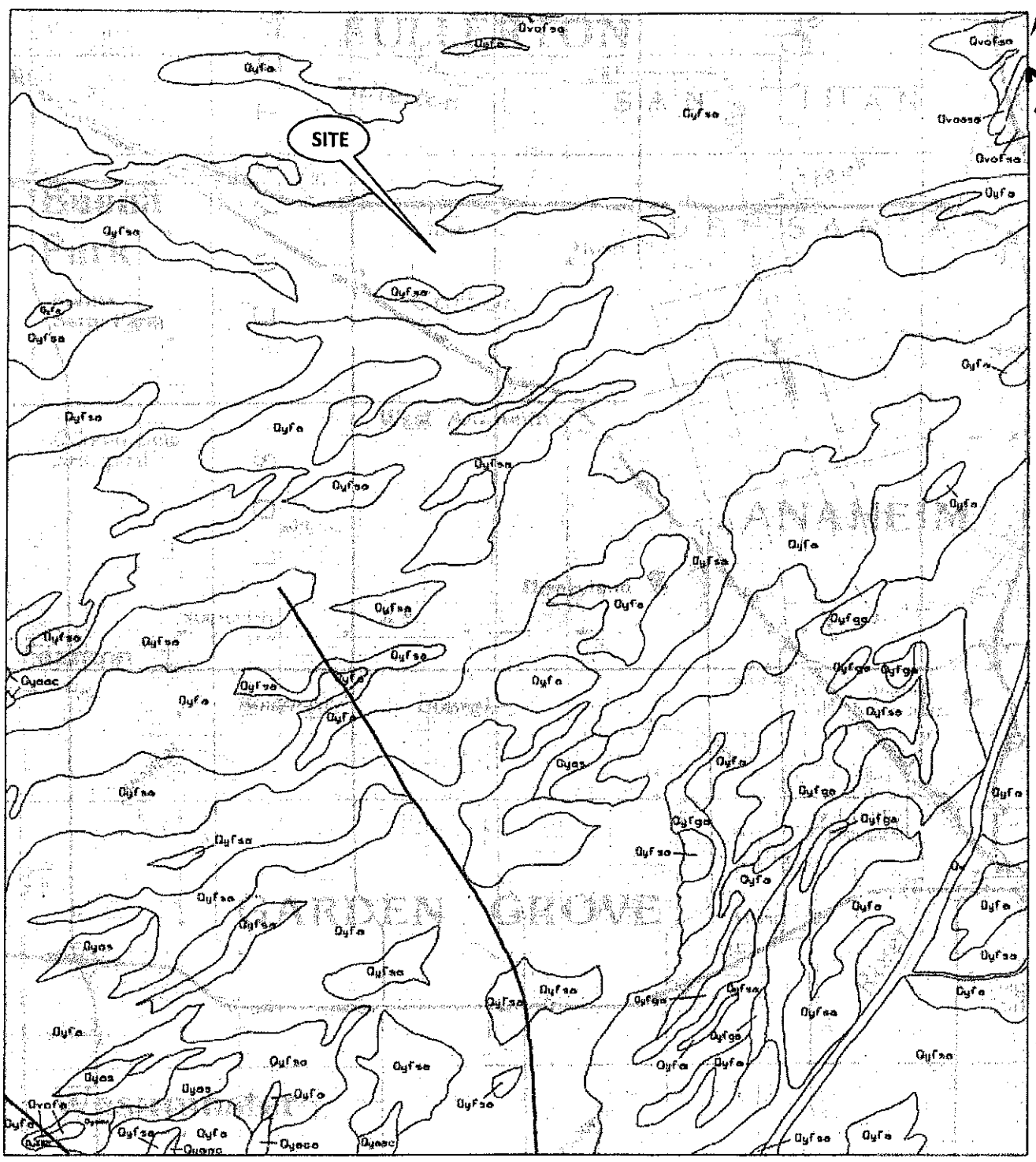
Quaternary Geologic Map



Base map reduced from U.S.G.S. 7.5-minute series

B = Pre-Quaternary bedrock,
See Geologic Conditions section in report for descriptions of the units.

