Appendix F-1

Report of Preliminary Geotechnical Investigation – Evolve Student Housing

REPORT OF PRELIMINARY GEOTECHNICAL EVALUATION
EVOLVE STUDENT HOUSING
SAN DIEGO STATE UNIVERSITY
SAN DIEGO, CALIFORNIA

Prepared for

San Diego State University
Facilities Planning, Design and Construction
5500 Campanile Drive
San Diego, California 92182-1624

Prepared by

GROUP DELTA CONSULTANTS, INC.
9245 Activity Road, Suite 103
San Diego, California 92126

Project No. SD814
June 7, 2024

GROUP DELTA

June 7, 2024

San Diego State University
Facilities Planning, Design and Construction
5500 Campanile Drive
San Diego, California 92182-1624

Attention: Ms. Amanda Scheidlinger, AIA, DBIA, LEED AP BD+C
Direction of Construction

SUBJECT: **REPORT OF PRELIMINARY GEOTECHNICAL EVALUATION**
Evolve Student Housing
San Diego State University
San Diego, California

Ms. Scheidlinger:

Group Delta Consultants (Group Delta) is submitting this Report of Preliminary Geotechnical Evaluation to provide our assessment of the geologic hazards and the geotechnical engineering characteristics at the Sites for the proposed student housing redevelopment. Group Delta prepared this report per the referenced proposal (Group Delta, 2024).

We appreciate the opportunity to support this project. Please contact us with questions or comments, or if you need anything else.

GROUP DELTA CONSULTANTS, INC.

Charles Robin (Rob) Stroop, G.E. 2298
Associate Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
CHARLES ROBIN STROOP
GE2298
Exp. 03/31/26
GEOTECHNICAL
STATE OF CALIFORNIA

James C. Sanders, C.E.G. 2258
Principal Engineering Geologist

Samuel Narveson, P.G. 10060
Project Geologist

PROFESSIONAL GEOLOGIST
SAMUEL R. NARVESON
No. 10060
EXP. 02/28/25
STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST
JAMES SANDERS
2258
STATE OF CALIFORNIA

Distribution: Addressee, Ms. Amanda Scheidlinger (ascheidlinger@sdsu.edu)

TABLE OF CONTENTS

FIGURES

APPENDICIES

1.0 INTRODUCTION

This report presents the results of a preliminary geotechnical evaluation by Group Delta Consultants, Inc. (Group Delta) of the two Sites proposed by San Diego State University (SDSU) for new student housing. The purposes of this report are to inform the development and design team about subsurface conditions, geologic hazards, and geotechnical engineering characteristics, and to evaluate their influence on design and construction.

SDSU plans to redevelop the surface parking for the University Towers building at the intersection of 55th Street and Montezuma Road (Site 1) and the residential area surrounding the northerly terminus of 55th Street (Site 2) to provide 3,200 residential beds. Figure 1 shows the location of the Sites. We have based our understanding of the project on information in the Request for Qualifications for Collaborative Design-Build Services (CSU, 2024).

Group Delta developed this evaluation using subsurface data from our prior experience within the SDSU campus and the referenced desktop study sources of information. Group Delta prepared this report per the referenced proposal (Group Delta, 2024).

1.1 Project Description

San Diego State University will develop the student housing using Collaborative Design-Build and therefore the type of structures are not known at this time. We expect the housing will be four to six stories of wood-framing or light metal gauge framing over one or two stories of above grade reinforced concrete podium parking. We do not expect significant cut and fill earthwork or subterranean parking.

Site 1 is the existing surface parking for the 8-story University Towers student housing. The parking lot occupies about three-quarters of an acre of level ground east of the housing structure.

Site 2 is several existing apartment complexes that occupy about 2.5 acres of an elevated natural terrace with elevations ranging from about 380 to 420 feet above mean sea level (msl, Google Earth, accessed May 2024) over a horizontal distance of about 1,100 feet. The Site slopes downward to the north. Natural slopes descend from the western, northern, and eastern perimeters of the Site at approximate inclinations of 2: 1 to 2.5:1 (horizontal to vertical units).

1.2 Prior Site Use

The Sites are located on an elevated natural terrace to the south of Alvarado Canyon. Several smaller secondary canyons have incised into this terrace, some of which have been filled in and built over during historic development in the area. Review of historic aerial images and topographic maps indicate that grades at the Sites were not changed significantly during initial development and no significant canyon in-fill was identified at either Site.

Review of boring logs from nearby project sites (Group Delta 2012, 2015, 2019, and Geocon, 2019) indicate that formational materials should underlie both Sites at relatively shallow depths.

Initial site development and earthwork appears to have been conducted in the early- to mid-1960s at both sites. Site 1 is situated on the interior portion of the natural terrace, and it is not immediately adjacent to any current or historic canyons. Subsequently, no canyon in-fill or deep fill due to the original site earthwork is anticipated at Site 1.

Site 2 is situated on a ridge of preserved terrace immediately south of Alvarado canyon between two relatively deep secondary canyons to the east and west. Steep slopes descend from the terrace into the canyons to the west, north, and east and reentrant side drainages and channels that may have been locally filled are apparent in the steep canyon slopes.

Original site earthwork is not believed to have filled any major canyons or drainages, though some smaller drainage fill, or isolated areas of deeper fill may exist at Site 2, particularly near the canyon rim (edge of the terrace) where some slope grading may have occurred.

1.3 Prior Geotechnical Investigations

1.3.1 Site 1: University Towers

In 2012, Group Delta completed a geotechnical investigation for pavement and site improvements (Group Delta, 2012). The investigation consisted of six borings. The maximum depth of exploration was 6.5 feet below the elevation of the surface that existed at that time. Group Delta observed and logged fill and residual soils over sandstone mapped as very old paralic deposits. Group Delta did not observe groundwater in the explorations.

1.3.2 Site 2: North of 55th Street

From 2017 to 2022, Group Delta provided geotechnical services for the design and construction of the Huāxyacac Student Resident Hall and the Aztec Recreation Center (ARC) North Expansion (Group Delta, 2017, 2019, 2020). These sites are located northwest and northeast of the intersection between 55th Street and Remington Road, respectively. The investigations consisted of five borings and five test pits at the Huāxyacac Student Resident Hall site, and three borings at the ARC North Expansion site. The maximum depth of exploration was 80 feet below the elevation of the surface that existed at that time. Group Delta observed and logged up to 20 feet of undocumented fill over sandstone and conglomerate mapped as the Mission Valley formation and the Stadium Conglomerate. Group Delta did not observe groundwater in the explorations or encounter groundwater during earthwork. Group Delta did observe seepage in many of the Cast-In-Drilled Hole piles used to support the Huāxyacac Student Resident Hall.

Geocon Incorporated completed a geotechnical investigation in 2019 for the College View Apartments located at 5420 55th street immediately south of Site 2. Boring logs and site maps obtained from this investigation indicate that formational materials logged as "Undifferentiated Very Old Paralic Deposits/Mission Valley Formation" were encountered at shallow depths (less than 5 feet below the elevation of the surface that existed at that time). Geocon notes on the boring logs that "groundwater was not encountered" to depths up to 46.5 feet.