——— Fault Line

Plate 1.1 Quaternary Geologic Map of the Anaheim 7.5-minute Quadrangle.

Anaheim Campus West Parking Lot Renovation	Project No.	SA-5627-01
1830 W. Romneya Drive, Anaheim, California 92801	Plate:	H
Geotechnical Solutions, Inc.		

Project: **Anaheim Campus West Parking Lot**
Project Location: **1830 W. Romneya Drive, Anaheim, California 92801**
Project Number: **SA-5627-01**

Key to Log of Test Hole
Plate No. I

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Penetration Resistance, Blows / 6 in.	Graphic Symbol	Blows / Last 12 in	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve	OTHER TESTS AND REMARKS
1	2	3	4	5	6	7	8	9	10	11	12

COLUMN DESCRIPTIONS

1 **Elevation:** Elevation in feet referenced to mean sea level (MSL) or site datum.

2 **Depth:** Depth in feet below the ground surface.

3 **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

4 **Sample Number:** Sample identification number; "[NR]" after number indicates no sample recovery.

5 **Blows / 6 in.:** Number of blows to advance driven sampler each 6-inch drive interval, or distance notes, using a 140-lb hammer with a 30-inch drop (unless otherwise noted)

6 **Graphic Symbol** Soil Type Symbol

7 **Blows / 12 in.:** Blows per 12" based on Col. 5 equal to uncorrected N-Value where SPT used

8 **Material Description:** Description of material encountered; may include color, moisture, grain size, and density / consistency. Approx. "and" = 35%-50%; "some" = 20%-35%; "little" = 10%-20%; "trace" = 0%-10%.

9 **Moisture Content:** Moisture content of sample, as percentage of dry weight of soil, meausred in lab according to ASTM D2937.

10 **Dry Unit Weight:** Dry unit weight of soil sample, in pounds per cubic foot, measured in lab according to ASTM D422.

11 **Percent Passing No. 200 Sieve:** Percent of soil by weight finer than the No. 200 sieve according to ASTM D422.

12 **Other Tests and Remarks:** Comments and observations regarding drilling or sampling made by driller or field personnel. Other lab tests are indicated using abbreviations explained below.

TYPICAL SAMPLER GRAPHIC SYMBOLS

- California (ring-lined)
- Modified California (brass tube-lined)
- Standard Penetration Test (SPT) split spoon
- Shelby Tube
- Bulk Sample
- Grab Sample

OTHER LABORATORY TEST ABBREVIATIONS

AL	Atterberg Limits Test (ASTM D4318)
COMP	Compaction test by modified effort (ASTM D1557)
CONS	One-dimensional consolidation test (ASTM D2435)
DS	Direct shear test (ASTM D3080)
EI	Expansion index test (ASTM 4829), index at 50% saturation
HD	Hydrometer analysis (ASTM D422), %<5 micros
LL	Liquid Limit from Atterberg Limites test
PI	Plasticity Index from Atterberg Limits test
SA	Sieve analysis (ASTM D422), %<#200 sieve
SE	Sand equivalent test for fines contamination (ASTM D2419)
UC	Unconfined compressive strength test (ASTM D2166)
WA	Wash analysis (ASTM D422), %<#200 sieve

OTHER GRAPHIC SYMBOLS

- First water encountered at time of drilling and sampling (ATD)
- Static water level measured at specified time after drilling
- Change in material properties within a lithologic stratum
- Inferred contact between soil strata or gradational lithologic change

Soil Classification are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; field descriptions may have been modified to reflect lab test results. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced; they are not warranted to be representative of subsurface conditions between samples, at other locations, or times.

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-1
Project Location :	1830 W. Romneya Drive, Anaheim, California 92801		Plate No. I-1
Project Number :	SA-5627-01		Page 1 of 1

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8"	Total Depth of Borehole, feet :	6.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Penetration Resistance, Blows / 6"	SAMPLES: Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						4" AC over 4" Base				
			Bag #1				Silty Sand (SM), dark brown, loose			44	HD: 56(SA):27(Si):17(CL)
	2		C-1	5-5-8		13	@2': Silty Sand (SM), dark brown/gray, slightly moist, loose	12	122		
							some roots				
116	5		C-2	4-9-11		20	@5':Sand (SP), light brown, moist, med dense, fine to coarse	4	107		
							End of Drilling = 6.5 feet				
							Backfilled w/cuttings				
111	10						No Groundwater				
							No caving but possible				
106	15										
101	20										
96	25										
91	30										
86	35										
81	40										
76	45										

GEOTECHNICAL SOLUTIONS, INC.

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-2
Project Location :	1630 W. Romneya Drive, Anaheim, California 92801		Plate No. I-2
Project Number :	SA-5627-01		Page 1 of 1

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8"	Total Depth of Borehole, feet :	6.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Penetration Resistance, Blows / 6"	SAMPLES Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						3" AC over 4" Base				
			Bag #1				Sand (SP), silty			34	HD: 66(SA):29(SI):5(CL)
	2		C-1	11-12-20		32	@2': Sand (SP), silty, brown/gray, moist, medium dense,	11	134		
116	5		C-2	11-16-20		36	@5':Sand (SP), silty, brown, moist, med dense, fine to coarse	6	124		
111	10						End of Drilling = 6.5 feet Backfilled w/cuttings No Groundwater No caving but possible				
106	15										
101	20										
96	25										
91	30										
86	35										
81	40										
76	45										

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-3
Project Location :	1630 W. Romneya Drive, Anaheim, California 92801		Plate No. I-3
Project Number :	SA-5627-01		Page 1 of 1

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8"	Total Depth of Borehole, feet :	6.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Penetration Resistance, Blows / 6"	SAMPLES: Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						2 1/2" AC over 8" Base				
			Bag #1				Sand (SP), silty			29	HD: 716(SA):19(SI):10(CL)
	2		C-1	9-14-17		31	@2': Sand (SP), light brown, moist, medium dense, fine to coarse grained, trace silt, mottled	4	116		
116	5		C-2	12-15-23		38	@5':Sand (SP), silty, brown, moist, med dense, fine to coarse	-	-		
111	10						End of Drilling = 6.5 feet Backfilled w/cuttings No Groundwater No caving but possible				
106	15										
101	20										
96	25										
91	30										
86	35										
81	40										
76	45								-		

GEOTECHNICAL SOLUTIONS, INC.

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-4
Project Location :	1830 W. Romneya Drive, Anaheim, California 92801		Plate No. I-4
Project Number :	SA-5627-01		Page 1 of 1

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8"	Total Depth of Borehole, feet :	6.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						2 1/2" AC over 5" Base				
			Bag #1				Silty Sand (SM), dark brown, slightly moist, trace gravel			32	HD: 68(SA):17(SI):15(CL)
	2		C-1	11-16-27		43	@2': Sand (SP), grayish brown, slightly moist, medium dense, fine to coarse grained, trace silt.	11	137		
116	5		C-2	14-20-26		46	@5':Sand (SP), silty, brown, moist, med dense, fine to coarse	-	-		
							End of Drilling = 6.5 feet Backfilled w/cuttings No Groundwater No caving but possible				
111	10										
106	15										
101	20										
96	25										
91	30										
86	35										
81	40										
76	45										

GEOTECHNICAL SOLUTIONS, INC.

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-5
Project Location :	1630 W. Romneya Drive, Anaheim, California 92801		Plate No. I-5
Project Number :	SA-5627-01		Page 1 of 1

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	6"	Total Depth of Borehole, feet :	6.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						2- 1/2" AC over 4- 1/2" Base				
			Bag #1				Silty Sand (SM), dark brown, slightly moist, trace gravel			34	HD: 66(SA):22(SI):12(CL)
	2		C-1	8-12-17		29	@2': Sand (SP), dark brown, slightly moist, medium dense,	11	137		
116	5						fine to coarse grained, trace silt.				
			C-2	10-15-20		35	@5':Sand (SP), silty, brown, moist, med dense, fine to coarse				
111	10						End of Drilling = 6.5 feet Backfilled w/cuttings No Groundwater No caving but possible				
106	15										
101	20										
96	25										
91	30										
86	35										
81	40										
76	45										