2.0 GEOLOGY AND SUBSURFACE CONDITIONS

The sites are located within the coastal plain of the Peninsular Ranges geomorphic province of Southern California. As shown in Figure 2, regional geological mapping by Kennedy and Tan (2008) indicate very old paralic deposits, unit 7 (middle to early Pleistocene) at Site 1 and the Mission Valley Formation (middle Eocene) and the Stadium Conglomerate (middle Eocene) at Site 2. Kennedy and Tan (2008) describe the very old paralic deposits as a very old surficial unit comprising siltstone, sandstone and conglomerate that is slightly to well indurated. They describe the Mission Valley Formation as a sedimentary bedrock unit comprising soft and friable, fine to medium grained sandstone containing cobble. They describe the Stadium Conglomerate as a sedimentary bedrock unit comprising cobble conglomerate in a sandstone matrix. The logging of the subsurface exploration completed by Group Delta at the Huāxyacac Student Resident Hall immediately to the south of Site 2 did not differentiate between these two Eocene-age units.

Subsurface conditions at the Sites should consist of locally thin undocumented fill placed over the formational materials described in the preceding paragraph. Undocumented fill is soil that has been placed and compacted with no documentation of observation and compaction testing by a geotechnical engineer. There may be a thin layer of remnant topsoil, colluvium, and/or residual soil between the fill and formational materials. The following sections describe the subsurface conditions of these materials.

2.1 Undocumented Fill

The extent of undocumented fill at the Sites is not known. Interpretation using the referenced desktop study information indicates that it should occur locally to depths that should not exceed 10 feet.

Undocumented fill observed by Group Delta at Site 1 consisted of sandy lean to fat clay (Unified Soil Classification - CL to CH) or clayey sand (SC). The consistency of the clay fill was hard based on Standard Penetration Tests (SPT) and pocket penetrometer data. The apparent density of the clayey sand fill was medium dense based on SPT data.

Undocumented fill observed by Group Delta at the Huāxyacac Student Resident Hall immediately to the south of Site 2 primarily consisted of lean and fat clay (CL and CH) or clayey sand (SC) with a few gravels and cobbles. Based on SPT and pocket penetrometer data, the consistency of the clay fill was stiff to very stiff. The apparent density of the clayey sand fill was not determined because of the gravel and cobbles and their influence on the SPT data.

2.2 Very Old Paralic Deposits, Unit 7

Based on previous observations by Group Delta within the San Diego State University campus, these materials typically consist of massive cobble conglomerate with a fine to coarse grained silty sand matrix with beds of sandstone, siltstone, and claystone. The conglomerate can be moderately to well cemented in some areas. The clasts within the conglomerate are typically

gravel sized (less than 3-inches in maximum dimension). Cobbles and boulders up to 18-inches in diameter can occur within these deposits. The sandstone, siltstone, and claystone beds typically have a very dense consistency.

There often is a layer of residual soils above the old paralic deposits. These soils are the product of weathering of the surface of the old paralic deposits. In many instances they are undifferentiated from the fill soils, such as indicated in the logs for Site 1, University Towers (Group Delta, 2021) that are provided in Appendix A.

2.3 Undifferentiated Mission Valley Formation / Stadium Conglomerate

Based on previous observations by Group Delta at the Huāxyacac Student Resident Hall and the Aztec Recreation Center North Expansion immediately to the south of Site 2, these materials typically consist of massive cobble conglomerate that contains well-rounded gravel and cobble that typically comprises between 30 and 60 percent of the conglomerate by mass. The cobbles are typically 3- to 6-inches, but may include boulders up to 24-inches in diameter. When observed in drive samples, these materials consist of silty and clayey sands (SM and SC). Samples taken from the conglomerate classified as poorly-graded gravel with silt and sand (GP-GM). Based on SPT data, the apparent density of these materials is dense to very dense, where the data is not influenced by gravel, cobbles, and boulders.

2.4 Groundwater

Groundwater should not substantially occur at the Sites based on previous observations by Group Delta within the San Diego State University (SDSU) campus. However, changes in rainfall, irrigation, or site drainage may produce seepage or locally perched groundwater at any location within the fill or formational units underlying the site. It has been our experience that light to moderate seepage is often encountered at or near the geologic contact between the fill and underlying formational soils throughout SDSU. The formational materials also contain permeable zones that may collect perched groundwater from nearby irrigation. Accordingly, we anticipate that excavations for the new buildings may encounter zones of wet soil or seepage. Such conditions are difficult to predict, and are typically mitigated if and where they occur.

3.0 GEOLOGIC HAZARDS

The Sites are not located within an area previously known for significant geologic hazards. As shown in Figure 3 the Sites are located within the City of San Diego Seismic Safety Study (City of San Diego, 2008), Geologic Hazard Category 53, which is characterized as "level or sloping terrain, unfavorable geologic structure, low to moderate risk." The primary geologic hazard at the Sites should be the potential for strong ground motion from an earthquake. The potential geologic hazards are described below.

3.1 Strong Ground Motion

A nearby or more distant, large magnitude earthquake occurring during the expected life span of the project could subject the site to moderate to strong ground motion. Numerous regional and

local faults can produce large earthquakes with magnitudes (M) 7.0 or greater. This hazard is managed by structural design using the latest edition of the California Building Code (CBC).

3.2 Earthquake Surface Fault Rupture Hazard

The potential for surface fault rupture should be low. Surface fault rupture is the movement on a fault reaching the ground surface. The Sites are not located within a State of California and/or City of San Diego Earthquake Fault Hazard Zone. The closest known Holocene-active fault[1] is the Rose Canyon Fault Zone that is located approximately 6 miles west of the Sites. As shown in Figure 3, a potentially active fault zone is mapped about 0.5 miles southwest of the Sites.

3.3 Soil Liquefaction and Seismic Compaction

Older geological formations (e.g., pre-Holocene) consisting of consolidated sediments underlie the Sites and regional standing groundwater is not anticipated. Therefore, the potential for soil liquefaction and its secondary effects should be very low. Liquefaction is a phenomenon where loose, saturated coarse-grained soils (with less than 50% passing the No. 200 sieve) lose their strength and acquire some mobility from strong ground motion induced by earthquakes. The secondary effects of liquefaction include sand boils, settlement, reduced soil shear strength, lateral spreading and global instability (flow slides) in areas with sloping ground.

The potential for seismic compaction should be low since we do not expect loose unsaturated coarse grained soils at the Sites. If these soils are encountered during earthwork, they would be removed and recompacted. Seismic compaction is the settlement of loose unsaturated granular soils from strong ground motion.

3.4 Landslides and Slope Instability

Evidence of landslides or slope instabilities were not found in the referenced desktop study sources or known to occur at the Sites based on our prior experience within the San Diego State University campus. The formational materials underlying the Sites at depth (very old paralic deposits, Stadium Conglomerate, and/or Mission Valley Formation) are not known regionally to be unstable or particularly susceptible to landslides. The slopes descending from Site 2 may be susceptible to slope creep or slow downward movement of surficial soils.