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Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-6
Project Location :	1630 W. Romneya Drive, Anaheim, California 92801		Plate No. I-6
Project Number :	SA-5627-01		Page 1 of 1

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8"	Total Depth of Borehole, feet :	6.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						3- 1/2" AC over 5" Base				
			Bag #1				Silty Sand (SM), trace clay, medium brown, slighly moist			44	HD: 56(SA):29(SI):15(CL)
	2		C-1	10-13-15		28	@2': Silty Sand (SM), brown, slightly moist, medium dense, fine to medium grained	13	131		
116	5		C-2	11-14-22		36	@5':Sand (SP), silty, brown, moist, med dense, fine to coarse	-	-		
111	10						End of Drilling = 6.5 feet Backfilled w/cuttings No Groundwater No caving but possible				
106	15										
101	20										
96	25										
91	30										
86	35										
81	40										
76	45								-		

GEOTECHNICAL SOLUTIONS, INC.

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-7
Project Location :	1830 W. Romneya Drive, Anaheim, California 92801		Plate No. I-7
Project Number :	SA-5627-01		Page 1 of 1

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8"	Total Depth of Borehole, feet :	6.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						3" AC over 5" Base				
			Bag #1				Silty Sand (SM), light brown, damp to slightly moist			29	HD: 71(SA):14(SI):15(CL)
	2		C-1	6-10-14		24	@2': Silty Sand (SM), brown, slightly moist, medium dense, fine to medium grained	6	117		
116	5		C-2	8-14-24		38	@5':Sand (SP), olive brown, moist, med dense, fine grained	-	-		
111	10						End of Drilling = 6.5 feet Backfilled w/cuttings No Groundwater No caving but possible				
106	15										
101	20										
96	25										
91	30										
86	35										
81	40										
76	45										

GEOTECHNICAL SOLUTIONS, INC.

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-8
Project Location :	1830 W. Romneya Drive, Anaheim, California 92801		Plate No. I-8a
Project Number :	SA-5627-01		Page 1 of 2

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	AB
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8"	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						2- 1/2" AC over 5" Base				
			Bag #1				Silty Sand (SM), brown, slightly moist, medium dense, coarse			27	HD: 73(SA):12(SI):15(CL)
	2		C-1	8-16-24		40	@2': Silty Sand (SM), brown, sl. Moist, medium dense	10	132		
116	5		C-2	7-13-25		38	@5': Sand (SP), olive brown, slighlty moist, medium dense, fine grained	13	132		
111	10		C-3	6-9-13		22	@10': Same as above	4	121		
106	15		C-4	7-13-18		31	@15':Same as above, but coarse grained, damp	3	109		
101	20		S-1	5-6-10		16	@ 20': Sand (SP), olive brown, slighlty moist, medium dense, fine to medium grained	5	-		
96	25										
91	30		S-2	7-13-8		21	@30': Same as above	3	-		
86	35										
81	40		S-3	4-7-9		16	@40': Silty Sand (SM), light brown, slighlty moist, fine to coarse grained, medium dense	10	-		
76	45								-		

GEOTECHNICAL SOLUTIONS, INC.

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-8
Project Location :	1630 W. Romneya Drive, Anaheim, California 92801		Plate No. I-8b
Project Number :	SA-5627-01		Page 2 of 2

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8"	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Penetration Resistance, Blows / 6"	SAMPLES Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
76	45										
71	50		S-4	5-5-13		18	@5':Silty Sand (SM), light brown, moist, med dense,fine grained	19	-		
							End of Drilling =51.5 feet Backfilled w/cuttings No Groundwater No caving but possible				
66	10										
61	15										
56	20										
51	25										
46	30										
41	35										
36	40										
31	45								-		

GEOTECHNICAL SOLUTIONS, INC.