3.5 Seiches and Tsunamis

The potential for earthquake induced flooding (seiches) at either Site is nil because the Sites are not located below any lakes or confined bodies of water. The potential for damage due to earthquake induced waves (tsunamis) is nil considering the distance between the Sites and the coast and their elevation above mean sea level.

4.0 GEOTECHNICAL ENGINEERING CHARACTERISTICS

The formational materials at the Sites possess a very high soil shear strength, a very low compressibility and a low to very low potential for expansion. These materials possess similar geotechnical engineering characteristics when they are excavated and properly processed and

placed as compacted fill. These materials also provide very good subgrades for slabs-on-grade and exterior surface improvements. These materials should not be corrosive to concrete and buried metals.

The undocumented fill at the Sites possess a highly variable soil shear strength, a highly variable compressibility and a high to very high potential for expansion. Remedial earthwork is typically recommended to remove these soils entirely and replace them with more suitable soils that are properly processed, placed, and compacted. This process is especially important along the perimeter of the existing mesa where previous development likely did not construct fill slopes in accordance with current standards of practice. These materials can be corrosive to concrete and buried metals.

5.0 DISCUSSION

The Sites may be developed using typical cut and fill earthwork combined with conventional shallow foundations as elaborated further below.

Earthwork: Provided below are salient aspects of the earthwork needed to form these Sites.

- The undocumented fill will need to be removed entirely and processed with other soils to be suitable for fill, placed in deeper fill areas (at depths greater than 5 to 10 feet), or disposed offsite. Topsoil, colluvium, residual soils, and other deleterious materials will also need to be removed entirely and disposed offsite. Areas disturbed by demolition of existing structures and improvements will need to be restored to the satisfaction of the geotechnical engineer.

- The formational materials may be locally resistant to trench and mass excavation. The earthwork contractor will need to process formational materials that are excavated for reuse as fill. They will need to remove oversize materials (typically materials greater than 3- to 6-inch in maximum dimension) and break down cemented materials and clasts. Oversize materials can be crushed, segregated, and individually placed in deeper fill (at depths greater than 5 to 10 feet) or disposed offsite.

- Reconstruction of perimeter fill slopes will be needed to establish a stable fill condition with inclinations at 2:1 (horizontal to vertical) or flatter, using a keyway and benches to the maximum extent practicable.

Foundations: The structural engineer can dimension strip and spread footings using preliminary allowable bearing pressures ranging from 6,000 to 8,000 pounds per square foot (psf) for typical widths and embedment depths in the formational materials. Footings should not transition between cut and fill. Deeper embedment may be needed at Site 2 if foundations are placed near to the existing descending slopes.

Structural Design: We recommend using Site Class D for the preliminary design of structures at Site 1 due to the variability of shear wave velocity in the upper 30 meters (Vs_{30}) that is inherent in the very old paralic deposits. We recommend using Site Class C for the preliminary design of structures at Site 2. This recommendation could change depending on actual site conditions encountered.

Civil Design: Provided below are salient aspects of the civil design needed to develop these Sites.

- We do not expect the formational materials at the Sites to support full or partial infiltration for Storm Water Best Management Practices (BMP). Stormwater BMP design should avoid collecting and/or infiltrating water near the top of slopes, or discharging water directly onto the slopes below the project.

- Fill slopes can be inclined at 2:1 (horizontal:vertical) or less. Cut slopes can be inclined at 1.5:1 to 2:1 depending on the height, location, and other factors.

- Site retaining walls should be designed with appropriate setbacks from the outside edge of the footing to any adjacent slope face depending on the wall height.

6.0 LIMITATIONS

Group Delta prepared this report for the exclusive use of San Diego State University and the appointed collaborative design-build contractor and their consultants for specific application to the subject project. Group Delta prepared the findings, conclusions and recommendations presented in this report using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in similar localities. No warranty, express or implied, is made as to the conclusions and professional opinions included in this report.

The findings of this report are valid as of the present date. However, changes in the condition of a property can occur with the passage of time, whether due to natural processes or the work of humans on this or adjacent properties. In addition, changes in applicable or appropriate standards of practice may occur from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control.

The scope of services completed was for preliminary geotechnical evaluation purposes. Geotechnical investigations will be required at the Sites for the design phases of the project.

Our study excluded an evaluation of hazardous or potentially hazardous materials in soil or groundwater.

7.0 REFERENCES

California Department of Conservation (2008). *Geologic Map of the San Diego 30'x60' Quadrangle, California*, complied by Kennedy, M. P., and Tan, S. S., Scale 1:100,000.

California State University (2024). *Request for Qualifications for Collaborative Design-Build Services, Bid Solicitation No 7017, Evolve Student Housing ('ESH"), San Diego State University*, dated June.

City of San Diego (2008). *Seismic Safety Study, Geologic Hazards and Faults, Development Services Department,* Grid Tiles: 21, 22, 26, and 27. Dated April 3.

Geocon Incorporated (2019). *Submittal of Figures and Boring Logs for Permit Closure DEH Permit No. LMWP-004111, Geotechnical Investigation for College View Apartments, 5420 55th Street, APN: 3462-220-04, San Diego, California.* Dated November 11.

Group Delta (2024). *Proposal for Geotechnical Desktop Study, Student Housing Master Plan, San Diego State University, San Diego, California.* Proposal No. SD24-016, dated March 12.

Group Delta (2020). *As-Graded Report, SDSU New Student Residence Hall San Diego, California*, dated October 2.

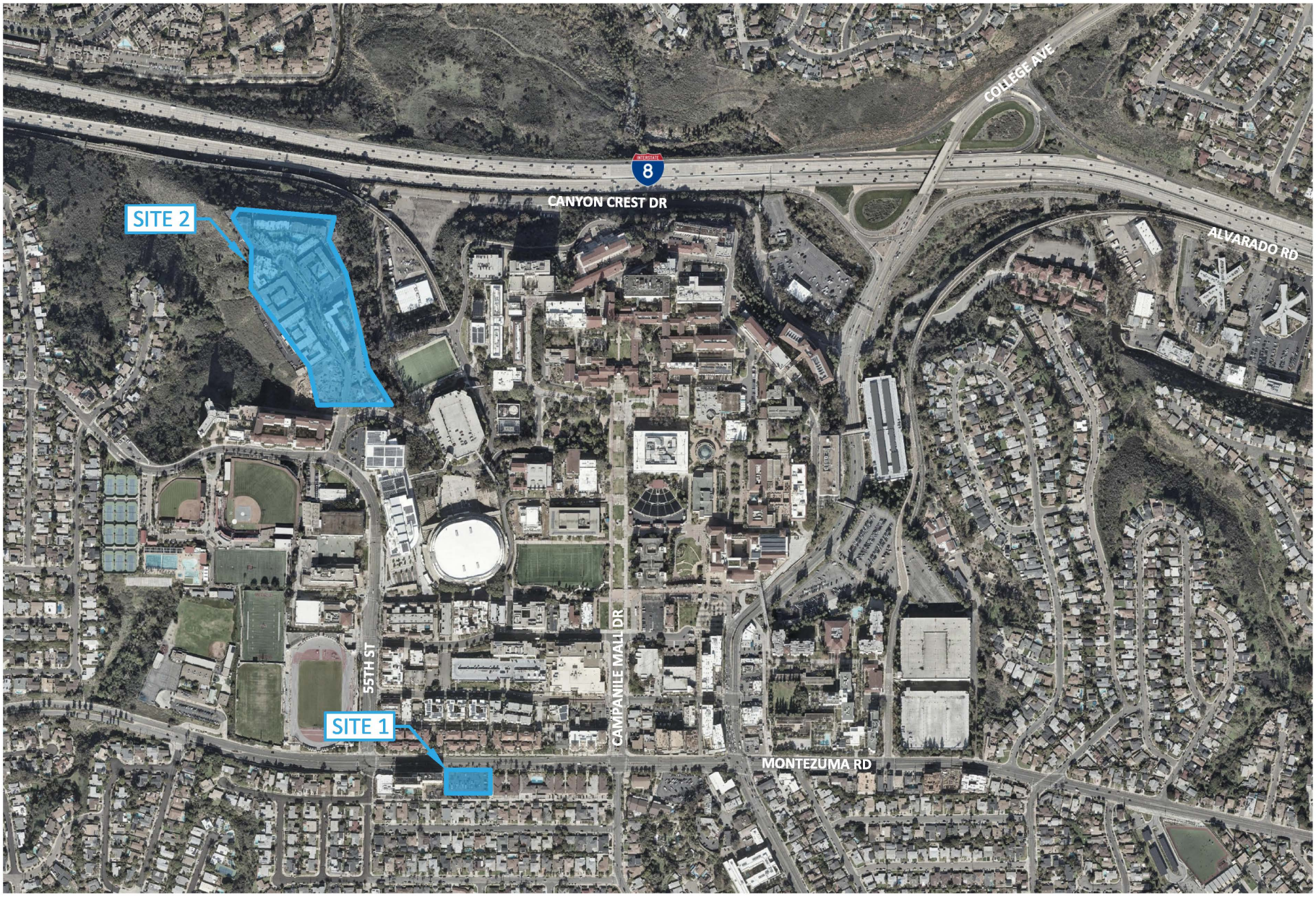
Group Delta (2019). *Addendum No. 1: Supplemental Geotechnical Investigation, Aztec Recreation Center (ARC) North Expansion, San Diego, California,* dated November 12.

Group Delta (2017). Report Of Geotechnical Investigation, SDSU New Student Residence Hall San Diego, California, dated August 4

Group Delta (2012). *Geotechnical Investigation, Pavement and Site Improvements, SDSU University Towers, San Diego, California*, dated April 20.

.

FIGURES



REFERENCE: GOOGLE, INC (2023) GOOGLE EARTH PRO, AERIAL IMAGERY DATED: DECEMBER 1, 2022

0 750'

SCALE, LOCATIONS, AND DIRECTIONS ARE APPROXIMATE.

SDSU EVOLVE STUDENT HOUSING	SITE LOCATION MAP	GROUP DELTA
		PROJECT NUMBER: SD814
		FIGURE NUMBER: 1

FILE PATH: N:\Projects\SD\SD800\SD814 SDSU Main Campus Affordable Housing Feasability Study\11. Drafting\CAD\SD814_Site Location Map.dwg
PLOTTED DATE: 5/20/2024 6:53:40 PM SAVED BY: brendaa

EXPLANATION

- CONTACT
- FAULT
- ANTICLINE FOLD
- SYNCLINE FOLD
- LANDSLIDE
- STRIKE AND DIP OF BEDS INCLINED
- STRIKE AND DIP OF IGNEOUS JOINTS INCLINED
- STRIKE AND DIP OF IGNEOUS JOINTS VERTICAL
- STRIKE AND DIP OF METAMORPHIC FOLIATION INCLINED

MAP UNITS

MODERN SURFICIAL DEPOSITS

- Qls — LANDSLIDE DEPOSITS, UNDIVIDED (HOLOCENE AND PLEISTOCENE)
- YOUNG COLLUVIAL DEPOSITS (HOLOCENE AND [illegible])

OLD SURFICIAL DEPOSITS

- Qoa

VERY OLD SURFICIAL UNITS

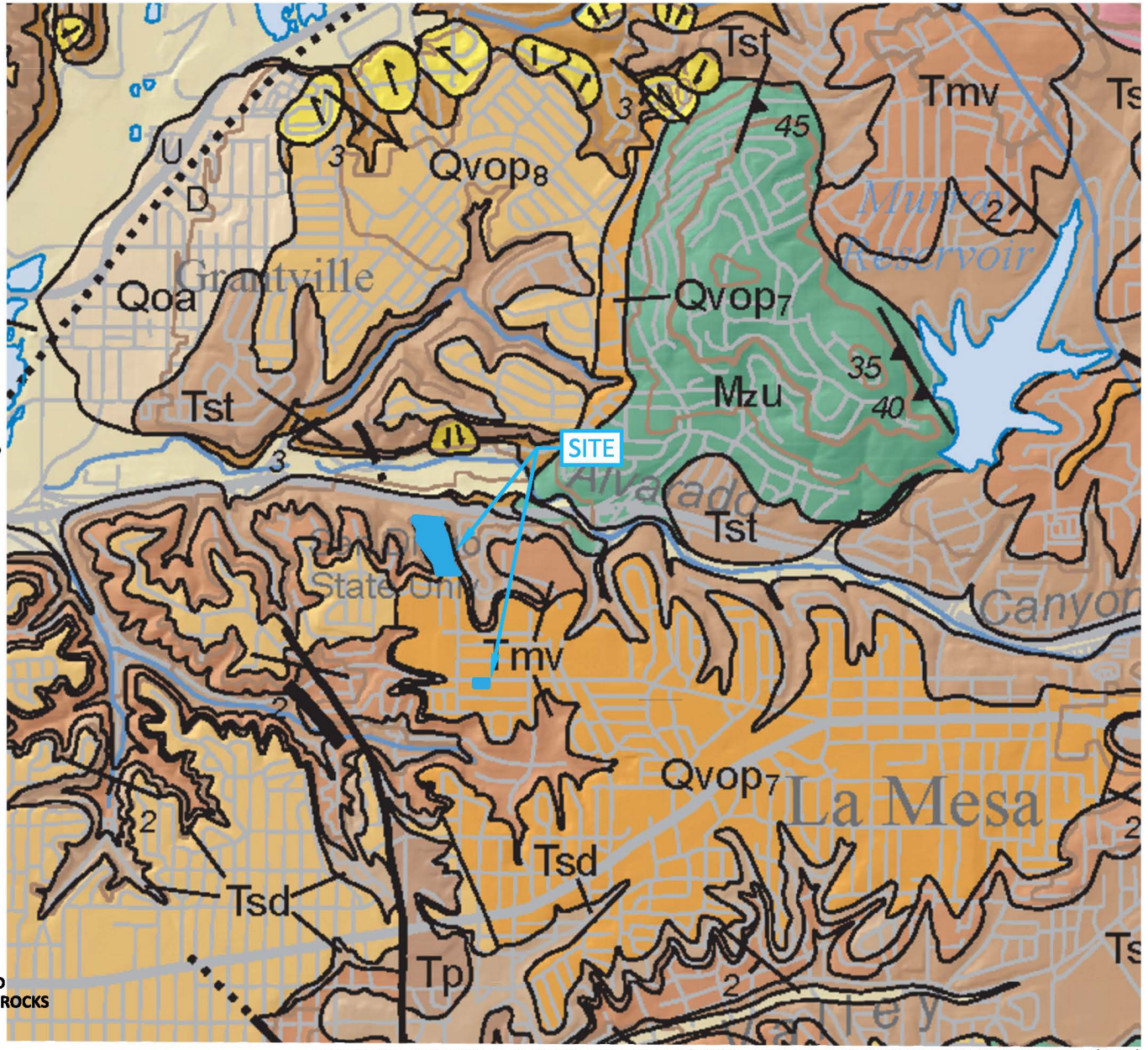
- Qvop — VERY OLD PARALIC DEPOSITS, UNDIVIDED (MIDDLE TO EARLY PLEISTOCENE)
- $Qvop_7$ — UNIT 7
- $Qvop_8$ — UNIT 8