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-9
Project Location :	1630 W. Romneya Drive, Anaheim, California 92801		Plate No. I-9
Project Number :	SA-5627-01		Page 1 of 1

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8"	Total Depth of Borehole, feet :	6.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						2-1/2" AC over 6" Base				
			Bag #1				Silty Sand (SM), dark gray, moist, trace clay			44	HD: 56(SA):25(SI):19(CL)
	2		C-1	7-11-13		24	@2': Silty Sand (SM), dark gray, slighlly moist, medium dense, fine to medium grained	9	127		
116	5		C-2	9-12-22		35	@5':Sand (SP), olive brown, moist, med dense, fine grained				
111	10						End of Drilling = 6.5 feet Backfilled w/cuttings No Groundwater No caving but possible				
106	15										
101	20										
96	25										
91	30										
86	35										
81	40										
76	45										

GEOTECHNICAL SOLUTIONS, INC.

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-10
Project Location :	1830 W. Romneya Drive, Anaheim, California 92801		Plate No. I-10
Project Number :	SA-5627-01		Page 1 of 1

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	6"	Total Depth of Borehole, feet :	6.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						2" AC over 6" Base				
	2		Bag #1				Silty Sand (SM), grayish brown, slightly moist, trace clay			42	HD: 58(SA):23(SI):19(CL)
			C-1	7-11-16		27	@2': Silty Sand (SM), grayish brown, slightly moist, medium dense, fine to medium grained	14	126		
116	5		C-2	10-11-12		23	@5':Silty Sand (SM), olive gray, sl. moist, med dense, gravel	15	128		
111	10						End of Drilling = 6.5 feet Backfilled w/cuttings No Groundwater No caving but possible				
106	15										
101	20										
96	25										
91	30										
86	35										
81	40										
76	45										

GEOTECHNICAL SOLUTIONS, INC.

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-11
Project Location :	1830 W. Romneya Drive, Anaheim, California 92801		Plate No. I-11
Project Number :	SA-5627-01		Page 1 of 1

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	6"	Total Depth of Borehole, feet :	6.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						3" AC over 6" Base				
			Bag #1				Silty Sand (SM), dark brown, slightly moist, trace clay			37	HD: 63(SA):17(SI):20(CL)
	2		C-1	11-15-20		35	@2': Silty Sand (SM), dark gray, slightly moist, medium dense, fine to medium grained	12	139		
116	5		C-2	13-15-27		42	@5':Silty Sand (SM), olive gray, sl. moist, med dense, trace clay	-	-		
111	10						End of Drilling = 6.5 feet Backfilled w/cuttings No Groundwater No caving but possible				
106	15										
101	20										
96	25										
91	30										
86	35										
81	40										
76	45								-		

GEOTECHNICAL SOLUTIONS, INC.

Project :	Anaheim Campus West Parking Lot Renovation	LOG OF TEST HOLE	Borehole No. B-12
Project Location :	1830 W. Romneya Drive, Anaheim, California 92801		Plate No. I-12
Project Number :	SA-5627-01		Page 1 of 1

Date(s) Drilled :	August 19, 2019	Logged By :	WQ	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8"	Total Depth of Borehole, feet :	6.5
Drill Rig Type :	B-61	Drilling Contractor :	2R Drilling	Approx. Surface Elevation, feet :	121 feet MSL
Groundwater Level and Date Measured:	No Groundwater encountered	Sampling Method :	California (ring), bulk	Hammer Data :	140 Lbs/ 30" Drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Penetration Resistance, Blows / 6"	SAMPLES: Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
121	0						2" AC over 5" Base				
			Bag #1				Silty Sand (SM), medium brown, slightly moist, trace gravel			39	HD: 61(SA):17(SI):22(CL)
	2		C-1	7-11-13		24	@2': Silty Sand (SM), brown, slightly moist, medium dense, fine to medium grained	13	125		
116	5		C-2	9-14-23		37	@5':Silty Sand (SM), olive gray, sl. moist, med dense, trace clay	-	-		
111	10						End of Drilling = 6.5 feet Backfilled w/cuttings No Groundwater No caving but possible				
106	15										
101	20										
96	25										
91	30										
86	35										
81	40										
76	45								-		

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