SEDIMENTARY AND VOLCANIC BEDROCK UNITS

- Tsdcg / Tsdss / Tsd — SAN DIEGO FORMATION (EARLY PLEISTOCENE AND LATE PLIOCENE)
  Tsd - UNDIVIDED
  Tsdcg - TRANSITIONAL MARINE AND NON MARINE
  Tsdss - MARINE SANDSTONE
- Tp / Tpm — POMERADO CONGLOMERATE (MIDDLE EOCENE)
  Tpm - MIRAMAR SANDSTONE MEMBER
- Tmv — MISSION VALLEY FORMATION (MIDDLE EOCENE)
- Tst — STADIUM CONGLOMERATE (MIDDLE EOCENE)

JURASSIC AND CREATACEOUS METAMORPHOSED AND UNMETAMORPHOSED VOLCANIC AND SEDIMENTARY ROCKS

- Mzu — METAMORPHOSED AND UNMETAMORPHOSED VOLCANIC AND SEDIMENTARY ROCKS, UNDIVIDED (MESOZOIC)



REFERENCE: GEOLOGIC MAP OF THE SAN DIEGO 30'X60' QUADRANGLE, CALIFORNIA BY KENNEDY AND TAN (2008)

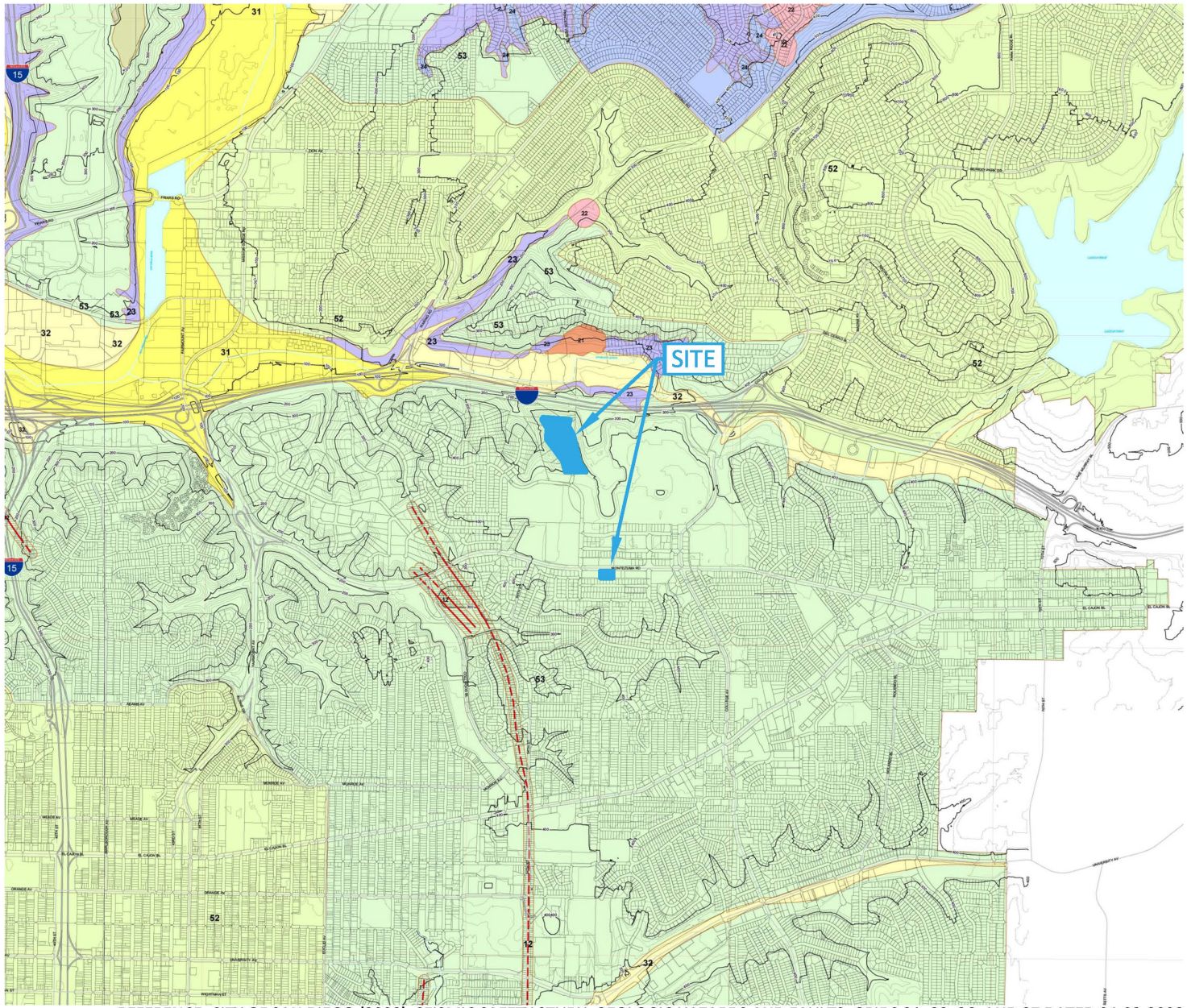
0 3000'

N

SCALE, LOCATIONS, AND DIRECTIONS ARE APPROXIMATE.

SDSU EVOLVE STUDENT HOUSING	REGIONAL GEOLOGIC MAP	GROUP DELTA
		PROJECT NUMBER: SD814
		FIGURE NUMBER: 2

FILE PATH: N:\Projects\SD\SD800\SD814 SDSU Main Campus Affordable Housing Feasability Study\11. Drafting\CAD\SD814_San Diego Geologic Map.dwg PLOTTED DATE: 5/20/2024 6:15:02 PM SAVED BY: brendaa



REFERENCE: CITY OF SAN DIEGO (2008). SEISMIC SAFETY STUDY, GEOLOGIC HAZARDS AND FAULTS, GRIDS 21, 22, 26, AND 27 DATED 04-03-2008

0 3000'

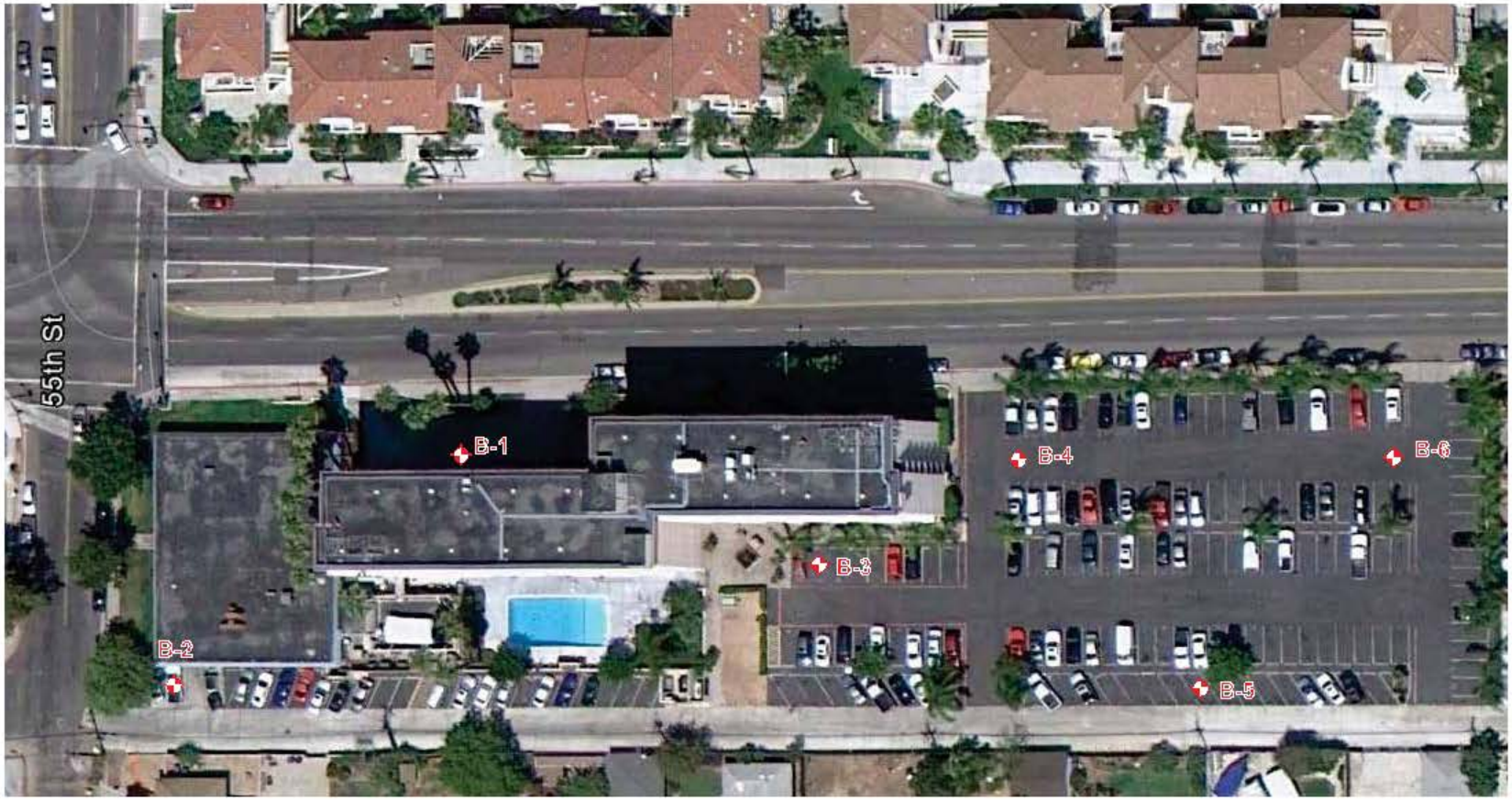
SCALE, LOCATIONS, AND DIRECTIONS ARE APPROXIMATE.

SDSU EVOLVE STUDENT HOUSING	SAN DIEGO SEISMIC SAFETY STUDY MAP	GROUP DELTA	
		PROJECT NUMBER SD814	FIGURE NUMBER 3

FILE PATH: N:\Projects\SD\SD800\SD814 SDSU Main Campus Affordable Housing Feasability Study\11. Drafting\CAD\SD814_Seismic Safety Map.dwg PLOTTED DATE: 5/20/2024 6:45:43 PM SAVED BY: brendaa

APPENDIX A

SITE 1



EXPLANATION

Approximate location of exploratory borings

Modified from: Google Earth

N

SCALE: 1"=50'

GROUP DELTA CONSULTANTS

EXPLORATION PLAN

PROJECT NUMBER: SD273

DOCUMENT NUMBER: 12-0123

FIGURE NUMBER: 2

PROJECT: SAN DIEGO STATE UNIVERSITY UNIVERSITY TOWERS

LOG OF EXPLORATION BORING NO. 1

Logged by: TSL **Date:** 4/6/2012

Method of Drilling: 6-inch diameter solid-stem auger **Elevation:** 463 Feet (MSL)

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	LAB TESTS
0						**PAVEMENT**: 7 inches of Portland cement concrete (PCC), no base.	
1						**FILL/RESIDUAL SOIL**: Sandy fat clay (CH), dark yellow brown, fine sands, low plasticity, moist, hard.	Gradation Hydrometer Atterberg Limits Soluble Sulfate Soluble Chloride pH & Resistivity Expansion Index
2	16	SPT				Pocket Penetrometer (PP) ~ 3 TSF	
3						Fat clay (CH), high plasticity, pale yellow brown, moist, hard.	
4							
5							
6	110	CAL		104	21	**VERY OLD PARALIC DEPOSITS (UNIT 7)**: Cobble conglomerate (GM), silty sand matrix, fine to coarse grained sand, low plasticity, light brown, moist, very dense.	
7						TOTAL DEPTH = 6 FEET NO GROUNDWATER OBSERVED BACKFILLED 4/6/12	
8							
9							
10							

PROJECT NO. SD273 **GROUP DELTA CONSULTANTS** **FIGURE A-1**

LOG OF EXPLORATION BORING NO. 2

Logged by: TSL **Date:** 4/6/2012

Method of Drilling: 6-inch diameter solid-stem auger **Elevation:** 462 Feet (MSL)

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	LAB TESTS
0						**PAVEMENT:** 5 inches of Portland cement concrete (PCC).	
1						**FILL/RESIDUAL SOIL:** Sandy lean clay (CL), dark yellow brown, fine sands, low plasticity, moist, hard	
2	36	CAL		116	16		Direct Shear
3							
4							
5							
6	63*	SPT				*Rock in sampler	
						VERY OLD PARALIC DEPOSITS (UNIT 7): Cobble conglomerate (GM), silty sand matrix, fine to coarse grained sand, low plasticity, light brown, moist, very dense.	
7						TOTAL DEPTH = 6½ FEET NO GROUNDWATER OBSERVED BACKFILLED 4/6/12	
8							
9							
10							

PROJECT NO. SD273 **GROUP DELTA CONSULTANTS** **FIGURE A-2**

LOG OF EXPLORATION BORING NO. 3

Logged by: TSL **Date:** 4/6/2012

Method of Drilling: 6-inch diameter solid-stem auger **Elevation:** 464 Feet (MSL)

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	LAB TESTS
0						**PAVEMENT:** 4 inches of asphalt concrete on 4 inches of base.	
1						**FILL/RESIDUAL SOIL:** Clayey sand (SC), dark yellowish brown, fine to medium grained sands, moist,medium dense.	Gradation R-Value
2	21	SPT					
3						Clayey sand (SC), dark yellowish brown, fine to coarse sand, moist, medium dense.	
4							
5	100*	CAL		113	10	*Sampler bouncing on rock. **VERY OLD PARALIC DEPOSITS (UNIT 7):** Silty sand with gravel (SM), reddish brown, fine to coarse sand, moist, moderately cemented.	
6						TOTAL DEPTH = 5½ FEET NO GROUNDWATER OBSERVED BACKFILLED 4/6/12	
7							
8							
9							
10							

PROJECT NO. SD273 **GROUP DELTA CONSULTANTS** **FIGURE A-3**

LOG OF EXPLORATION BORING NO. 4

Logged by: TSL **Date:** 4/6/2012

Method of Drilling: 6-inch diameter solid-stem auger **Elevation:** 464 Feet (MSL)

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	LAB TESTS
0						**PAVEMENT:** 5 inches of asphalt concrete on 4 inches of base.	
1						**FILL/RESIDUAL SOIL:** Sandy clay (CL), grayish brown, fine sands, low plasticity, moist, hard.	
2	28	CAL		111	17	Sandy clay/clayey sand (CL/SC), yellowish brown, fine sands, low plasticity, moist, medium dense.	
3							
4							
5	56	SPT				Clayey sand with gravel (SC), light brown, gravel up to 1 inch, moist, medium dense to dense.	
6							
7						TOTAL DEPTH = 6½ FEET NO GROUNDWATER OBSERVED BACKFILLED 4/6/12	
8							
9							
10							

PROJECT NO. SD273 **GROUP DELTA CONSULTANTS** FIGURE A-4

LOG OF EXPLORATION BORING NO. 5

Logged by: TSL **Date:** 4/6/2012

Method of Drilling: 6-inch diameter solid-stem auger **Elevation:** 463 Feet (MSL)

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	LAB TESTS
0						**PAVEMENT:** 6 inches of asphalt concrete on 3 inches of base.	
1						**FILL/RESIDUAL SOIL:** Sandy clay (CL), dark yellowish brown, fine sands, low plasticity, moist, hard.	
2	76*	SPT				*Sampler bouncing on rock.	
3						Sandy clay with gravel (CL), light brown, fine sands, low plasticity, moist, hard.	
4							
5	24	CAL		---	13	**VERY OLD PARALIC DEPOSITS (UNIT 7):** Silty sand with gravel (SM), reddish brown, fine to coarse sand, moist, moderately cemented. Contains gravel up to 2-inches in maximum dimension.	
6						TOTAL DEPTH = 6 FEET NO GROUNDWATER OBSERVED BACKFILLED 4/6/12	
7							
8							
9							
10							

PROJECT NO. SD273 **GROUP DELTA CONSULTANTS** **FIGURE A-5**

LOG OF EXPLORATION BORING NO. 6

Logged by: TSL **Date:** 4/6/2012

Method of Drilling: 6-inch diameter solid-stem auger **Elevation:** 464 Feet (MSL)

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	LAB TESTS
0						**PAVEMENT:** 4 inches of asphalt concrete on 3 inches of base.	
1						**FILL/RESIDUAL SOIL:** Sandy lean clay (CL), grayish brown, fine sands, low plasticity, moist, hard. PP~2½ TSF	Gradation Soluble Sulfate R-Value Lime Mix Design
2	28	CAL		101	24		
3						Clay (CH), pale yellowish brown, high plasticity, moist, hard. PP~2½ TSF	
4							
5							
6	21	SPT				**VERY OLD PARALIC DEPOSITS (UNIT 7)**: Cobble conglomerate (GM), silty sand matrix, fine to coarse grained sand, low plasticity, light brown, moist, very dense.	
7						TOTAL DEPTH = 6½ FEET NO GROUNDWATER OBSERVED BACKFILLED 4/6/12	
8							
9							
10							

PROJECT NO. SD273 **GROUP DELTA CONSULTANTS** FIGURE A-6

SITE 2

THE GEOGRAPHICAL INFORMATION MADE AVAILABLE FOR DISPLAY WAS PROVIDED BY GOOGLE EARTH, SUBJECT TO A LICENSING AGREEMENT. THE INFORMATION IS FOR ILLUSTRATIVE PURPOSES ONLY; IT IS NOT INTENDED FOR CLIENT'S USE OR RELIANCE AND SHALL NOT BE REPRODUCED BY CLIENT. CLIENT SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS GEOCON FROM ANY LIABILITY INCURRED AS A RESULT OF SUCH USE OR RELIANCE BY CLIENT.

N

NO SCALE

VICINITY MAP

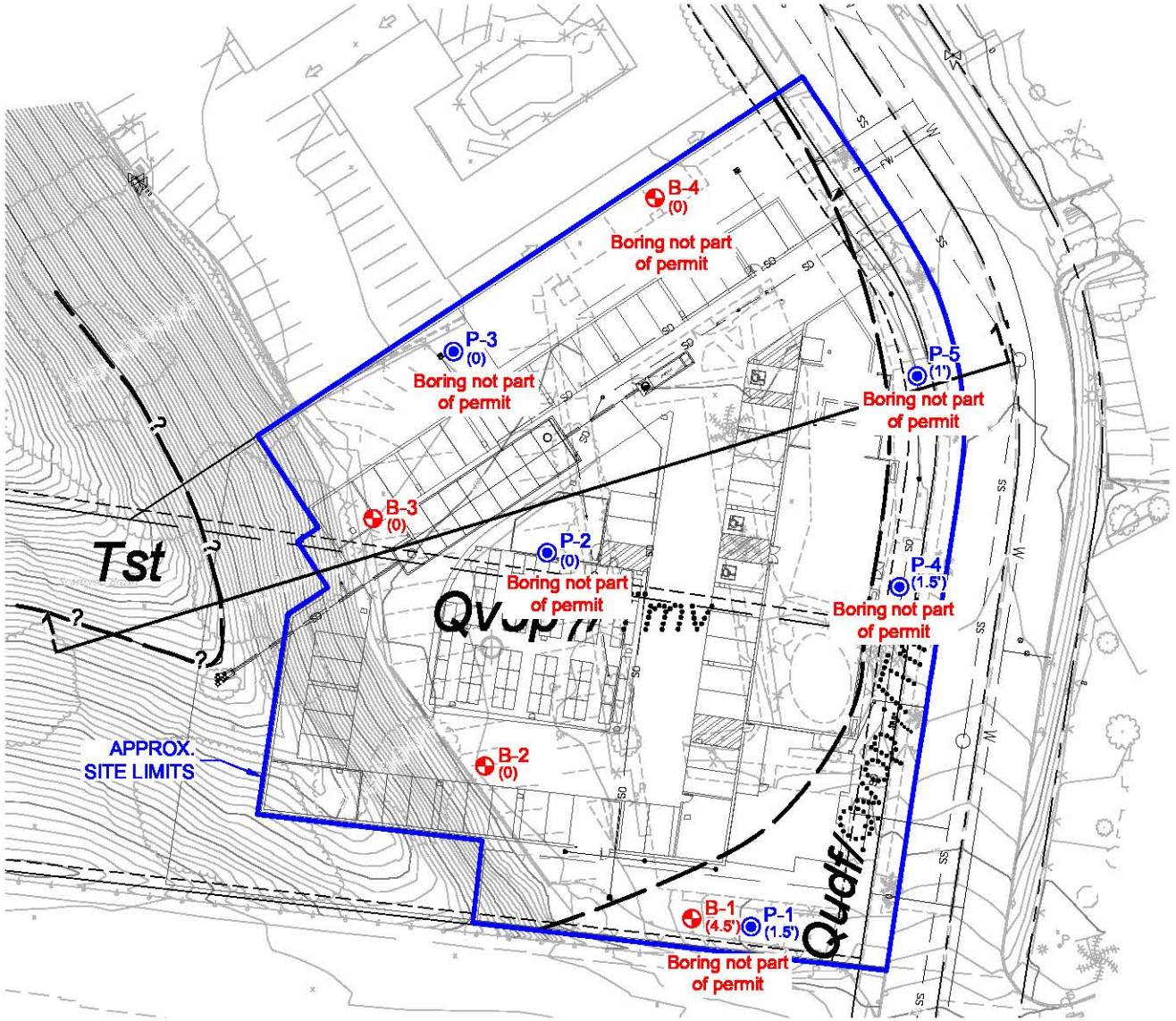
GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

RM / AML		DSK/GTYPD

COLLEGE VIEW
5420-22 55TH STREET
SAN DIEGO, CALIFORNIA

DATE 10 - 07 - 2019	PROJECT NO. G2432 - 52 - 01	FIG. 1

Plotted:10/07/2019 8:09AM | By:JONATHAN WILKINS | File Location:Y:\PROJECTS\G2432-52-01 (College View)\DETAILS\G2432-52-01 Vic Map.dwg



COLLEGE VIEW
5420-22 55TH STREET
SAN DIEGO, CALIFORNIA

0' 20' 40' 60' 80'
SCALE 1"=40'(on 11x17)

GEOCON LEGEND

- Qudf .....UNDOCUMENTED FILL
- Qvop 7 .....VERY OLD PARALIC DEPOSITS (Dotted Where Buried
- Tmv .....MISSION VALLEY FORMATION (Dotted Where Buried)
- Tst .....STADIUM CONGLOMERATE
- ~?~ .....APPROX. LOCATION OF GEOLOGIC CONTACT (Queried Where Uncertain)
- B-4 .....APPROX. LOCATION OF BORING
- P-5 .....APPROX. LOCATION OF AARDVARK PERMEAMETER TEST
- (4') .....APPROX. DEPTH TO FORMATION (Feet)
- 1 1' .....APPROX. LOCATION OF GEOLOGIC CROSS SECTION

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

PROJECT NO. G2432 - 52 - 01
FIGURE 2
DATE 10 - 07 - 2019

GEOLOGIC MAP

Plotted:10/07/2018 8:08AM | By:JONATHAN WILKINS | File Location:Y:\PROJECTS\G2432-52-01 (College View)\SHEETS\G2432-52-01 Geo Map.dwg

PROJECT NO. G2432-52-01

BORING B 2

ELEV. (MSL.) 411' DATE COMPLETED 08-08-2019

EQUIPMENT CME 75 BY: K. HAASE

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					5" ASPHALT			
2	B2-1			SM	**VERY OLD PARALIC DEPOSITS/MISSION VALLEY FORMATION-Undifferentiated (Qvop$_?$/Tmv)** Dense to very dense, light brown to brown, Silty, fine- to medium-grained, Sandy CONGLOMERATE			
4								
6	B2-2				-No recovery	55		
8								
10	B2-3				-No recovery	33		
12								
14								
16	B2-4					22		
18								
20								
22								

Figure A-2,
Log of Boring B 2, Page 1 of 2

G2432-52-01.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G2432-52-01

BORING B 2

ELEV. (MSL.) 411' DATE COMPLETED 08-08-2019

EQUIPMENT CME 75 BY: K. HAASE

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
24								
	B2-5			SC	Dense to very dense, light brown to brown, Clayey, fine- to medium-grained, Sandy CONGLOMERATE	31		
26								
28								
30	B2-6				-No recovery	29		
32								
34								
	B2-7			SC	**STADIUM CONGLOMERATE (Tst)** Very dense, moist, reddish brown, Clayey, fine- to coarse-grained, Sandy CONGLOMERATE (Approximate Depth)	31		
36								
38								
40	B2-8				-No recovery	50/1"		
42								
44								
46								
					BORING REFUSAL AT 46.5 FEET Groundwater not encountered Backfilled with 16 cu. ft. cement grout			

Figure A-2,
Log of Boring B 2, Page 2 of 2

G2432-52-01.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G2432-52-01

BORING B 3

ELEV. (MSL.) 409' DATE COMPLETED 08-08-2019

EQUIPMENT CME 75 BY: K. HAASE

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					4" **ASPHALT**			
2	B3-1			SM	**VERY OLD PARALIC DEPOSITS/MISSION VALLEY FORMATION-Undivided (Qvop-/Tmv)** Dense to very dense, damp to moist, brown, Silty, fine- to coarse-grained, Sandy CONGLOMERATE			
4								
6	B3-2				-No recovery	50/6"		
8								
10	B3-3				-Becomes light reddish brown	40		
12								
14								
16	B3-4			SC	Dense to very dense, damp to moist, brown, Clayey, fine- to coarse-grained, Sandy CONGLOMERATE	24		
18								
20	B3-5					14		
22								

Figure A-3,
Log of Boring B 3, Page 1 of 2

G2432-52-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G2432-52-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**BORING B 3** ELEV. (MSL.) **409'** DATE COMPLETED **08-08-2019** EQUIPMENT **CME 75** BY: **K. HAASE**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
24								
	B3-6				-No recovery	19		
26								
28								
					BORING TERMINATED AT 29 FEET Groundwater not encountered Backfilled with 10 cu. ft. cement grout			

Figure A-3,
Log of Boring B 3, Page 2 of 2

G2432-52-01.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON