Appendix E

Geotechnical Data Report

Geotechnical Data Report

UCI North Campus
University of California, Irvine
Irvine, California

University of California, Irvine
Design and Construction Services

101 Academy Drive, Suite 200 | Irvine, California 92697

November 27, 2019 | Project No. 209570014





Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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Geotechnical Data Report

UCI North Campus
University of California, Irvine
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November 27, 2019 | Project No. 209570014

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1 INTRODUCTION

In accordance with your request and authorization, we have prepared this revised geotechnical data report for the North Campus site at the University of California, Irvine (UCI) campus. Our study was conducted in general accordance with the scope of services presented in our proposal dated February 26, 2019 This revised report presents updated seismic parameters in general accordance with the 2019 California Building Code (CBC). The purpose of our geotechnical services was to develop preliminary information regarding the soil, groundwater conditions, geologic conditions, and percolation characteristics at the site for future site development. This report presents our findings and conclusions for the project.

2 SCOPE OF SERVICES

Our scope of services included the following:

- Project coordination, planning, and scheduling the subsurface evaluation.
- Review of readily available background materials, including published topographic maps, geologic maps, fault and seismic hazard maps, groundwater data, stereoscopic aerial photographs, and project related plans.
- Reconnaissance of the site to observe the existing surface conditions from a geotechnical perspective and mark the proposed boring locations for utility clearance by Underground Service Alert.
- Performance of a geophysical survey for utility clearance.
- Subsurface exploration consisting of the drilling, sampling, and logging of thirty-five (35) small-diameter borings to depths ranging from approximately 16.5 to 61.5 feet below the ground surface, and sixteen (16) backhoe test pits up to depths of approximately 10.3 feet below the ground surface. The borings and test pits were logged by a representative of our firm, and bulk and relatively undisturbed soil and formational samples were collected at selected intervals for laboratory testing.
- Percolation testing in four (4) additional borings to a depth of approximately 10 feet below the ground surface in general accordance with Orange County Public Works Technical Guidance Document guidelines (2011).
- Geotechnical laboratory testing to evaluate in-situ moisture and dry density, percentage of particles finer than the No. 200 sieve, Atterberg limits, consolidation, direct shear strength, expansion index, Proctor density, soil corrosivity, and R-value.
- Analytical testing consisting of fifty-one (51) Title 22 Metals tests, evaluated by US Environmental Protection Agency (EPA) Test Method 6010B/7471A, and fifty-one (51) total petroleum hydrocarbons, evaluated by EPA test method 8015B. One Title 22 Metals test and one 8015B test was performed per field excavation.
- Preparation of this geotechnical data report presenting our findings for the project.

3 SITE DESCRIPTION AND PROPOSED CONSTRUCTION

The project site is located at the southeast corner of the intersection of Jamboree Road and Campus Drive, north of the main UCI campus (Figure 1). The site is bordered by Jamboree Road to the northwest, Campus Drive to the northeast, undeveloped land to the southwest, and the San Joaquin Marsh to the southeast (Figure 2). The northern portion of the site is comprised of asphalt paved parking lots, several single-story relocatable maintenance and office structures, access roads, and the UCI Arboretum. In addition, the northwest corner of the site includes the UC Irvine Hydrogen Fueling Station. The southern portion of the site currently consists of undeveloped land with overgrown grass to the east and an asphalt paved parking lot and the UCI Childhood Development Center in the east. The developed portion along the western portion of the site is relatively flat at an elevation of approximately 50 feet above mean sea level (MSL) (United States Geological Survey [USGS], 1981). The southeastern portion of the site descends towards the south and consists of nearly 1:1 (horizontal to vertical) slopes that descend towards San Joaquin Marsh to an elevation of approximately 35 feet above MSL. The site is currently under evaluation for future development, however no details were available at the time of this report.

4 SUBSURFACE EVALUATION AND LABORATORY TESTING

Our subsurface evaluation was performed from May 28, 2019 through June 11, 2019, and consisted of the drilling, logging, and sampling of thirty-five small-diameter borings (B-1 through B-35) to depths ranging from approximately 16.5 feet to 61.5 feet below the ground surface, and sixteen backhoe excavated test pits (TP-1 through TP-16) to depths ranging from approximately 4.0 to 10.3 feet below the ground surface. The borings were drilled using a truck-mounted drill rig with 8-inch-diameter hollow-stem augers. Additionally, four percolation test borings (P-1 through P-4) were drilled up to a depth of approximately 10 feet below the ground surface. The borings and test pits were logged by a representative from our firm and bulk and relatively undisturbed soil and bedrock samples were obtained at selected depths from the borings for laboratory testing. The approximate locations of the exploratory borings and test pits are shown on Figure 2. The logs of the borings and test pits are provided in Appendix A and B, respectively.

Percolation testing was performed on June 5, 2019, to evaluate the infiltration rate of the on-site soils. The approximate locations of the percolation tests are also shown on Figure 2. Details regarding the percolation testing are provided in Section 8 of this report.

Geotechnical laboratory testing was performed on representative samples to evaluate the in-situ moisture and dry density, gradation, percentage of particles finer than the No. 200 sieve, Atterberg limits, consolidation, collapse potential, direct shear strength, expansion index, Proctor density,

soil corrosivity, and R-value. The results of our in-situ moisture content and dry density tests are presented on the boring and test pit logs in Appendix A and B, respectively, and the remaining geotechnical laboratory testing results are presented in Appendix C.

In addition, analytical testing included Title 22 Metals, evaluated by EPA Test Method 6010B/7471A and total petroleum hydrocarbons, evaluated by EPA test method 8015B. One Title 22 Metals test and one 8015B test was performed per field excavation. The results of our analytical testing are presented in Appendix D.

5 GEOLOGY AND SUBSURFACE CONDITIONS

5.1 Geologic Setting

The project site is situated along the northern portion of the San Joaquin Hills, within the Peninsular Ranges Geomorphic Province of California (Norris and Webb, 1990). The San Joaquin Hills consist of a series of generally northwest-trending hills bounded by the Los Angeles Basin on the north, the Pacific Ocean on the southwest, and the Santa Ana Mountains and San Juan Creek on the east and south. The San Joaquin Hills are generally underlain by Paleocene through early Pliocene marine and non-marine sedimentary deposits. Recent research suggests the San Joaquin Hills may have been formed by folding and uplift in association with ongoing movement along a blind thrust fault in the southern Los Angeles basin.

5.2 Site Geology and Subsurface Conditions

Regional geologic mapping data (Morton and Miller, 2006) indicate the site is underlain by late Pleistocene-age marine terrace deposits and the Miocene-age Topanga Formation (Figure 3). The marine terrace deposits are described as containing silt, sand, gravel, and cobbles. The Topanga Formation, including Paularino and Los Trancos members, include interbedded sandstone, siltstone, and claystone.

The materials encountered in our exploratory borings consisted of pavement, fill, alluvium, marine terrace deposits, and Topanga Formation. A summary of the materials encountered on site is presented below. More detailed information is presented on the boring and test pits logs in Appendix A and B, respectively.

5.2.1 Pavement

Pavement was encountered in borings B-1 through B-3, B-8 through B-14, B-18 through B-25B-28 and B-29, and generally consisted of asphalt concrete (AC) over aggregate base (AB). The thickness of the AC over AB ranged from approximately 2 to 4 inches over

approximately 2 to 8 inches. Boring B-20 consisted of AC approximately 6 inches thick over fill. The AB material generally consisted of a dense, silty gravel with sand.

5.2.2 Fill Materials

Undocumented fill materials were observed in borings B-1 through B-3, B-5, B-10, B-11, 20, B-22, B-23, B-26 through B-28. The thickness of the fill encountered in borings ranged from approximately 1 to 13 feet. The fill materials observed in our borings generally consisted of moist, stiff to hard, sandy to lean clay. Scattered gravel, construction debris, and other debris were also encountered in the fill materials.

5.2.3 Alluvium

Alluvium was encountered beneath the pavement and/or fill, or at the surface in borings B-16 through B-21, B-34, and B-35 on the southeastern portion of the site. The alluvium generally consisted of moist, stiff to hard, sandy to lean clay, and moist, medium dense to dense, silty and clayey sand, and poorly graded sand with variable amount of gravel. The alluvium grades into the terrace deposits going from the southeast to the northwestern portions of the site.

5.2.4 Terrace Deposits

Terrace deposits were encountered at the surface or beneath the fill and/or alluvium. The terrace deposits generally consisted of interfingered moist, medium dense to dense, sandy silt, silty sand, and poorly graded sand, and moist to wet, stiff to hard, sandy clay, and lean to fat clay. The depth to terrace deposits ranged from the surface up to the total depth explored of approximately 61.5 feet below the ground surface. The terrace deposits grade into alluvial soils on the southeastern portion of the site.

5.2.5 Topanga Formation

Topanga Formation was encountered in exploratory boring B-30 beneath terrace deposits. The depth to the Topanga Formation observed in our exploratory boring was at a depth of approximately 18 feet below the ground surface. The Topanga Formation encountered consisted of moist, moderately to strongly indurated claystone, and, moist, moderately weathered, sandstone.

6 GROUNDWATER

Groundwater was encountered in exploratory borings B-4 through B-6, B-9, B-12 through B-14, B-16, B-29, B-34, and B-35 at a depths ranging from approximately 23 to 49.2 feet below the existing ground surface at the time of drilling. Historical high groundwater is mapped at the site at

approximately 10 feet below the ground surface (California Geological Survey [CGS], 1998). Fluctuations in the level of groundwater may occur due to variations in ground surface topography, subsurface stratification, rainfall, irrigation practices, groundwater pumping, and other factors which may not have been evident at the time of our field evaluation.

7 FLOOD HAZARDS

Based on our review of flood insurance rate maps for the project area (Federal Emergency Management Agency [FEMA], 2009), the southeastern portions of the site adjacent to the San Joaquin Marsh are located in the 100-year Flood Hazard Zone A99. Zone A99 includes areas to be protected from a 100-year flood by the Federal Flood Protection System under construction at the time of publication of the FEMA map; no base flood elevations are given. The rest of the site is located within Other Areas – Zone X, which includes areas outside the 0.2 percent annual chance floodplain. In addition, the site is not located in a zone subject to inundation due to dam failure.

8 FIELD PERCOLATION TESTING

Percolation testing was performed in percolation test borings P-1 through P-4 in general accordance with the Orange County Public Works – Orange County Watersheds Technical Guidance Document BMP Fact Sheets (2011). A 2-inch-diameter slotted polyvinyl chloride (PVC) pipe was placed in the boreholes and the annulus between the borehole walls and pipes were backfilled with clean gravel to avoid caving in the test zone. The infiltration zone was pre-soaked with water on the previous day prior to performing the percolation testing. Percolation testing was conducted by placing clean water in the PVC pipes to establish a head of water and by measuring the drop in water over a time period of approximately 6 hours. Water was added to the PVC pipes after every 10 or 30 minute increments to maintain approximately the same amount of head. The measured rate of infiltration during the last 10 or 30 minutes was utilized for the calculation of the percolation rates per the Orange County Public Works guidelines (2011). The tested percolation rates are presented in Table 1 below.

Table 1 – Percolation Test Results

Test Boring	Approximate Depth Tested (feet)	Tested Percolation Rate (inch/hour)
P-1	0.5 – 10.0	0.12
P-2	4.0 – 10.0	0.01
P-3	1.0 – 10.0	0.04
P-4	2.0 – 10.0	1.08

9 FAULTING AND SEISMICITY

The site is located in a seismically active area, as is the majority of southern California. The numerous faults in southern California include active, potentially active, and inactive faults. As defined by CGS, active faults are faults that have ruptured within Holocene time (approximately the last 11,000 years). Potentially active faults are those that show evidence of movement during Quaternary time (approximately the last 1.6 million years), but for which evidence of Holocene movement has not been established. Inactive faults have not ruptured in the last approximately 1.6 million years.

The approximate locations of major faults in the project area and their geographic relationship to the project are shown on Figure 4. The site is not located within a State of California Earthquake Fault Zone (formerly known as an Alquist-Priolo Special Studies Zone) (Hart and Bryant, 1997). Table 2 lists selected principal known active faults that may affect the project area, the approximate fault-to-site distances, and the maximum moment magnitudes (M_{max}) of the faults (USGS, 2008). The active San Joaquin Hills blind thrust fault is mapped approximately 1.8 miles north of the site (USGS, 2008). Blind thrust faults are low-angle faults at depth that do not break the surface and are, therefore, not shown on Figure 5. Although blind thrusts do not have a surface trace, they can be capable of generating damaging earthquakes and are included in Table 2.

Table 2 – Principal Active Faults

Fault	Approximate Fault to Site Distance miles (kilometers)	Maximum Moment Magnitude (M_{max})
San Joaquin Hills Blind Thrust	1.8 (2.9)	7.1
Newport-Inglewood	5.7 (9.2)	7.5
Puente Hills Blind Thrust	14.8 (23.9)	6.9
Elsinore	16.4 (26.5)	7.9
Palos Verdes	17.4 (28.0)	7.7
Chino	19.8 (31.8)	6.8
San Jose	25.3 (41.7)	6.7
Coronado Bank	26.2 (43.0)	7.4
Elysian Park	31.3 (50.3)	6.7
San Andreas	47.5 (76.4)	8.2

An unnamed, inferred fault is mapped approximately 1.25 miles southeast of the site (Miller, 1976). The fault has recently been referred to as the UCI Campus Fault and is shown on Figure 6. The fault was described as a northwesterly projected 80-foot-wide zone containing reverse faults with up to 12 feet of vertical displacement (Geobase, Inc., 1998). Petra Geosciences, Inc. performed an investigation, dated December 5, 1991, of the southeast extension of the UCI Campus Fault. The fault investigation located the UCI Campus Fault near the Social Science Lab and the Middle Earth Housing complex, and also recommended no habitable structures to be placed across the ground surface trace of the fault.

The principal seismic hazards evaluated at the subject site are surface fault rupture, ground motion, liquefaction, landsliding, and tsunamis and seiches. A brief description of these hazards and the potential for their occurrences on site are discussed in the following sections.

9.1 Surface Fault Rupture

Based on our review of the referenced literature and our site reconnaissance, no active faults are known to cross the project site. Therefore, the probability of damage from surface fault rupture is considered to be low. However, lurching or cracking of the ground surface as a result of nearby seismic events is possible.

9.2 Ground Motion and Seismic Design Parameters

Considering the proximity of the site to active faults capable of producing a maximum moment magnitude of 6.0 or more, the project area has a high potential for experiencing strong ground motion. The 2019 California Building Code (CBC) specifies that the risk-targeted maximum considered earthquake (MCE_R) ground motion response accelerations be used to evaluate seismic loads for design of buildings and other structures. The 2019 CBC amended per the University of California (UC) Seismic Safety Policy will be implemented for this site. The MCE_R ground motion response accelerations are based on the spectral response accelerations for 5 percent damping in the direction of maximum horizontal response and incorporate a target risk for structural collapse equivalent to 1 percent in 50 years with deterministic limits for near-source effects. The horizontal peak ground acceleration that corresponds to the MCE_R for the project area was calculated as 0.51g using the 2019 Structural Engineers Association of California (SEAOC)/Office of Statewide Health Planning and Development (OSHPD) seismic design tool (web-based). Spectral response acceleration parameters, consistent with the 2019 CBC, are also provided below for the evaluation of seismic loads on buildings and other structures.

Design of the proposed improvements should be performed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 3 presents the seismic design parameters for the site in accordance with the CBC (2019) guidelines and adjusted MCE_R spectral response acceleration parameters (SEAOC/OSHPD, 2019) and the UC Seismic Safety Policy 2019 CBC amendment.

Table 3 – 2019 California Building Code Seismic Design Criteria	
Site Coefficients and Spectral Response Acceleration Parameters	**Values**
Site Class	C[1]
Site Coefficient, Fa	1.2
Site Coefficient, Fv	1.5
Mapped Spectral Response Acceleration at 0.2-second Period, S_s	1.282 g
Mapped Spectral Response Acceleration at 1.0-second Period, S_1	0.458 g
Spectral Response Acceleration at 0.2-second Period Adjusted for Site Class, S_{MS}	1.539 g
Spectral Response Acceleration at 1.0-second Period Adjusted for Site Class, S_{M1}	0.687 g
Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	1.026 g
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.458 g

Note:
[1] Based on shear wave velocity in the upper 30 meters (V_{s30}) using the CGS Data Viewer (web-based).

9.3 Liquefaction

Liquefaction is the phenomenon in which loosely deposited granular soils with silt and clay contents of less than approximately 35 percent and non-plastic silts located below the water table undergo rapid loss of shear strength when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid rise in pore water pressure, and causes the soil to behave as a fluid for a short period of time. Liquefaction is known generally to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet below the ground surface. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking. The southeastern portion of the site adjacent to the marsh is located in an area mapped as being susceptible to liquefaction (Figure 5). In general, due to the relatively dense and cohesive nature of the shallow terrace deposits and depth to groundwater, liquefaction is not considered a design consideration for the site.

9.4 Landsliding

Landslides may be induced by strong vibratory motion produced by earthquakes. Research and historical data indicate that seismically induced landslides tend to occur in weak soil and rock on sloping terrain. The process for zoning earthquake-induced landslides incorporates expected future earthquake shaking, existing landslide features, slope gradient, and strength of earth materials on the slope. The project area is not mapped in an area considered susceptible to seismically induced landslides (CGS, 2001b). The majority of the subject site is situated on relatively level terrain. The relatively steep slopes along the southeastern edge of the site adjacent to the marsh may be subject to instability. We did not observe indications of landslides during our site reconnaissance or background review.

9.5 Tsunamis and Seiches

Tsunamis are long wavelength, seismic sea waves (long compared to ocean depth) generated by the sudden movement of the ocean floor during submarine earthquakes, landslides, or volcanic activity. Seiches are waves generated in a large, enclosed body of water. The project area is not located within an area considered susceptible to tsunamis or seiche inundation. Therefore, damage due to tsunamis or seiches is not a design consideration.

10 CORROSIVITY

Laboratory testing was performed on representative samples of near-surface soil to evaluate soil pH, electrical resistivity, water-soluble chloride content, and water-soluble sulfate content. The soil pH and electrical resistivity tests were performed in general accordance with California Test Method (CT) 643. Chloride content tests were performed in general accordance with CT 422. Sulfate testing was performed in general accordance with CT 417. The laboratory test results are presented in Appendix C.

The soil pH of the samples tested was measured to be between 7.1 and 7.8 and the measured electrical resistivity of the samples tested ranged from 242 and 1,056 ohm-centimeters. The chloride content of the samples tested ranged from approximately 30 to 590 parts per million (ppm). The sulfate content of the tested samples ranged from approximately 0.001 to 0.108 percent by weight (i.e., 10 ppm to 1080 ppm). Based on the laboratory test results and California Department of Transportation (Caltrans, 2018a) corrosion criteria, the project site can be classified as a corrosive site, which is defined as having earth materials with more than 500 ppm chlorides, more than 0.15 percent sulfates (i.e., 1,500 ppm), a pH of 5.5 or less, and an electrical resistivity of less than 1,100 ohm-centimeters.

11 PRELIMINARY CONCLUSIONS

The purpose of this study was to develop preliminary information regarding the soil and geologic conditions at the site for future site development. Based on our preliminary evaluation, it is our opinion that development of the site is feasible from a geotechnical perspective. A detailed geotechnical evaluation should be performed during the design phase to develop appropriate design and construction recommendations. A summary of our preliminary conclusions is presented below:

- Fill soils were encountered in our exploratory borings and test pits in various areas of the site to depths ranging from approximately 1 to 13 feet below the ground surface. The fill generally consisted of moist, stiff to hard, sandy to lean clay. Scattered gravel, construction debris, and other debris were also encountered in the fill. Documentation regarding the limits of fill or the

placement and compaction of the fill soils was not available for review. Large and abrupt variations in the thickness of the fill should be anticipated during construction.

- The native earth materials encountered in our borings and test pits on-site consist of alluvium and terrace deposits. The alluvium and terrace deposits were generally comprised of moist, stiff to hard, sandy to lean clay and fat clay, and medium dense, silty and clayey sand, and poorly graded sand. The Topanga Formation encountered in our boring generally consisted of moist, moderately to strongly indurated, claystone, lesser moderately weathered sandstone.

- The Topanga Formation materials encountered in our borings contain moderately to strongly indurated claystone and moderately cemented sandstone. These materials may involve difficult excavating conditions and may generate oversized material. Rippability should be further evaluated during the design phase of the project, particularly if deep excavations are involved.

- Excavations for at-grade structure foundations and pavements should be feasible with conventional grading equipment in good working condition.

- The on-site soils consists of clayey and sandy material consistent with Type C soils in accordance with Occupational Safety and Health Administration (OSHA) soil classifications. Temporary shoring should be provided in accordance with OSHA regulations.

- Groundwater was encountered at the site ranging from approximately 23 to 49.2 feet below the ground surface. However, the historical high groundwater level is mapped at approximately 10 feet below the ground surface.

- Laboratory test results indicate that the on-site surficial clayey soils have expansion index values ranging from approximately 29 to 73, indicating a low to medium potential for expansion.

- Our infiltration testing of the near-surface soils resulted in infiltration rates ranging from approximately 0.01 to 1.08 inches per hour.

- The southeastern portion of the site is located within a mapped Seismic Hazards Zone considered susceptible to liquefaction.

- The subject site is not located within a State of California Earthquake Fault Zone (formerly known as an Alquist-Priolo Special Studies Zone).

- The southeastern portion of the site is located within a designated floodplain area, within the 0.2 percent annual chance of flooding.

- Based on our laboratory corrosion testing, the on-site soil can be classified as corrosive based on the Caltrans Corrosion Guidelines (Caltrans, 2018a).

12 LIMITATIONS

The field evaluation and geotechnical data presented in this report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the data, conclusions, and opinions presented in this report. There is no

evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for preliminary design purposes only. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions are based on an analysis of the observed site conditions. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client and the design-build teams of the project. Any use or reuse of the findings and conclusions of this report by parties other than the client and its bidders is undertaken at said parties' sole risk.

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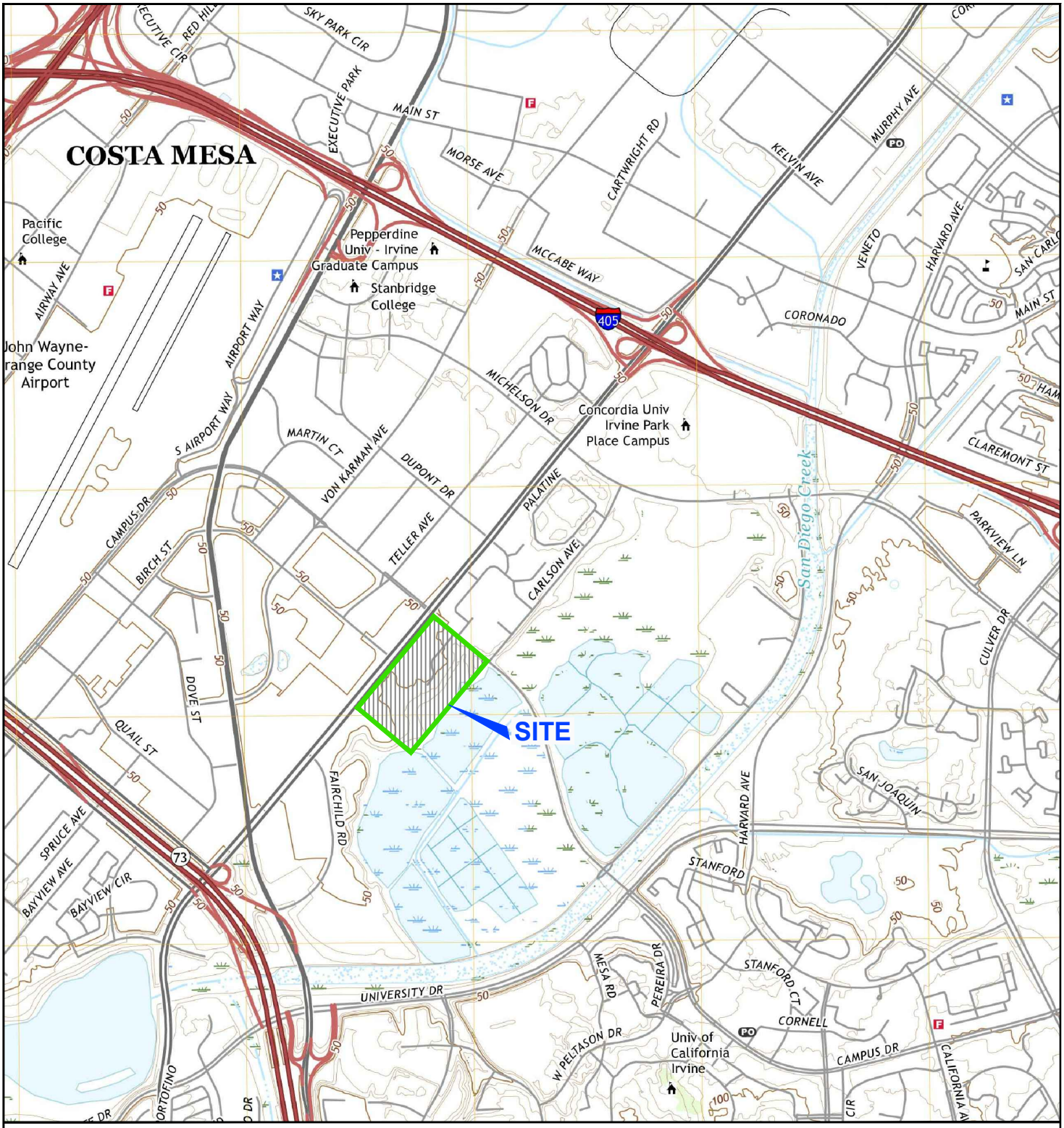
FIGURES



NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: USGS, 2018.

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FIGURE 1

SITE LOCATION

UCI NORTH CAMPUS
IRVINE, CALIFORNA

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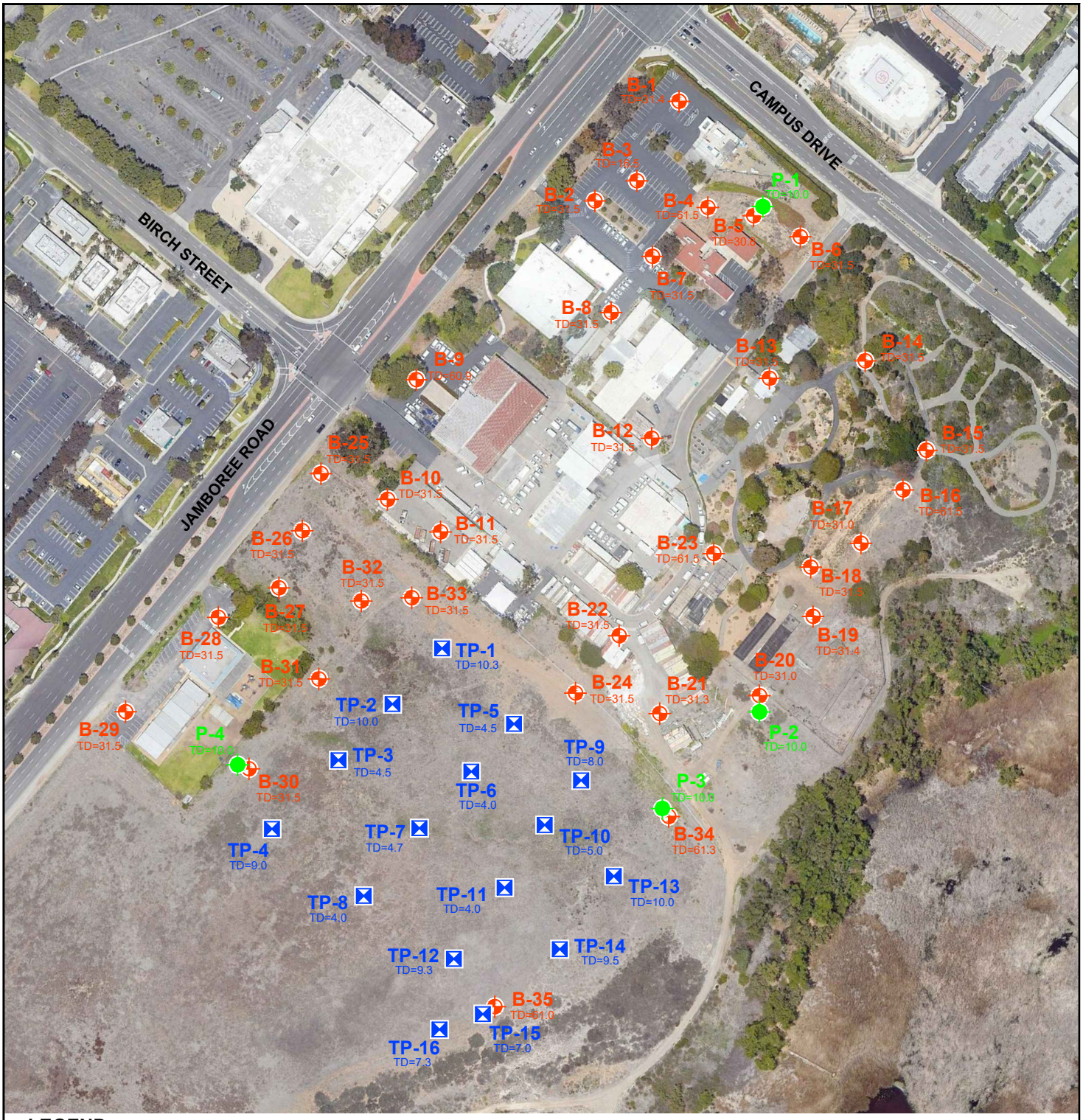

LEGEND

B-35 TD=61.0 — BORING; TD=TOTAL DEPTH IN FEET

P-4 TD=10.0 — PERCOLATION TEST; TD=TOTAL DEPTH IN FEET

TP-16 TD=7.3 — TEST PIT; TD=TOTAL DEPTH IN FEET

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: GOOGLE EARTH, 2019.

N

FEET

0 250 500

209570014_BTPL.dwg 10/07/2019 GK, JDP

FIGURE 2

BORING AND TEST PIT LOCATIONS

UCI NORTH CAMPUS
IRVINE, CALIFORNA

209570014 I 11/19

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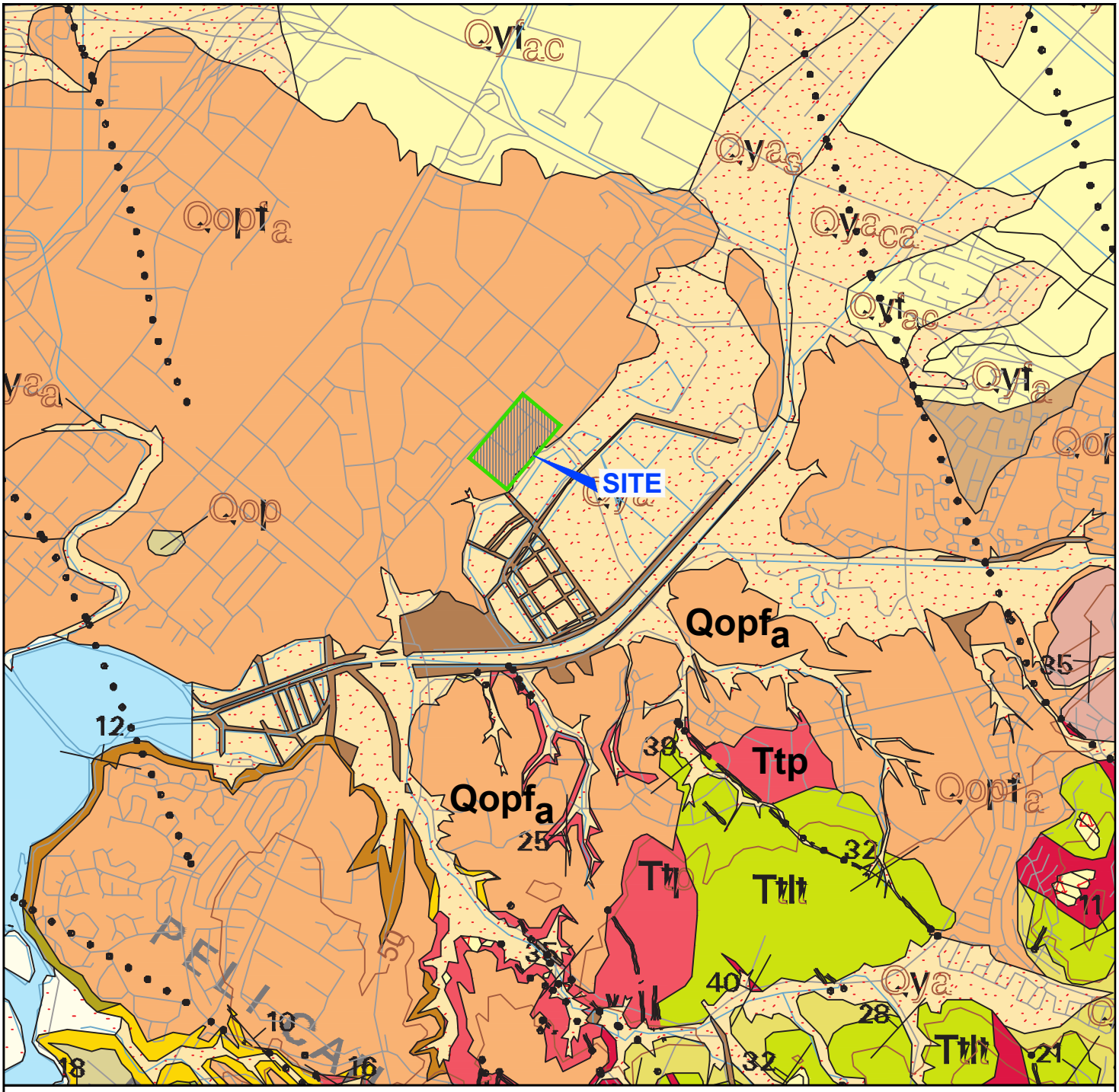

LEGEND

Qya	AXIAL CHANNEL DEPOSITS	Ttp	TOPANGA FORMATION - PAULARINO MEMBER
$Qopf_a$	MARINE TERRACE DEPOSITS	Ttlt	TOPANGA FORMATION - LOS TRANCOS MEMBER
— —••••	FAULT	~	GEOLOGIC CONTACT

N

FEET

0 3,000 6,000

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: R.V. MILLER AND S.S. TAN, 1976.

209570014_RG.dwg 10/07/2019 GK

FIGURE 3

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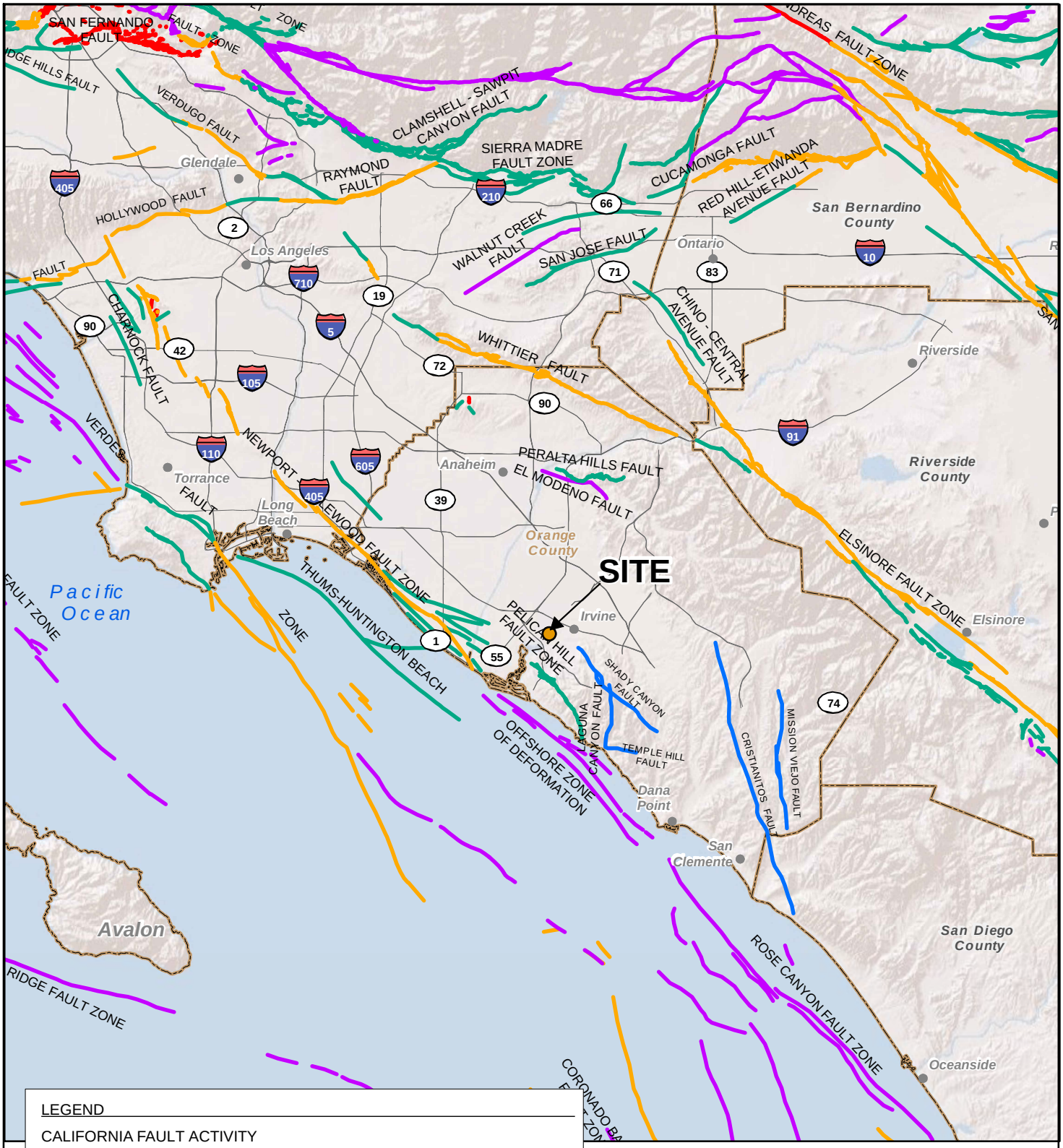
REGIONAL GEOLOGY

UCI NORTH CAMPUS
IRVINE, CALIFORNA

209570014 I 11/19



LEGEND

CALIFORNIA FAULT ACTIVITY

- HISTORICALLY ACTIVE
- HOLOCENE ACTIVE
- LATE QUATERNARY (POTENTIALLY ACTIVE)
- QUATERNARY (POTENTIALLY ACTIVE)
- QUATERNARY (INACTIVE)
- STATE/COUNTY BOUNDARY

SOURCES: CALIFORNIA DIVISION OF MINES AND GEOLOGY, 1976, ENVIRONMENTAL GEOLOGY OF ORANGE COUNTY, CALIFORNIA, OPEN FILE REPORT 79-8.; JENNINGS, C.W., AND BRYANT, 2010, FAULT ACTIVITY MAP OF CALIFORNIA; ESRI SHADED RELIEF, 2017

N

MILES 0 10 20

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

209570014_FL.mxd 6/17/2019 GK

FIGURE 4

FAULT LOCATIONS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 | 11/19

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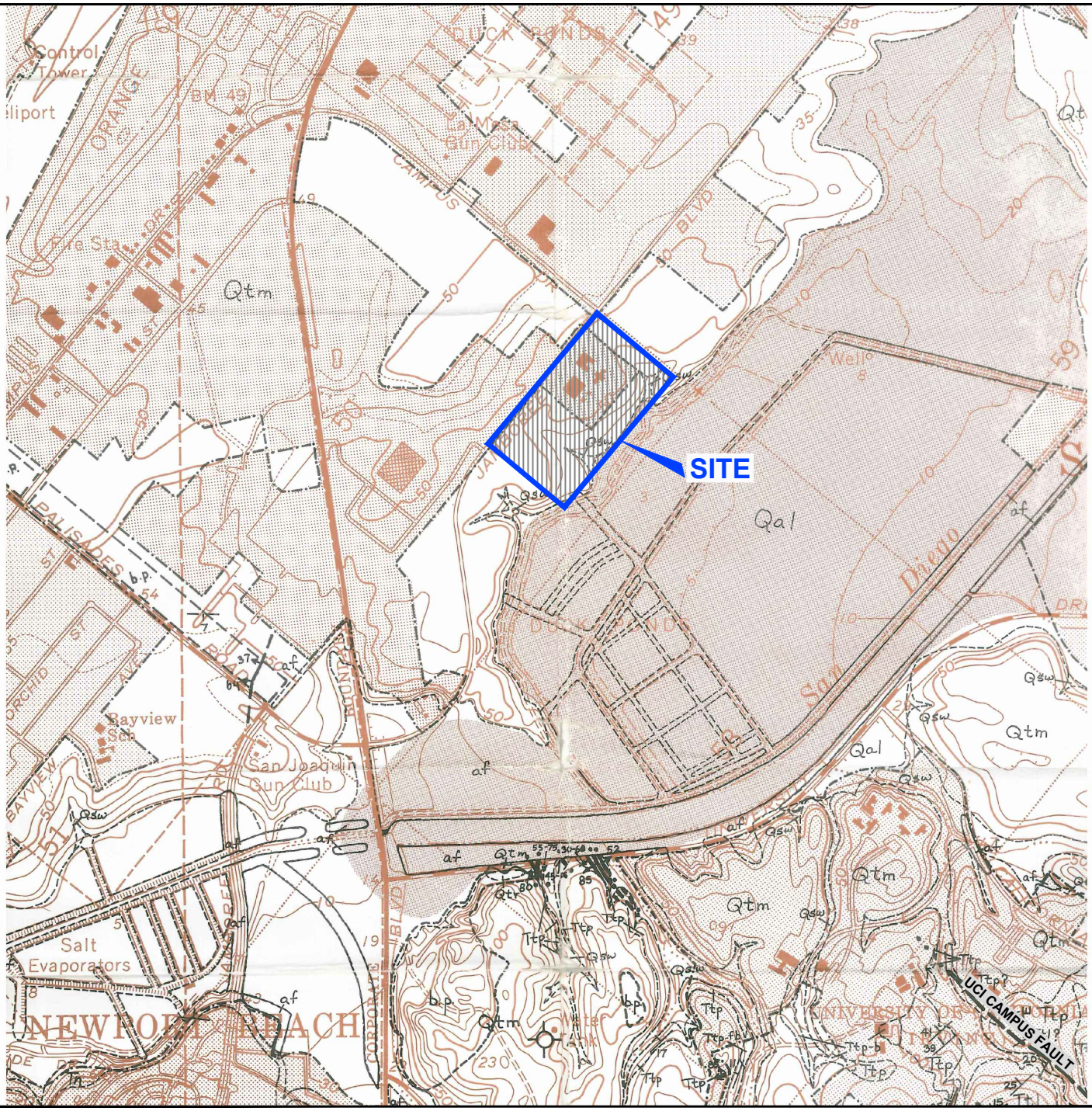

LEGEND

Qsw	SLOPEWASH DEPOSITS
Qtm	MARINE TERRACE DEPOSITS
	DEVELOPED AREA WITH UNDELINEATED ARTIFICIAL CUTS AND FILLS (1976).
	APPROXIMATE GEOLOGIC CONTACT

TOPANGA FORMATION

Ttp	PAULARINO MEMBER
Ttl	LOS TRANCOS MEMBER
Ttb	BOMMER MEMBER
	FAULT

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: R.V. MILLER AND S.S. TAN, 1976.

N

FEET

0 1,500 3,000

209570014_CF.dwg 10/07/2019 GK

FIGURE 5

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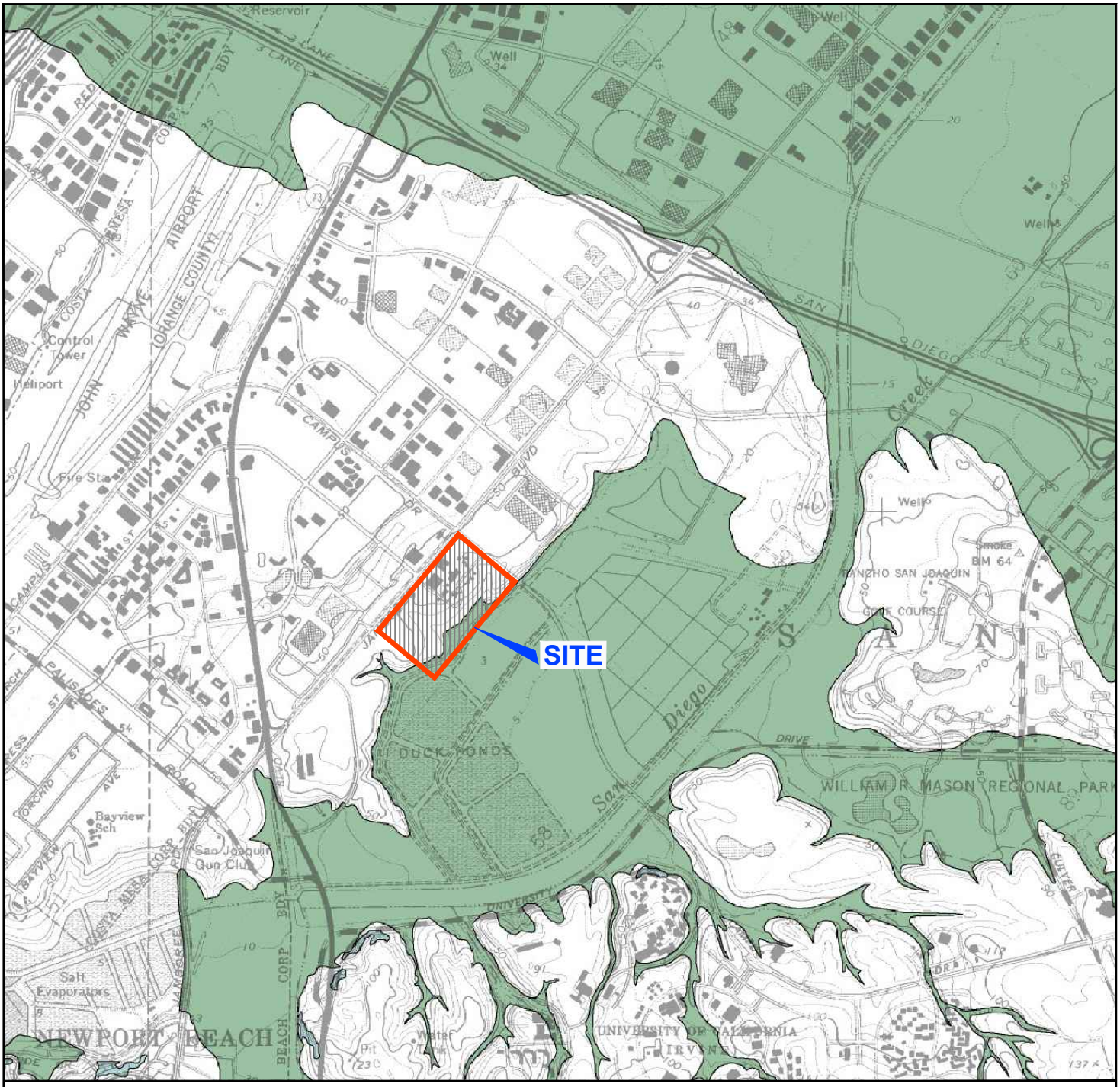
UCI CAMPUS FAULT

UCI NORTH CAMPUS
IRVINE, CALIFORNA

209570014 I 11/19



LEGEND

LIQUEFACTION
Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

EARTHQUAKE-INDUCED LANDSLIDES
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: CGS, 2001.

N

FEET
0 2,000 4,000

209570014_SHZ.dwg 10/07/2019 GK

FIGURE 6

SEISMIC HAZARD ZONES

UCI NORTH CAMPUS
IRVINE, CALIFORNA

209570014 I 11/19

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APPENDIX A

Boring Logs

APPENDIX A

BORING LOGS

Field Procedure for the Collection of Disturbed Samples
Disturbed soil samples were obtained in the field using the following method.

Bulk Samples
Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler
Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of $1^3/_8$ inches. The sampler was driven into the ground 12 to 18 inches with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed, and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples
Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler
The sampler, with an external diameter of 3 inches, was lined with 1-inch-long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

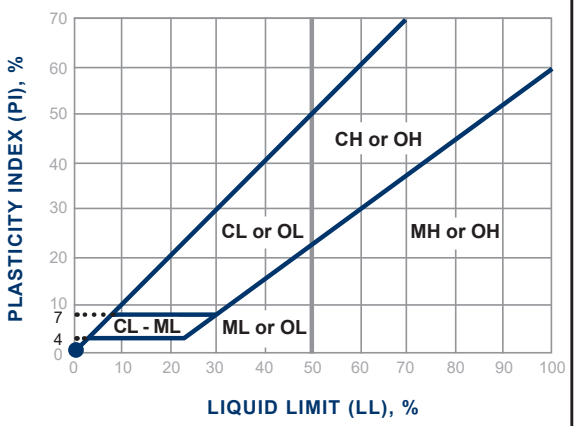
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 4 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consis-tency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

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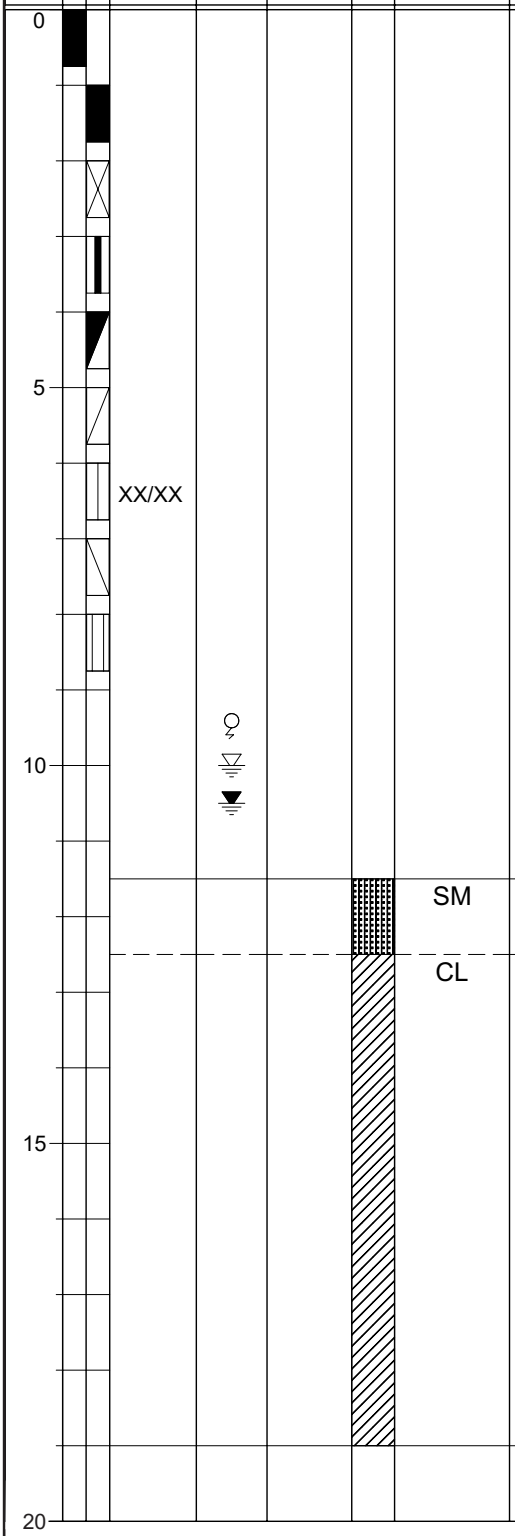
USCS METHOD OF SOIL CLASSIFICATION

BORING LOG EXPLANATION SHEET



Bulk sample.

Modified split-barrel drive sampler.

No recovery with modified split-barrel drive sampler.

Sample retained by others.

Standard Penetration Test (SPT).

No recovery with a SPT.

Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.

No recovery with Shelby tube sampler.

Continuous Push Sample.

Seepage.

Groundwater encountered during drilling.

Groundwater measured after drilling.

SM

MAJOR MATERIAL TYPE (SOIL):

Solid line denotes unit change.

CL

Dashed line denotes material change.

Attitudes: Strike/Dip
b: Bedding
c: Contact
j: Joint
f: Fracture
F: Fault
cs: Clay Seam
s: Shear
bss: Basal Slide Surface
sf: Shear Fracture
sz: Shear Zone
sbs: Shear Bedding Surface

The total depth line is a solid line that is drawn at the bottom of the boring.

DATE DRILLED 6/1/19 BORING NO. B-1

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	ASPHALT CONCRETE: Approximately 2 inches thick.
						CL	AGGREGATE BASE: Gray, moist, dense, silty GRAVEL with sand; approximately 5.5 inches thick.
							FILL: Reddish brown, moist, stiff, sandy CLAY; few pockets of sand; trace fine angular gravel.
						CL	TERRACE DEPOSITS: Olive brown, moist, stiff, CLAY; layers of white calcium carbonate.
		6					
10		54	16.6	114.1			Reddish brown mottled; hard.
		21					
							Sandy.
20		46	23.3	101.9			Grayish brown mottled.
		21					Olive brown.
						SP-SM	Grayish brown, moist, very dense, poorly graded SAND with silt.
30		50/5					
							Total Depth = 31.4 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil and patched with rapid-set concrete dyed black on 6/1/19.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

FIGURE A- 1

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UCI NORTH CAMPUS
IRVINE, CALIFORNIA

DATE DRILLED 6/1/19 BORING NO. B-2

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 2.5 inches thick.
						CL	AGGREGATE BASE: Gray, moist, dense, silty GRAVEL with sand; approximately 6 inches thick. FILL: Dark grayish brown, moist, stiff, CLAY.
		9				SM	TERRACE DEPOSITS: Yellowish brown, moist, medium dense, silty SAND; interbedded layers of sandy clay.
						ML	Reddish to yellowish brown, moist, hard, SILT.
10		30	24.1	100.5			
						SM	Yellowish brown, moist, dense, silty SAND.
		24					
						CL	Olive brown, reddish brown mottled, moist, hard, CLAY.
20		26					
		21					
						SP-SM	Yellowish brown, moist, very dense, poorly graded SAND with silt.
30		50/6"					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil and patched with rapid-set concrete dyed black on 6/1/19.
40							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 6/1/19 BORING NO. B-3

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 2 inches thick.
						CL	AGGREGATE BASE: Gray, moist, dense, silty GRAVEL with sand; approximately 8 inches thick.
							FILL: Brown, grayish brown mottled, moist, sandy CLAY; scattered pockets of sand.
		23	22.4	102.9		CL	TERRACE DEPOSITS: Olive brown, moist, hard CLAY; trace caliche.
10		20				SM	Grayish brown, moist, medium dense, silty SAND.
		33	23.4	100.9		CH	Olive brown, moist, hard, fat CLAY; few caliche.
20							Total Depth = 16.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil and patched with rapid-set concrete dyed black on 6/1/19.
30							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
40							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 6/3/19 BORING NO. B-4

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	TERRACE DEPOSITS: Dark brown, moist, hard, CLAY; few caliche; interbedded layers of silty sand.
		50/11"	16.0	113.6			Decrease in sand.
10		27					
		36	18.7	105.9			Few fine gravel.
20		20					Olive brown; reddish brown mottled; very stiff; laminated.
		58	21.0	106.3			Hard. @27': Groundwater encountered during drilling; wet.
						SP	Grayish brown, wet, very dense, poorly graded SAND.
30		56					
						CL	Gray, wet, very stiff, sandy CLAY.
		22					
						ML	Gray, wet, stiff, SILT.
40							

FIGURE A- 4

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UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 | 11/19

DATE DRILLED 6/3/19 BORING NO. B-4

GROUND ELEVATION 50' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40						ML	TERRACE DEPOSITS: (Continued) Gray, wet, stiff, SILT.
		21	42.6	78.9		CL	Gray, wet, very stiff, CLAY.
						SM	Olive brown, wet, dense, silty SAND; trace clay.
50		27					
		50/6"				SP	Gray, wet, very dense, poorly graded SAND; fine sand.
60		47					
							Total Depth = 61.5 feet. Groundwater encountered during drilling at approximately 27 feet. Backfilled with bentonite cement grout on 6/3/19. Notes: Groundwater may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report for groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
70							
80							

DATE DRILLED 6/3/19 BORING NO. B-5

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	FILL: Dark grayish brown, moist, hard, sandy CLAY; few scattered fine angular gravel.
		25					
10		36	20.5	105.9		CH	Dark grayish brown, moist, hard, fat CLAY.
						CL	TERRACE DEPOSITS: Dark brown, moist, very stiff, CLAY; few caliche; interbedded layers of silty sand.
		12					
20		37					Hard; sandy.
			▼				@23': Groundwater measured after drilling; wet.
						SP	Olive brown, wet, dense, poorly graded SAND; fine sand.
		27					
30		50/8"	26.8	96.9			Very dense.
							Total Depth = 30.8 feet. Groundwater measured after drilling at approximately 23 feet. Backfilled with bentonite cement grout and capped with on-site soil on 6/3/19.
							Notes: Groundwater may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report for groundwater monitoring recommendations.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

DATE DRILLED 6/3/19 BORING NO. B-6

GROUND ELEVATION 45' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	TERRACE DEPOSITS: Reddish brown, moist, medium dense, lean CLAY; few scattered gravel.
		47	17.2	109.9			Dark grayish brown; hard; caliche; no gravel observed.
10		26					Reddish brown.
		52					
						SM	Gray, moist, very dense, silty SAND.
20		43					
			▽				@23.8': Groundwater encountered during drilling; wet.
						SP	Gray, wet, very dense, poorly graded SAND; fine sand.
		50/6"					
						ML	Olive brown, interbedded layers of reddish brown, wet, hard, SILT; laminated.
30		28					
							Total Depth = 31.5 feet. Groundwater encountered during drilling at approximately 23.8 feet. Backfilled with bentonite cement grout and capped with on-site soil on 6/3/19.
40							Notes: Groundwater may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report for groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 6/1/19 BORING NO. B-7

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	TERRACE DEPOSITS: Grayish brown, moist, very stiff, CLAY; few caliche.
		17					
						SP	Light yellowish brown to white, moist, very dense, poorly graded SAND; fine sand.
10		83/12"					
						CL	Reddish brown, moist, very stiff, sandy CLAY.
		14					
20		40	20.7	105.7			Hard.
		28					Few rootlets; laminated.
						SP-SM	Yellowish brown, moist, dense, poorly graded SAND with silt.
30		70					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 6/1/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

DATE DRILLED 6/8/19 BORING NO. B-8

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	ASPHALT CONCRETE: Approximately 3 inches thick.
						CL	AGGREGATE BASE: Gray, moist, dense, silty GRAVEL with sand; approximately 6 inches thick.
							TERRACE DEPOSITS: Reddish brown, moist, hard, CLAY with caliche.
		28					
						SM	Reddish brown, moist, dense, silty SAND; few oxidation stains.
10		54	9.8	109.2			
						CL	Olive brown, moist, very stiff, sandy CLAY; trace caliche; trace coarse sand.
		15					
20		61					Hard.
						SM	Yellowish brown to white, moist, dense, silty SAND.
						CL	Grayish brown, moist, very stiff, sandy CLAY; few oxidation stains; thin interbeds of silty sand.
		15					
						SM	Olive brown, moist, dense, silty SAND; few oxidation stains.
30		58					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with with on-site soil and patched with rapid-set concrete dyed black on 6/8/19.
40							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 6/7/19 BORING NO. B-9

GROUND ELEVATION ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	ASPHALT CONCRETE: Approximately 5 inches thick.
						CL	AGGREGATE BASE: Gray, moist, dense, silty GRAVEL with sand; approximately 6 inches thick. TERRACE DEPOSITS: Reddish brown, moist, very stiff, CLAY with few caliche.
		12					
						SM	Yellowish brown, moist, very dense, silty SAND.
10		50/6"	7.6	102.7		SP	Grayish brown, moist, very dense, poorly graded SAND.
						CL	Olive brown, moist, very stiff, CLAY.
		16					
20		32	23.1	125.6		CH	Olive brown, moist, hard, fat CLAY.
						SM	Olive brown, moist, dense, silty SAND.
		26					
			▽				@28.7': Groundwater encountered during drilling; wet.
30		76/10"				SP	Yellowish brown, wet, very dense, poorly graded SAND; oxidation staining.
						CH	Grayish brown, moist, stiff, CLAY.
		7					
40							

FIGURE A- 10

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209570014 | 11/19

DATE DRILLED 6/7/19 BORING NO. B-9

GROUND ELEVATION ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40	Driven	10	54.3	68.5		CH	TERRACE DEPOSITS: (Continued) Gray, moist, stiff, CLAY; thin interbeds of sand.
	Driven	5					Firm.
50	Driven	10					Stiff.
	Driven	10					
60	Driven	50/5"				SP-SM	Gray, moist, very dense, poorly graded SAND with silt.
							Total Depth = 60.9 feet. Groundwater encountered during drilling at approximately 28.7 feet. Backfilled with bentonite cement grout and patched with rapid-set concrete dyed black on 6/7/19. Notes: Groundwater may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report for groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
70							
80							

DATE DRILLED 5/8/19 BORING NO. B-10

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3.5 inches thick.
						CL	AGGREGATE BASE: Grayish brown, moist, dense, silty GRAVEL with sand; approximately 5 inches thick.
							FILL: Grayish brown, reddish brown mottled, moist, stiff, CLAY; trace angular fine gravel; few sand.
		24				CL	TERRACE DEPOSITS: Grayish brown, moist, very stiff, CLAY; layers of caliche.
10		21					Mottled reddish brown; hard.
						SM	Yellowish brown, moist, medium dense, silty SAND; fine to medium sand.
		37	12.2	94.6			Laminated.
						CL	Yellowish brown, reddish brown mottled, very stiff CLAY.
20		18					
		25				SM	Yellowish brown, moist, medium dense, silty SAND; fine to medium sand.
							@ 26': Slight chatter on gravel.
						CL	Yellowish brown, reddish brown mottled, moist, hard, sandy CLAY; layers of caliche.
30		45				SM	Yellowish brown, moist, very dense, silty SAND.
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil and patched with cold patch asphalt on 5/28/19. Patched with rapid-set concrete dyed black on 5/31/19.
40							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 5/28/19 BORING NO. B-11

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	ASPHALT CONCRETE: Approximately 3.5 inches thick. AGGREGATE BASE: Grayish brown, moist, dense, silty GRAVEL with sand; approximately 2 inches thick. FILL: Grayish brown, reddish brown mottled, moist, stiff, sandy CLAY; trace fine angular gravel.
		14				CL	TERRACE DEPOSITS: Grayish brown, moist, very stiff, CLAY; few layers of caliche; little sand.
10		28	14.2	115.6		ML	Olive brown, moist, medium dense, sandy SILT with gravel; trace rootlets.
		20				CL	Olive brown, moist, very stiff, CLAY.
20		29	16.4	112.0			Hard.
		63				SM	Yellowish brown, moist, very dense, silty SAND; fine to medium sand; few layers oxidized reddish brown. Drill stem chatter at approximately 22 feet.
30		32	23.4	101.2		CL	Olive brown, moist, hard, CLAY; with shell fragments up to approximately 3/8 inch diameter.
40							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil and patched with cold patch asphalt on 5/28/19. Patched with rapid-set concrete dyed black on 5/31/19.

Notes:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 6/7/19 BORING NO. B-12

GROUND ELEVATION ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	ASPHALT CONCRETE: Approximately 2.5 inches thick.
						CL	AGGREGATE BASE: Gray, moist, dense, silty GRAVEL with sand; approximately 7 inches thick.
							TERRACE DEPOSITS: Reddish brown, moist, stiff, sandy CLAY.
		32	35.4	85.3			Yellowish brown; hard.
10		18					With caliche.
		23	19.4	108.6			Grayish brown; trace caliche.
20		19					Yellowish brown; very stiff.
		73					Hard; grayish brown mottled.
						SP	Grayish brown, moist, very dense, poorly graded SAND.
							@29': Groundwater encountered during drilling; wet.
30		49					
							Total Depth = 31.5 feet. Groundwater encountered during drilling at approximately 29 feet. Backfilled with bentonite cement grout and patched with rapid-set concrete dyed black on 6/7/19.
							Notes: Groundwater may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report for groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

FIGURE A- 14

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DATE DRILLED 6/11/19 BORING NO. B-13

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	ASPHALT CONCRETE: Approximately 5 inches thick. TERRACE DEPOSITS: Dark reddish brown, moist, stiff, CLAY; trace to few caliche.
		6					Olive brown.
10		32	29.6	90.5		CH	Olive brown, moist, hard, fat CLAY.
		18					Very stiff.
20		49					Hard.
		35				SP	Olive brown, moist, very dense, poorly graded SAND; fine sand.
							@26.9': Groundwater encountered during drilling; wet.
30		83					Few layers of oxidized reddish brown.
							Total Depth = 31.5 feet. Groundwater encountered during drilling at approximately 29.9 feet. Backfilled with bentonite cement grout and patched with rapid-set concrete dyed black on 6/11/19.
40							Notes: Groundwater may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report for groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 6/11/19 BORING NO. B-14

GROUND ELEVATION ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	ASPHALT CONCRETE: Approximately 3 inches thick.
						CL	AGGREGATE BASE: Gray, moist, dense, silty GRAVEL with sand; approximately 2 inches thick.
							TERRACE DEPOSITS: Olive brown, moist, hard, CLAY with caliche; trace rootlets.
		61	23.2	102.9		SM	White, moist, dense, silty SAND; fine sand.
						CL	Olive brown, moist, very stiff, CLAY; trace rootlets.
10		14					
						SM	Yellowish brown, moist, very dense, silty SAND.
		75	20.6	102.4			
			▽				@17.8': Groundwater encountered during drilling; wet.
20		50					Few thinly interbedded layers of oxidized reddish brown.
						CH	Grayish brown, reddish brown mottled, moist to wet, very stiff, CLAY; oxidized.
		13	47.4	73.6			
30		18					With caliche.
							Total Depth = 31.5 feet. Groundwater encountered during drilling at approximately 17.8 feet. Backfilled with bentonite cement grout and patched with rapid-set concrete dyed black on 6/11/19.
							Notes: Groundwater may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report for groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

FIGURE A- 16

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DATE DRILLED 6/11/19 BORING NO. B-15

GROUND ELEVATION 30' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	AGGREGATE BASE:
						CL	Gray, moist, dense, silty GRAVEL with sand; approximately 2 inches thick.
							TERRACE DEPOSITS:
							Olive gray, moist, stiff, CLAY; few rootlets; trace sea shells; trace sand.
		9					
10		38					Grayish brown; hard; increase in sand.
							Chatter.
		11					Olive brown; very stiff; trace to few caliche.
20		26					
		15					Very stiff; thin interbeds of silty sand.
30		33					Hard; layer of coarse clayey sand.
							Total Depth = 31.5 feet.
							Groundwater was not encountered during drilling.
							Backfilled with on-site soil on 6/11/19.
							Notes:
							Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

DATE DRILLED 6/11/19 BORING NO. B-16

GROUND ELEVATION ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	ALLUVIUM: Dark brown, moist, hard, CLAY; few caliche; trace sea shell fragments; trace coarse sand; few rootlets.
							Black.
		16	20.3	100.2			
10		16					
		25	22.0	105.9			Olive brown; hard.
							Very stiff.
20		14					Trace caliche.
		29					Hard.
							Sandy.
30		28					
						SP	TERRACE DEPOSITS: Yellowish brown, moist, very dense, poorly graded SAND.
			▽				@34': Seepage encountered during drilling; wet.
		90/9"					
			▽				@39.4': Groundwater encountered during drilling; wet.
40							

FIGURE A- 18

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DATE DRILLED 6/11/19 BORING NO. B-16

GROUND ELEVATION ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40	Driven	42				SP	TERRACE DEPOSITS: (Continued) Yellowish brown, wet, very dense, poorly graded SAND; medium sand.
	Driven	50/5"					
50	Driven	28					Gray.
	Driven	51	27.1	94.8			Dense; fine sand.
60	Driven	79					Very dense.
							Total Depth = 61.5 feet. Groundwater encountered during drilling at approximately 39.4 feet. Seepage encountered during drilling at approximately 34 feet. Backfilled with bentonite cement grout and patched with on-site soil on 6/11/19. Notes: Groundwater may rise to a level higher than that measured in borehole due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
70							
80							

DATE DRILLED 6/8/19 BORING NO. B-17

GROUND ELEVATION 30' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	TOPSOIL: Grayish black, moist, very stiff, lean CLAY.
		13				CL	ALLUVIUM: Olive brown, moist, very stiff, CLAY; few sand.
10		26	21.1	102.6			
						SP-SM	TERRACE DEPOSITS: Yellowish brown, moist, medium dense, poorly graded SAND with silt; trace oxidation stains; massive.
		46					Very dense; thin interbeds oxidized at contacts between layers.
20		50/4"	4.3	95.4			
		43					
30		50/6"					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 6/8/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

DATE DRILLED 6/8/19 BORING NO. B-18

GROUND ELEVATION 40' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	ALLUVIUM: Dark reddish brown, moist, stiff, CLAY with rootlets.
						SC	Yellowish brown, moist, medium dense, clayey SAND.
						SP	Yellowish brown, moist, medium dense, poorly graded SAND; few oxidation stains.
		40	12.5	104.9			
						CL	Olive brown, moist, very stiff, sandy CLAY with caliche.
10		17					
		25					Hard.
						SP	TERRACE DEPOSITS: Yellowish brown, moist, very dense, poorly graded SAND; fine sand; massive.
20		44					
		50/5"					Trace oxidation stains.
30		52					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 6/8/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

FIGURE A- 21

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DATE DRILLED 5/3/19 BORING NO. B-19

GROUND ELEVATION 30' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		9				CL	ALLUVIUM: Grayish brown, moist, stiff, sandy CLAY; few precipitates consisting of calcite.
10		50/5"	4.7	103.8		SP-SM	TERRACE DEPOSITS: Grayish brown to white, moist, very dense, poorly graded SAND with silt.
		45					
20		89/12"					Trace oxidation stains.
		57					
30		77/11"					Oxidized reddish brown.
							Total Depth = 31.4 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 5/31/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

DATE DRILLED 5/29/19 BORING NO. B-20

GROUND ELEVATION 30' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	FILL: Dark brown, moist, stiff, CLAY; few sand pockets.
		10				CL	ALLUVIUM: Brown, moist, stiff, CLAY; few to little caliche.
10		32	16.2	112.4			Mottled reddish brown; hard.
		29					Interbedded layers of sandy clay.
20		83/12"	3.8	96.1		SP-SM	TERRACE DEPOSITS: Light yellowish brown, reddish brown oxidized, moist, very dense, poorly graded SAND with silt. Thin layers oxidized reddish brown.
		42					
30		50/6"					
							Total Depth = 31.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 5/29/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
40							

DATE DRILLED 5/28/19 BORING NO. B-21

GROUND ELEVATION 40' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	BASE:
						CL	Gray, moist, dense, silty GRAVEL with sand; approximately 2 inches thick.
							ALLUVIUM:
							Reddish brown, grayish brown mottled, moist, stiff, CLAY; trace fine angular gravel.
							Grayish brown; trace gypsum crystals.
		10				SM	Yellowish brown, moist, medium dense, silty SAND; trace gypsum crystals.
10		60	15.0	108.6			Increase in gypsum crystals; dense.
						CL	Olive brown, moist, very stiff, CLAY.
		14					
							Yellowish brown, reddish brown oxidized; few sand.
20		31	21.5	101.4			Hard.
		35				SP-SM	TERRACE DEPOSITS:
							Grayish brown, moist, very dense, poorly graded SAND with silt.
30		96/9"					
							Total Dept = 31.3 feet.
							Groundwater was not encountered during drilling.
							Backfilled with on-site soil on 5/28/19.
							Notes:
							Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

DATE DRILLED 5/28/19 BORING NO. B-22

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	AGGREGATE BASE:
						CL	Gray, moist, dense, silty GRAVEL with sand; approximately 2 inches thick.
							FILL:
		48	17.6	109.6			Grayish brown, reddish brown mottled, moist, hard, CLAY; trace angular fine gravel.
						CL	TERRACE DEPOSITS:
10		9					Olive brown, moist, stiff, CLAY; few layers of gypsum crystals.
		61				SC	Yellowish brown, reddish brown oxidized, moist, dense, clayey SAND; few layers of silty sand.
						CL	Olive brown, moist, very stiff, CLAY; few pockets of sand.
20		23					Hard.
		33	25.7	97.2			Yellowish brown; few oxidized veins.
						SM	Yellowish brown, moist, very dense, silty SAND; fine to medium sand.
30		67					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 5/28/19.
40							

Notes:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 5/29/19 BORING NO. B-23

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	FILL: Reddish brown, moist, stiff, sandy CLAY; few sand pockets.
		18	22.5	101.3		CL	TERRACE DEPOSITS: Reddish brown, moist, very stiff, lean CLAY; few caliche. Drill stem chatter. Olive brown; few layers of gypsum crystals.
10		15					Drill stem chatter.
		40	22.9	105.9			Hard; few thin layers of clayey sand.
						SP-SM	Yellowish brown, moist, medium dense, poorly graded SAND with silt; trace to few layers oxidized reddish brown.
20		16				CL	Yellowish brown, moist, medium dense, poorly graded SAND with silt; trace to few layers oxidized reddish brown.
		38	23.6	103.0			
30		30				SP	White, moist, very dense, poorly graded SAND; thin layers oxidized reddish brown.
		50/6"					
40							

FIGURE A- 26

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DATE DRILLED 5/29/19 BORING NO. B-23

GROUND ELEVATION 50' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40			67				SP-SM	TERRACE DEPOSITS: (Continued) White to light yellowish brown, moist, very dense, poorly graded SAND with silt; few thin layers oxidized reddish brown.
			50/5"					
50			73					
			50/6"	3.1	99.9			Gray.
60			74					
								Total Depth = 61.5 feet. Groundwater was not encountered during drilling. Backfilled with cement-bentonite grout on 5/29/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
70								
80								

DATE DRILLED 5/31/19 BORING NO. B-24

GROUND ELEVATION 40' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	TERRACE DEPOSITS: Dark grayish brown, moist, hard, CLAY with caliche.
		30	29.3	90.4			
10		29				SM	Yellowish brown, reddish brown oxidized, moist, dense, silty SAND.
		34	18.4	108.5		CL	Yellowish brown, moist, hard, sandy CLAY; oxidized reddish brown.
20		18					Very stiff.
			♀				@ 23': Seepage encountered during drilling; wet.
		43					Reddish brown, yellowish brown mottled; hard.
						SP	Yellowish brown, moist, very dense, poorly graded SAND; thin interbeds of clay.
30		54					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. No groundwater in boring after measurement at completion of boring. Seepage encountered at approximately 23 feet. Backfilled with cement-bentonite grout on 5/31/19.
40							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 5/30/19 BORING NO. B-25

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CH	TERRACE DEPOSITS: Dark grayish brown, moist, hard, CLAY; with caliche.
		80/12"	14.1	111.7			Interbedded layers of yellowish brown; sandy clay.
						SP	Yellowish brown, moist, very dense, poorly graded SAND.
10		50					
						CH	Olive brown, reddish brown mottled, moist, hard, CLAY; few interbedded layers of silty sand.
		32					
20		20					
		36					
						SC	Yellowish brown, moist, medium dense, clayey SAND.
						CH	Gray, moist, hard, CLAY; few scattered medium to coarse sand.
30		25					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 5/30/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

FIGURE A- 29

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DATE DRILLED 5/30/19 BORING NO. B-26

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	FILL: Reddish brown, moist, stiff, sandy CLAY; few rootlets.
		30				CL	TERRACE DEPOSITS: Dark grayish brown, moist, hard, lean CLAY; with caliche veins.
10		50/6"	13.7	111.0			
		18					Very stiff.
20		35	24.2	99.2			Hard; few sand; reddish brown mottled.
						SP	Yellowish brown, moist, very dense, poorly graded SAND; fine sand.
		91/11"				SM	Yellowish brown, moist, very dense, silty SAND.
30		20				CL	Yellowish brown, moist, very stiff, sandy CLAY.
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 5/30/19.
40							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

FIGURE A- 30

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DATE DRILLED 5/30/19 BORING NO. B-27

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	FILL: Dark brown, moist, stiff, lean CLAY; trace coarse gravel-sized asphalt fragments.
		24	19.9	105.4		CH	TERRACE DEPOSITS: Dark brown, moist, very stiff, fat CLAY; few caliche.
10		17					Olive brown.
		32					Reddish brown mottling; hard.
						SC	Reddish brown, yellowish brown mottled, moist, very dense, clayey SAND.
20		68				SP	Yellowish brown, moist, very dense, poorly graded SAND.
		50/5"	9.0	100.1			
						CL	Yellowish brown, reddish brown mottled, moist, hard, sandy CLAY.
30		22					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 5/30/19.
40							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 6/8/19 BORING NO. B-28

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	ASPHALT CONCRETE: Approximately 4 inches thick.
						GM	AGGREGATE BASE: Brown, moist, dense, silty GRAVEL with sand; approximately 2 inches thick.
						CL	ASPHALT CONCRETE: Approximately 3 inches thick.
							AGGREGATE BASE: Gray, moist, dense, silty GRAVEL with sand; approximately 3 inches thick.
		13				CL	FILL: Dark grayish brown, moist, stiff, sandy CLAY; trace angular coarse sand; few rootlets.
							TERRACE DEPOSITS: Grayish brown, moist, very stiff, CLAY with caliche.
10		48	7.9	107.8		SP	Yellowish brown, moist, medium dense, poorly graded SAND.
						CL	Olive brown, moist, very stiff, CLAY.
		19					
20		77/10"				SM	White, moist, very dense, silty SAND.
						SP	Yellowish brown to white, moist, very dense, poorly graded SAND.
		69					
						CL	Olive brown, moist, hard, CLAY; trace oxidation staining.
30		28					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil and patched with rapid-set concrete dyed black on 6/8/19.
40							

Notes:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 6/1/19 BORING NO. B-29

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3.5 inches thick.
						CL	AGGREGATE BASE: Gray, moist, dense, silty GRAVEL with sand; approximately 5 inches thick.
							TERRACE DEPOSITS: Dark reddish brown, moist, hard CLAY with caliche.
		27	15.2	114.6		SM	Reddish brown, moist, medium dense, silty SAND; trace clay pockets.
10		26					Thin interbeds of sandy clay.
		44				SP-SM	Brown, moist, dense, poorly graded SAND with silt.
						CL	Olive, moist, hard, CLAY.
20		23					
						SC	Yellowish brown, grayish brown mottled, moist, very dense, clayey SAND.
		50/4"				SP	Yellowish brown, moist, very dense, poorly graded SAND; fine sand.
						CL	Olive, moist, very stiff, CLAY.
30		12					
		27	26.0	97.0			Yellowish brown; hard; sandy.
40							

FIGURE A- 33

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DATE DRILLED 6/1/19 BORING NO. B-29

GROUND ELEVATION 50' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40		16					TERRACE DEPOSITS: (Continued) Dark gray, moist, very stiff, CLAY.
			▼				@ 43.3': Groundwater measured immediately after drilling.
		76					Yellowish brown; hard; sandy.
						SM	Yellowish brown, moist, very dense, silty SAND; grayish brown mottled.
			▽				@ 48.4': Groundwater encountered during drilling; wet.
50		44					Thin interbeds of sandy clay.
						CH	Dark grayish brown, wet, hard, fat CLAY.
		55	22.3	103.7			
60		12					Bluish gray; very stiff; laminated.
							Total Depth = 61.5 feet. Groundwater was encountered during drilling at approximately 48.4 feet. Groundwater was measured immediately after drilling at approximately 43.3 feet. Backfilled with cement-bentonite grout and patched with rapid-set concrete dyed black on 5/31/19. Notes: Groundwater may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Please refer to the report for groundwater monitoring recommendations. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
70							
80							

FIGURE A- 34

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DATE DRILLED 5/31/19 BORING NO. B-30

GROUND ELEVATION 50 ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	TERRACE DEPOSITS: Dark grayish brown, moist, hard, CLAY; with caliche; thin layers of reddish brown, sandy clay.
		28					
						SP	Yellowish brown, moist, very dark, poorly graded SAND; fine to medium sand.
10		76	1.8	111.2			
						CL	Olive brown, moist, very stiff, CLAY.
		17					
							TOPANGA FORMATION: Black, moist, strongly indurated, CLAYSTONE.
20		84	16.0	115.6			
							Yellowish brown, moist, moderately cemented, friable SANDSTONE; few oxidation stains.
		50					
							Yellowish brown mottled gray and reddish brown, moist, moderately indurated, weathered CLAYSTONE.
30		34					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 5/31/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

FIGURE A- 35

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DATE DRILLED 5/31/19 BORING NO. B-31

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	TERRACE DEPOSITS: Reddish brown, moist, hard, sandy CLAY.
		23	23.5	100.6			Reddish brown mottled; laminated.
10		11					Not laminated; very stiff.
		68	9.5	119.0		SM	Light yellowish brown, moist, very dense, silty SAND; thinly interbedded.
							Oxidized reddish brown at contacts between layers.
20		50					
		34	24.0	99.3		CL	Olive brown, moist, hard, sandy CLAY; laminated; caliche at contacts between layers.
30		20					Very stiff.
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 5/31/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

DATE DRILLED 5/30/19 BORING NO. B-32

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	TERRACE DEPOSITS: Reddish gray, moist, firm, sandy CLAY; trace rootlets.
		5					
						CH	Olive brown, moist, hard, fat CLAY; with caliche.
10		55	22.7	103.1			
						CL	Yellowish brown,moist, hard, sandy CLAY.
		59					
20		50/6"					Oxidized reddish brown.
		17					Dark grayish brown; very stiff; sea shells.
						CH	Olive brown, moist, hard, fat CLAY; reddish brown mottling.
30		49					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 5/30/19.
40							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 5/29/19 BORING NO. B-33

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	TERRACE DEPOSITS: Grayish brown, moist, hard, CLAY; few to little caliche.
		50	20.4	106.8			
						CH	Grayish brown, moist, very stiff, fat CLAY; few gypsum crystals.
10		19					
		28	34.6	87.8			Hard.
						SM	Grayish brown, moist, very dense, silty SAND; reddish brown mottled; oxidation staining.
20		34					
		56					Dense.
						CL	Olive brown, moist, very stiff, CLAY; few caliche.
30		16					
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soil on 5/29/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

DATE DRILLED 6/4/19 BORING NO. B-34

GROUND ELEVATION 30' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SC	ALLUVIUM: Olive brown, moist, medium dense, clayey SAND with gravel.
						CL	Dark brown, moist, hard, sandy CLAY; few scattered gravelly caliche.
		26	20.5	104.9			Olive brown.
10		18					Reddish brown mottling; very stiff.
						SP-SM	TERRACE DEPOSITS: Yellowish brown, moist, very dense, poorly graded SAND; fine sand; massive.
		50/5"					
20		48					
		50/4"	3.8	93.6			Trace oxidation staining.
30		45					
		50/5"	▽				@36.2': Groundwater encountered during drilling; wet.
40							

FIGURE A- 39

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DATE DRILLED 6/4/19 BORING NO. B-34

GROUND ELEVATION 30' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40			80/9"				SP	TERRACE DEPOSITS: (Continued) Grayish brown, wet, very dense, poorly graded SAND; fine sand; oxidation staining.
			50/6"	38.4	92.2			Dark grayish brown.
50			51					Thinly interbedded layers; increase in silt.
			92/9"					
60			83/9"					Dark grayish brown; thinly interbedded.
								Total Depth = 61.3 feet. Groundwater encountered during drilling at approximately 36.2 feet. Backfilled with bentonite cement grout and capped with on-site soil on 6/4/19. Notes: Groundwater may rise to a level higher than that measured in borehole due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
70								
80								

DATE DRILLED 6/4/18 BORING NO. B-35

GROUND ELEVATION 40' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SP	ALLUVIUM: Yellowish brown, moist, medium dense, poorly graded SAND; few gravel.
		10					Trace gravel.
10		43	5.5	109.0		SP-SM	Yellowish brown, moist, dense, poorly graded SAND with silt.
						CL	Grayish brown, moist, very stiff, sandy CLAY.
		16					
20		50/4"				SP	TERRACE DEPOSITS: Yellowish brown, moist, very dense, poorly graded SAND.
		63					Thinly interbedded layers.
30		50/5"	4.1	86.5			
		88/11"					
40							

FIGURE A- 41

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DATE DRILLED 6/4/18 BORING NO. B-35

GROUND ELEVATION 40' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40		50/6"				SP	TERRACE DEPOSITS: (Continued) Grayish brown, moist, very dense, poorly graded SAND; fine sand.
		50					Yellowish brown; thin layer of sandy clay.
50		50/3"	3.2	119.0			@49.5': Groundwater encountered during drilling; wet.
		94/12"					
60		50/6"				SM	Dark gray, wet, very dense, silty SAND.
							Total Depth = 61 feet. Groundwater encountered during drilling at approximately 49.5 feet. Backfilled with bentonite cement grout and capped with on-site soil on 6/4/19. Notes: Groundwater may rise to a level higher than that measured in borehole due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
70							
80							

DATE DRILLED 6/4/19 BORING NO. P-1

GROUND ELEVATION 50' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Gray, moist, medium dense, silty SAND; few clay pockets; trace gravel.
							CL	Dark grayish brown, moist, hard, CLAY; few scattered fine angular gravel.
10								Total Depth = 10 feet. Groundwater was not encountered during drilling. Percolation test presoaked at 10:05 AM. Backfilled with on-site soil on 6/5/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20								
30								
40								

FIGURE A- 43

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UCI NORTH CAMPUS
IRVINE, CALIFORNIA

DATE DRILLED 6/4/19 BORING NO. P-2

GROUND ELEVATION ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	ALLUVIUM: Dark grayish brown, moist, hard, CLAY with caliche. Olive brown; increase in moisture; sandy.
10							Total Depth = 10 feet. Groundwater was not encountered during drilling. Percolation test presoaked at 9:22 AM. Backfilled with on-site soil on 6/5/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							
30							
40							

DATE DRILLED 6/4/19 BORING NO. P-3

GROUND ELEVATION ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ML	TERRACE DEPOSITS: Grayish brown, moist, stiff, SILT; few rootlets.
							CL	Dark grayish brown, moist, stiff, CLAY; trace caliche.
10								Total Depth = 10 feet. Groundwater was not encountered during drilling. Percolation test presoaked at 8:57 AM. Backfilled with on-site soil on 6/5/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20								
30								
40								

FIGURE A- 45

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UCI NORTH CAMPUS
IRVINE, CALIFORNIA

DATE DRILLED 6/4/19 BORING NO. P-4

GROUND ELEVATION ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (2R Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY RDH

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	TERRACE DEPOSITS: Dark grayish brown, moist, hard, CLAY; trace caliche.
							Olive brown; increase in caliche; sandy.
10							Total Depth = 10 feet. Groundwater was not encountered during drilling. Percolation test presoaked at 8:15 AM. Backfilled with on-site soil on 6/5/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							
30							
40							

APPENDIX B

Test Pit Logs

APPENDIX B

TEST PIT LOGS

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following method.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

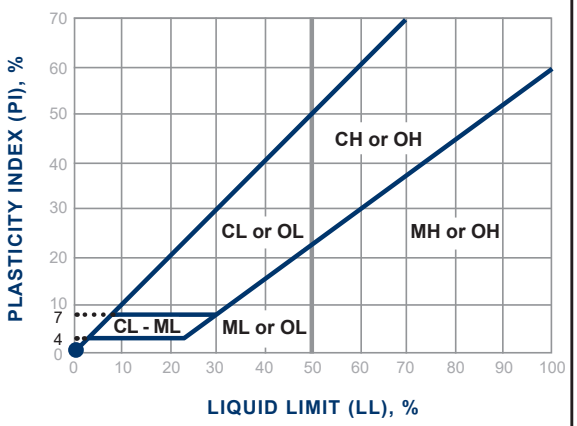
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 4 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consis-tency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

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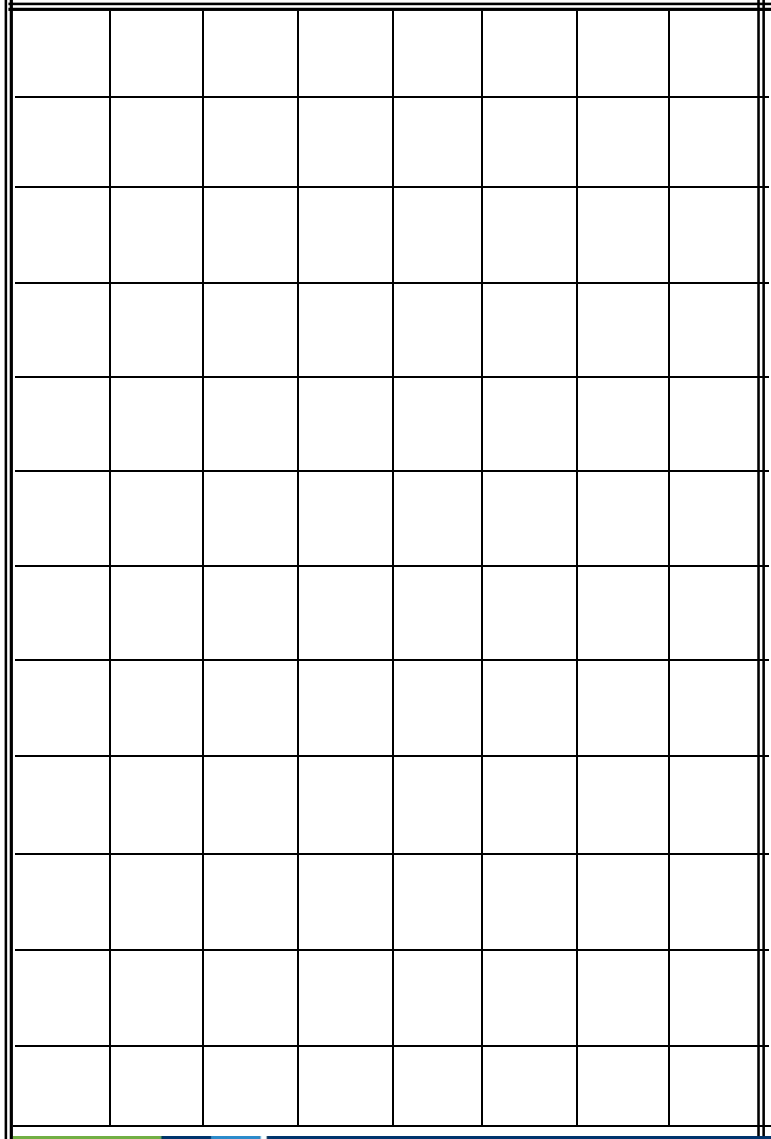
USCS METHOD OF SOIL CLASSIFICATION

DATE EXCAVATED _____

GROUND ELEVATION _____

METHOD OF EXCAVATION _____

TEST PIT DIAGRAM



SCALE 1 inch = 2 feet

EXCAVATION LOG EXPLANATION SHEET

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	FILL:
1	■						Bulk sample.
		■				ML	Dashed line denotes material change.
2			■				Drive sample.
			■				Sand cone performed.
3		X		♀			Seepage.
		X		▽			Groundwater encountered during excavation.
4		X					No recovery with drive sampler.
		■		▼			Groundwater encountered after excavation.
5		■					Sample retained by others.
		|		xx/xx			Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
6		|					
		\					No recovery with Shelby tube sampler.
7		\				SM	ALLUVIUM:
							Solid line denotes unit change.
							Attitude: Strike/Dip
							b: Bedding — s: Shear
							c: Contact — bss: Basal Slide Surface
							j: Joint — sf: Shear Fracture
							f: Fracture — sz: Shear Zone
							F: Fault — sbs: Sheared Bedding Surface
							cs: Clay Seam
10							The total depth is a solid line that is drawn at the bottom of the excavation log.
11							
12							

FIGURE B-1

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TEST PIT LOG
EXPLANATION OF TEST PIT, CORE, TRENCH AND HAND AUGER LOG SYMBOLS

LOCATION: Irvine, California

GROUND ELEVATION: 50'± (msl)

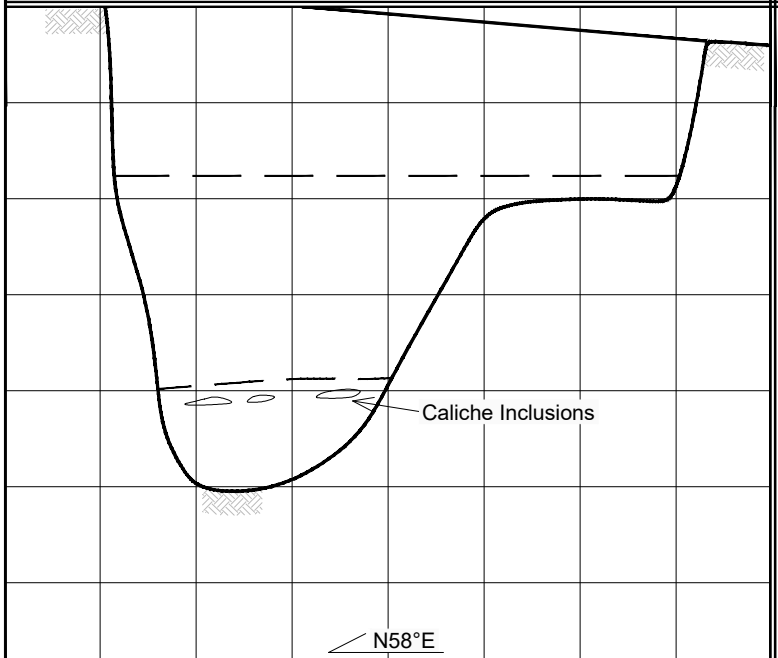
METHOD OF EXCAVATION: Backhoe (Strongarm Environmental)

TEST PIT NO: TP-1

LOGGED BY: VAM/ECH

DATE EXCAVATED: 6/3/2019

TEST PIT DIAGRAM



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						CL	TERRACE DEPOSITS: Reddish brown, moist, hard, CLAY; little sand; abundant fissures; blocky texture; rootlets; root hairs. Little caliche and gravel.
2	■						
4	■						
6						SC	Pale brown to white, medium dense, clayey SAND; iron oxidation staining, root hairs, root casts, porous.
8						CL	Gray, moist, hard, silty CLAY; caliche inclusions.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
12							
14							
16							Notes: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
18							
20							SCALE: 1"=4"

209570014_TP1.dwg 11/07/2019 JDP

FIGURE B-1

Ninyo & Moore
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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION: Irvine, California

GROUND ELEVATION: 50'± (msl)

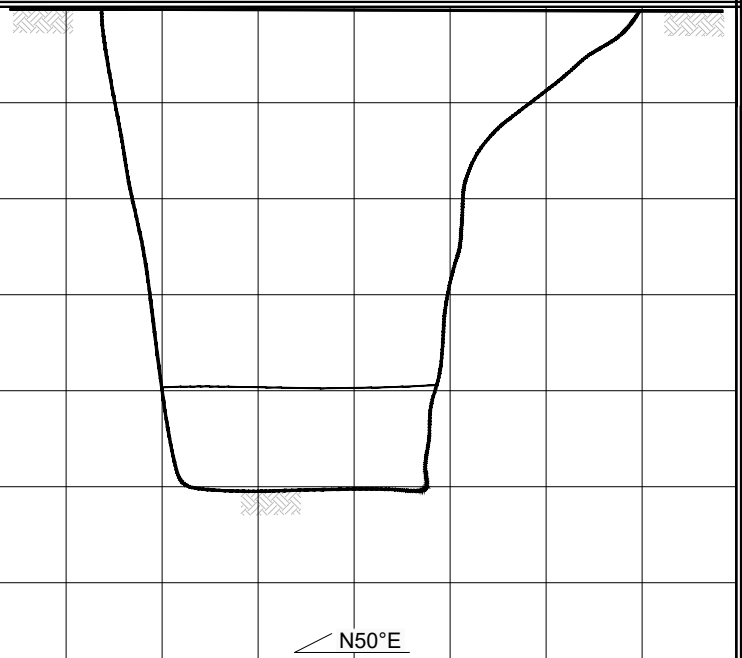
METHOD OF EXCAVATION: Backhoe (Strongarm Environmental)

TEST PIT NO: TP-2

LOGGED BY: VAM/ECH

DATE EXCAVATED: 6/3/2019

TEST PIT DIAGRAM



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						CH	FILL: Reddish brown, moist, hard, CLAY; rootlets; porous fissures; blocky texture; black clay inclusions, few gravel, asphalt concrete and Portland concrete pieces. No fissures.
8	■					CH	TERRACE DEPOSITS: Black, moist, hard, CLAY; porous.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.

Notes:

Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE: 1"=4"

FIGURE B-2

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

209570014_TP2.dwg 11/07/2019 JDP

LOCATION Irvine, California

GROUND ELEVATION 50'± (msl)

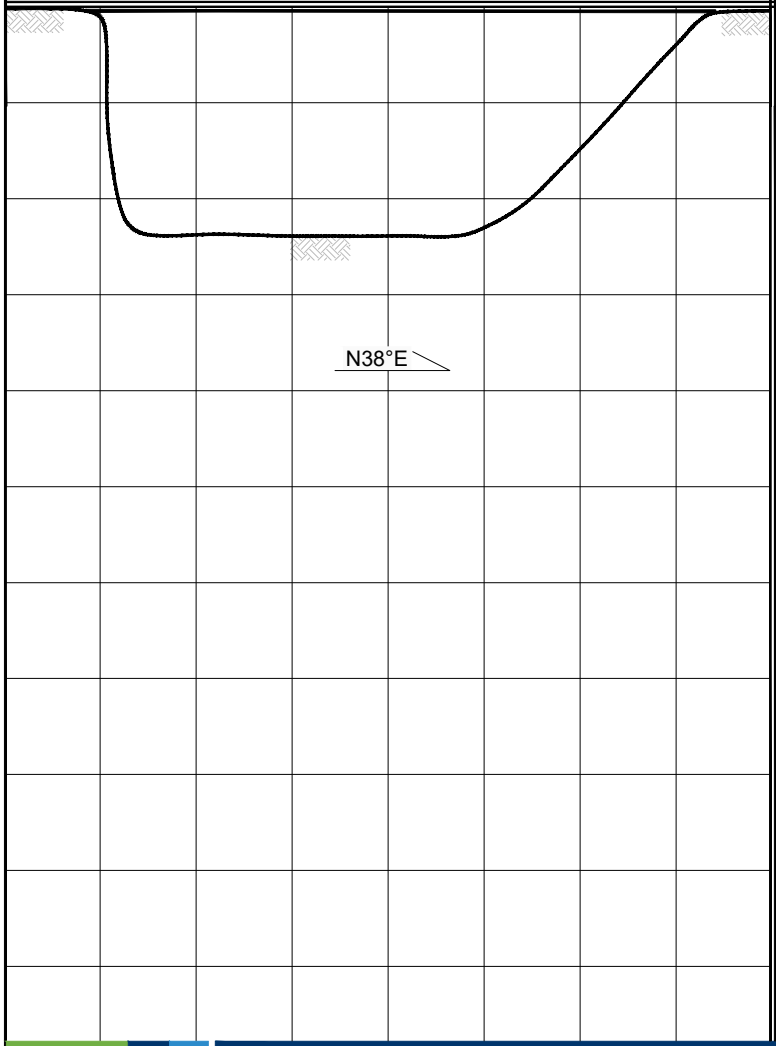
METHOD OF EXCAVATION Backhoe (Strongarm Environmental)

TEST PIT NO: TP-3

LOGGED BY VAM/ECH

DATE EXCAVATED 6/3/2019

TEST PIT DIAGRAM



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0							TERRACE DEPOSITS:
2		■				CH	Reddish brown, moist, hard, CLAY; rootlets; trace gravel; porous; blocky texture; fissures.
4							Caliche veins, fissures infilled.
6							Total Depth = 4.5 feet.
8							No groundwater encountered.
10							Backfilled with compacted on-site soils 6/3/19.
12							
14							
16							
18							
20							

Notes:

Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE: 1"=4"

209570014_TP3.dwg 11/07/2019 JDP

FIGURE B-3

Ninyo & Moore
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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION Irvine, California

GROUND ELEVATION 50'± (msl)

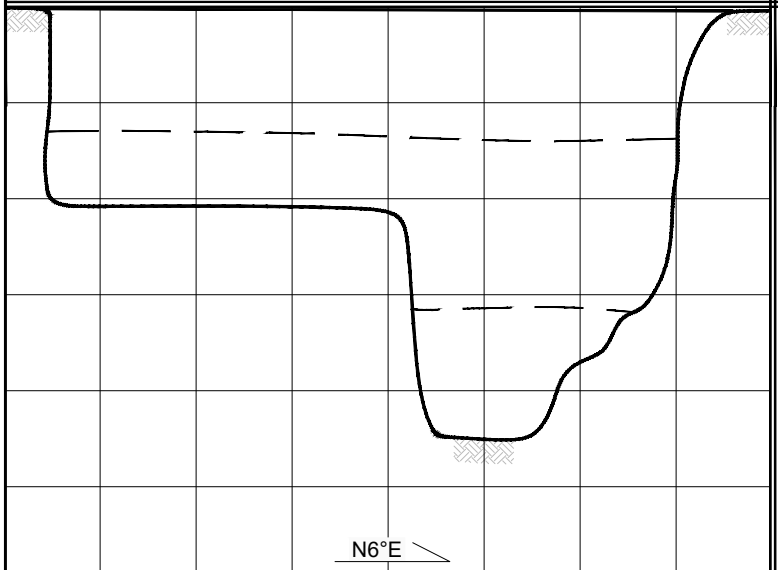
METHOD OF EXCAVATION Backhoe (Strongarm Environmental)

TEST PIT NO: TP-4

LOGGED BY VAM/ECH

DATE EXCAVATED 6/3/2019

TEST PIT DIAGRAM



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						CH	TERRACE DEPOSITS: Reddish brown, moist, hard, CLAY; fissured; blocky texture, rootlets; root casts, porous.
2		■					
4						SC	Pale brown to white, moist, medium dense, clayey SAND; caliche sand and gravel; root cast; rootlets, porous.
6							
8		■				CH	Black, moist, hard, CLAY; caliche lense and inclusions.
10		■					Total Depth = 9.0 feet (refusal). No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
12							
14							
16							
18							
20							

Notes:

Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE: 1"=4"

209570014_TP4.dwg 11/07/2019 JDP

FIGURE B-4

Ninyo & Moore
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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION Irvine, California

GROUND ELEVATION 50'± (msl)

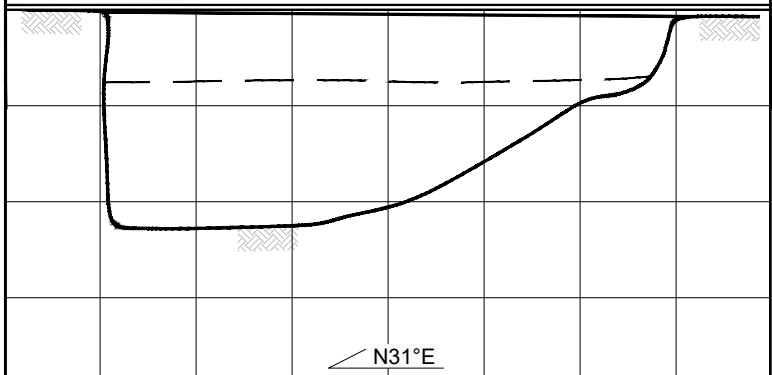
METHOD OF EXCAVATION Backhoe (Strongarm Environmental)

TEST PIT NO: TP-5

LOGGED BY VAM/ECH

DATE EXCAVATED 6/3/2019

TEST PIT DIAGRAM



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						CH	TERRACE DEPOSITS: Dark grayish brown, moist, hard, CLAY; little caliche gravel; moderately cemented.
2	■						
4	■					CL	Gray, moist, hard, CLAY; fissures infilled with dark grayish brown clay; blocky texture. Caliche veins; fissures infilled with gypsum; sand fissures individual crystals visible.
6							Total Depth = 4.5 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
8							
10							
12							
14							
16							Notes: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
18							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							SCALE: 1"=4"

209570014_TP5.dwg 11/07/2019 JDP

FIGURE B-5

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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION Irvine, California

GROUND ELEVATION 50'± (msl)

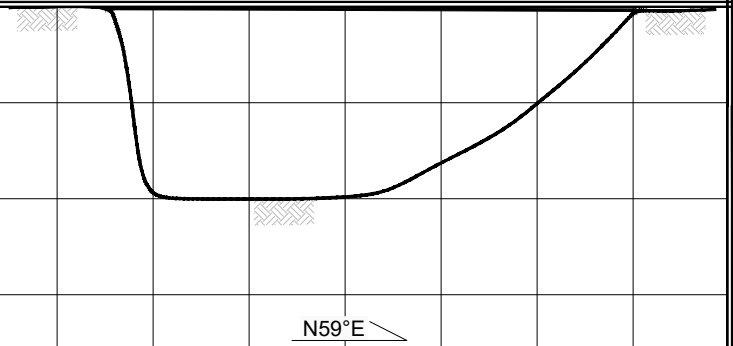
METHOD OF EXCAVATION Backhoe (Strongarm Environmental)

TEST PIT NO: TP-6

LOGGED BY VAM/ECH

DATE EXCAVATED 6/3/2019

TEST PIT DIAGRAM



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0							TERRACE DEPOSITS:
2						CH	Black, moist, hard, CLAY; desiccation cracks; rootlets.
4							Blocky texture; root hairs; scattered caliche gravel.
6							Total Depth = 4.0 feet.
8							No groundwater encountered.
10							Backfilled with compacted on-site soils 6/3/19.
12							
14							
16							
18							
20							

Notes:

Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE: 1"=4"

209570014_TP6.dwg 11/07/2019 JDP

FIGURE B-6

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION Irvine, California

GROUND ELEVATION 50'± (msl)

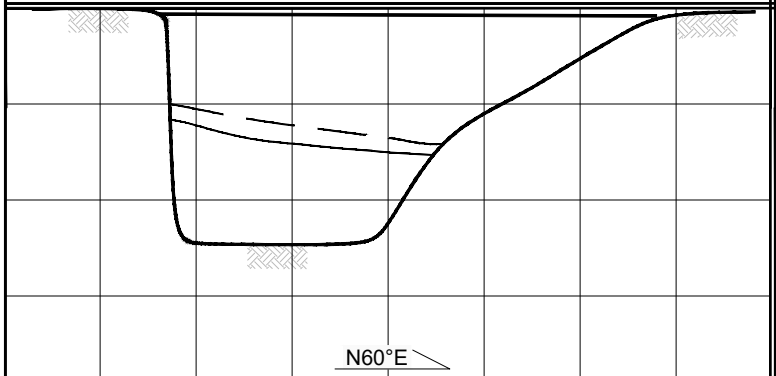
METHOD OF EXCAVATION Backhoe (Strongarm Environmental)

TEST PIT NO: TP-7

LOGGED BY VAM/ECH

DATE EXCAVATED 6/3/2019

TEST PIT DIAGRAM



DESCRIPTION

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						CH	FILL: Brown, moist, hard, CLAY; rootlets; trace gravel; asphalt concrete pieces; desiccation cracking.
2	■						
4						SC	Pale brown, moist, loose, clayey SAND; few gravel; asphalt concrete pieces; approximately 6 inches thick.
						CL	TERRACE DEPOSITS: Dark brown to black, moist, hard; blocky texture.
6							Total Depth = 4.7 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
8							
10							
12							
14							
16							
18							
20							

Notes:

Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE: 1"=4"

209570014_TP7.dwg 11/07/2019 JDP

FIGURE B-7

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION Irvine, California

GROUND ELEVATION 50'± (msl)

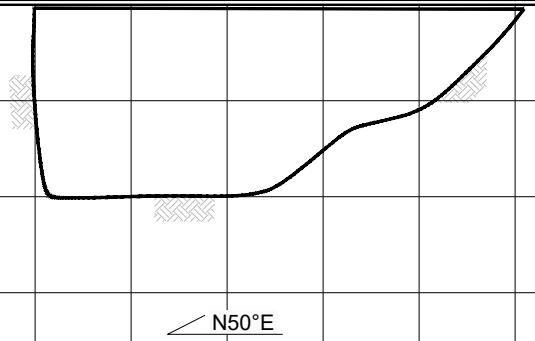
METHOD OF EXCAVATION Backhoe (Strongarm Environmental)

TEST PIT NO: TP-8

LOGGED BY VAM/ECH

DATE EXCAVATED 6/3/2019

TEST PIT DIAGRAM



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■						TERRACE DEPOSITS:
2						CH	Reddish gray, moist, hard, fat CLAY; blocky texture; desiccation cracking; rootlets and root hairs.
4							Dark reddish gray; slickensided; root hairs.
6							Strong brown.
8							Total Depth =4.0 feet.
10							No groundwater encountered.
12							Backfilled with compacted on-site soils 6/3/19.
14							
16							
18							
20							

Notes:

Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE: 1"=4"

209570014_TP8.dwg 11/07/2019 JDP

FIGURE B-8

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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION Irvine, California

GROUND ELEVATION 50'± (msl)

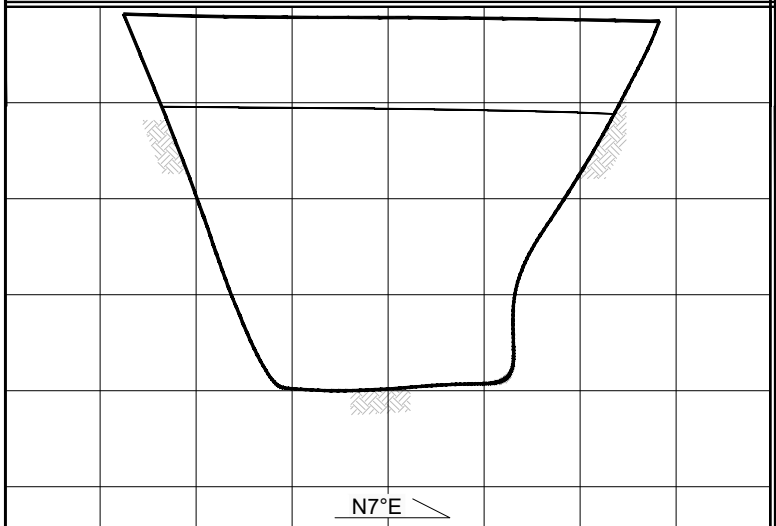
METHOD OF EXCAVATION Backhoe (Strongarm Environmental)

TEST PIT NO: TP-9

LOGGED BY VAM/ECH

DATE EXCAVATED 6/3/2019

TEST PIT DIAGRAM



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						CH	TOPSOIL: Brown, moist, dense, fat CLAY; trace roots; scattered caliche gravel; blocky texture.
2							
4	■					CL	TERRACE DEPOSITS: Dark brown to black, moist, hard, CLAY; trace roots.
6							Light grayish brown, abundant caliche gravel.
8	■						Total Depth = 8.0 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
10							
12							
14							
16							
18							
20							

Notes:

Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE: 1"=4"

209570014_TP9.dwg 11/07/2019 JDP

FIGURE B-9

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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION: Irvine, California

GROUND ELEVATION: 50'± (msl)

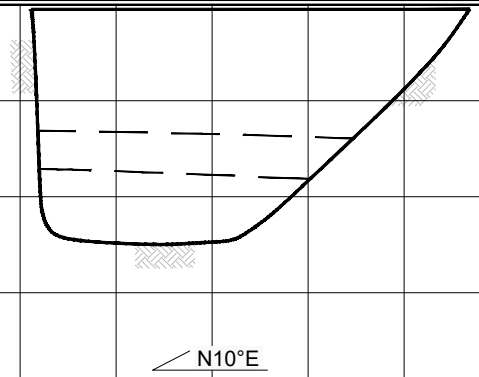
METHOD OF EXCAVATION: Backhoe (Strongarm Environmental)

TEST PIT NO: TP-10

LOGGED BY: VAM/ECH

DATE EXCAVATED: 6/3/2019

TEST PIT DIAGRAM



DESCRIPTION

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						CH	TERRACE DEPOSITS: Brown, moist, hard, fat CLAY; scattered caliche gravel; trace roots; trace pinhole porosity.
2							
4						CL	Light brown, moist, hard, CLAY; few caliche gravel; quartz gravel; trace roots.
						SC	Dark brown, moist, dense, clayey SAND; trace pinhole porosity.
6							Total Depth = 5.0 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
8							
10							
12							
14							
16							Notes: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
18							
20							

SCALE: 1"=4"

209570014_TP10.dwg 11/07/2019 JDP

FIGURE B-10

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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION Irvine, California

GROUND ELEVATION 50'± (msl)

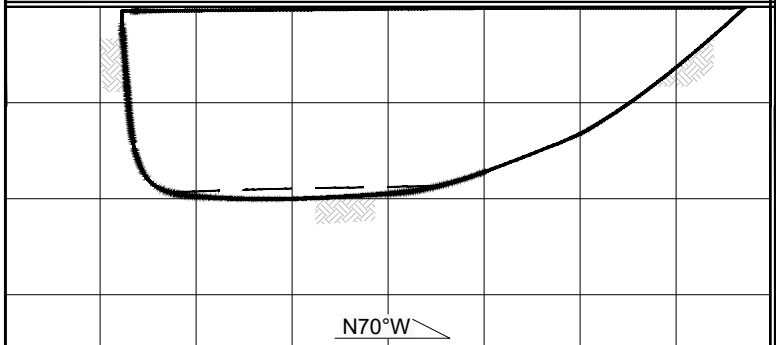
METHOD OF EXCAVATION Backhoe (Strongarm Environmental)

TEST PIT NO: TP-11

LOGGED BY VAM/ECH

DATE EXCAVATED 6/3/2019

TEST PIT DIAGRAM



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0							TERRACE DEPOSITS:
2						CH	Brown, moist, hard, fat CLAY; scattered caliche gravel; blocky texture; desiccation cracks; trace roots.
4						SP	White, moist, poorly graded SAND; trace caliche.
6							Total Depth = 4.0 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
8							
10							
12							
14							
16							
18							
20							

Notes:

Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE: 1"=4"

209570014_TP11.dwg 11/07/2019 JDP

FIGURE B-11

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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION Irvine, California

GROUND ELEVATION 50'± (msl)

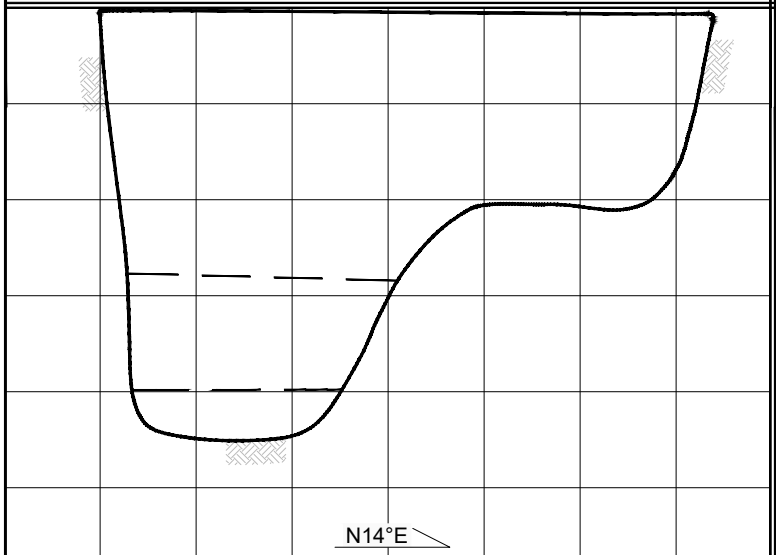
METHOD OF EXCAVATION Backhoe (Strongarm Environmental)

TEST PIT NO: TP-12

LOGGED BY VAM/ECH

DATE EXCAVATED 6/3/2019

TEST PIT DIAGRAM



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						CH	TERRACE DEPOSITS: Dark brown, moist, hard, CLAY; trace roots; scattered caliche gravel; blocky texture.
2		■					
4							
6						CL	Olive, moist, very stiff, sandy CLAY.
8		■				SM	Olive gray, moist, medium dense, silty SAND.
10							Total Depth = 9.3 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
12							
14							
16							
18							
20							

Notes:

Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE: 1"=4"

209570014_TP12.dwg 11/07/2019 JDP

FIGURE B-12

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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION Irvine, California

GROUND ELEVATION 50'± (msl)

METHOD OF EXCAVATION Backhoe (Strongarm Environmental)

TEST PIT NO: TP-13

LOGGED BY VAM/ECH

DATE EXCAVATED 6/3/2019

TEST PIT DIAGRAM

DESCRIPTION

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0							TERRACE DEPOSITS:
	■						Black, moist, hard, fat CLAY; roots and rootlets; blocky texture; porous.
2							Olive to brown; abundant caliche gravel; weakly cemented.
						CH	
4							Olive; massive; no visible porosity.
6							
8						SM	Yellow, moist, silty SAND; iron oxidation staining, weakly cemented.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
12							
14							
16							Notes:
							Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
18							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							SCALE: 1"=4"

209570014_TP13.dwg 11/07/2019 JDP

FIGURE B-13

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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION: Irvine, California

GROUND ELEVATION: 50'± (msl)

METHOD OF EXCAVATION: Backhoe (Strongarm Environmental)

TEST PIT NO: TP-14

LOGGED BY: VAM/ECH

DATE EXCAVATED: 6/3/2019

TEST PIT DIAGRAM

DESCRIPTION

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0							TERRACE DEPOSITS:
2						CH	Black, moist, hard, fat CLAY; roots and rootlets; blocky texture.
4							Few caliche gravel; no texture.
6						SP-SM	Yellow, moist, medium dense, poorly graded SAND with silt; pockets of black clay.
8							Yellow to gray, moist, medium dense, poorly graded SAND with silt; iron oxidation staining; silt lenses.
10							Abundant shell fragments.
12							Total Depth = 9.5 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
14							
16							Notes: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
18							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							SCALE: 1"=4"

209570014_TP14.dwg 11/07/2019 JDP

FIGURE B-14

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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION: Irvine, California

GROUND ELEVATION: 50'± (msl)

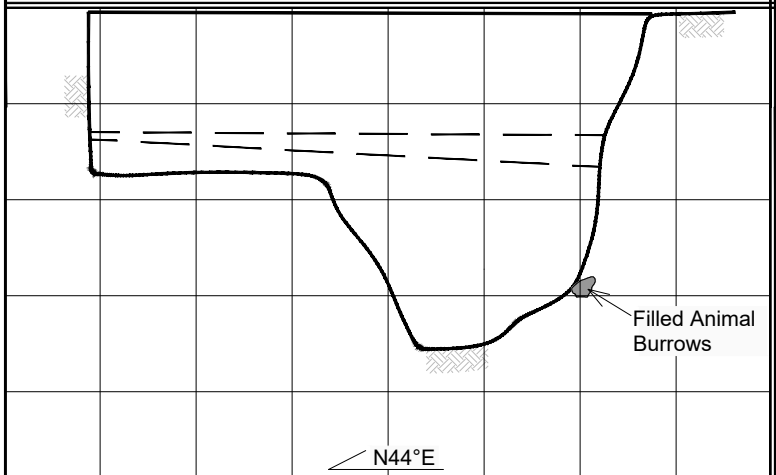
METHOD OF EXCAVATION: Backhoe (Strongarm Environmental)

TEST PIT NO: TP-15

LOGGED BY: VAM/ECH

DATE EXCAVATED: 6/3/2019

TEST PIT DIAGRAM



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						CH	TERRACE DEPOSITS: Black, moist, hard, fat CLAY; blocky texture; rootlets; scattered caliche gravel; rootlets.
2						CL	Mottled black and gray; moist, silty CLAY; rootlets.
4						SM	Gray, moist, medium dense, silty SAND; iron oxidation staining; trace shells; trace filled animal burrows.
6	■						Brownish red, moist, hard, CLAY; blocky texture; abundant caliche veins.
8							Total Depth = 7.0 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
10							
12							
14							
16							
18							
20							

Notes:

Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE: 1"=4"

209570014_TP15.dwg 11/07/2019 JDP

FIGURE B-15

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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

LOCATION Irvine, California

GROUND ELEVATION 50'± (msl)

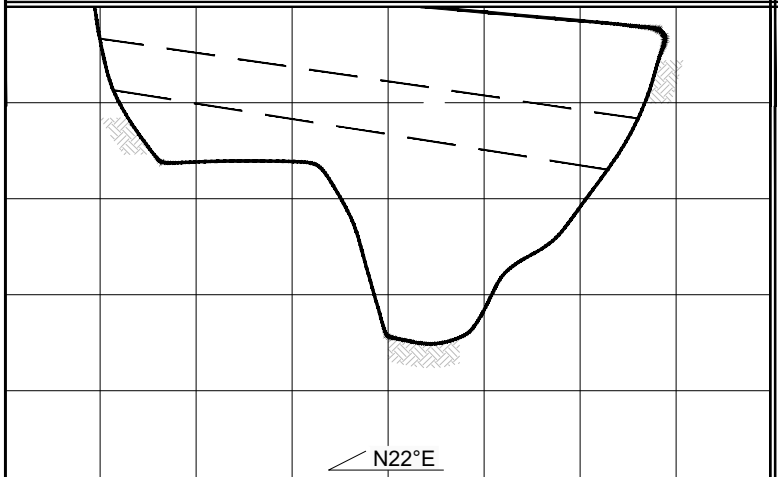
METHOD OF EXCAVATION Backhoe (Strongarm Environmental)

TEST PIT NO: TP-16

LOGGED BY VAM/ECH

DATE EXCAVATED 6/3/2019

TEST PIT DIAGRAM



DESCRIPTION

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						CH	TERRACE DEPOSITS: Black, moist, hard, CLAY; blocky texture; rootlets, scattered caliche gravel.
2						SM	Olive, moist, hard, sandy SILT; blocky texture; caliche veins.
4						SM	Olive, moist, medium dense, silty SAND.
6							
8							Total Depth =7.3 feet. No groundwater encountered. Backfilled with compacted on-site soils 6/3/19.
10							
12							
14							
16							
18							
20							

Notes:

Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE: 1"=4"

209570014_TP16.dwg 11/07/2019 JDP

FIGURE B-16

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TEST PIT LOG

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 I 11/19

APPENDIX C

Laboratory Testing

APPENDIX C

LABORATORY TESTING

Classification
Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory borings and test pits in Appendix A and B, respectively.

In-Place Moisture and Density Tests
The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory borings and test pits in Appendix A and B, respectively.

200 Wash
Evaluation of the percentage of particles finer than the No. 200 sieve in selected soil samples was performed in general accordance with ASTM D 1140. The results of the tests are presented on Figures C-1 through C-4.

Atterberg Limits
Tests were performed on selected representative fine-grained soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D 4318. These test results were utilized to evaluate the soil classification in accordance with the USCS. The test results and classifications are shown on Figures C-5 through C-7.

Consolidation Tests
Consolidation tests were performed on selected relatively undisturbed soil samples in general accordance with ASTM D 2435. The samples were inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The results of the tests are summarized on Figures C-8 through C-22.

Direct Shear Tests
Direct shear tests were performed on relatively undisturbed samples in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of selected materials. The samples were inundated during shearing to represent adverse field conditions. The results are shown on Figures C-23 through C-33.

Expansion Index Tests
The expansion indices of representative near-surface samples were evaluated in general accordance with ASTM D4829. The samples were molded under a specified compactive energy at approximately 50 percent saturation (plus or minus 2 percent). The prepared 1-inch thick and 4-inch diameter samples were loaded with a surcharge of 144 pounds per square foot and were inundated with distilled water. Readings of volumetric swell were made for a period of 24 hours. The results of these tests are presented on Figure C-34 and C-35.

Proctor Density Tests
The maximum dry density and optimum moisture content of selected representative soil samples were evaluated using the Modified Proctor method in general accordance with ASTM D 1557. The results of the tests are summarized on Figures C-36 through C-39.

Soil Corrosivity Tests

Soil pH, and minimum resistivity tests were performed on representative samples in general accordance with California Test (CT) 643. The sulfate and chloride contents of the selected samples were evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure C-40 and C-41.

R-Value

The resistance value, or R-value, for site soils was evaluated in general accordance with CT 301. Samples were prepared and evaluated for exudation pressure and expansion pressure. The equilibrium R-value is reported as the lesser or more conservative of the two calculated results. The test results are shown on Figure C-42.

SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B-4	35.0-36.5	LEAN CLAY	100	87	CL
B-6	0.0-3.0	LEAN CLAY	91	64	CL
B-7	5.0-6.5	LEAN CLAY	98	87	CL
B-8	10.0-11.5	SILTY SAND	100	33	SM
B-8	30.0-31.5	SILTY SAND	100	32	SM
B-9	60.0-60.9	POORLY GRADED SAND WITH SILT	99	6	SP-SM
B-10	15.0-16.5	SILTY SAND	100	44	SM
B-11	10.0-11.5	SANDY SILT WITH GRAVEL	83	52	ML
B-11	25.0-26.5	SILTY SAND	100	14	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1140

FIGURE C-1

NO. 200 SIEVE ANALYSIS TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B-12	25.0-26.5	LEAN CLAY	100	53	CL
B-14	15.0-16.5	SILTY SAND	100	15	SM
B-16	35.0-36.5	POORLY GRADED SAND	100	3	SP
B-17	20.0-21.5	POORLY GRADED SAND WITH SILT	100	6	SP-SM
B-19	10.0-11.5	POORLY GRADED SAND WITH SILT	100	9	SP-SM
B-19	20.0-21.5	POORLY GRADED SAND WITH SILT	100	7	SP-SM
B-20	20.0-21.5	POORLY GRADED SAND WITH SILT	100	9	SP-SM
B-21	10.0-11.5	SILTY SAND	94	21	SM
B-21	30.0-31.5	POORLY GRADED SAND WITH SILT	100	7	SP-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1140

FIGURE C-2

NO. 200 SIEVE ANALYSIS TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B-22	15.0-16.5	CLAYEY SAND	100	45	SC
B-23	20.0-21.5	LEAN CLAY	100	50	CL
B-23	45.0-46.5	POORLY GRADED SAND WITH SILT	100	8	SP-SM
B-26	25.0-26.5	SILTY SAND	100	14	SM
B-29	5.0-6.5	SILTY SAND	100	44	SM
B-29	15.0-16.5	POORLY GRADED SAND WITH SILT	100	5	SP-SM
B-31	20.0-21.5	SILTY SAND	100	15	SM
B-32	20.0-21.5	LEAN CLAY	100	51	CL
B-33	25.0-26.5	SILTY SAND	100	15	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1140

FIGURE C-3

NO. 200 SIEVE ANALYSIS TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 | 11/19

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B-34	25.0-26.5	POORLY GRADED SAND WITH SILT	100	7	SP-SM
B-35	10.0-11.5	POORLY GRADED SAND WITH SILT AND GRAVEL	71	7	SP-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1140

FIGURE C-4

NO. 200 SIEVE ANALYSIS TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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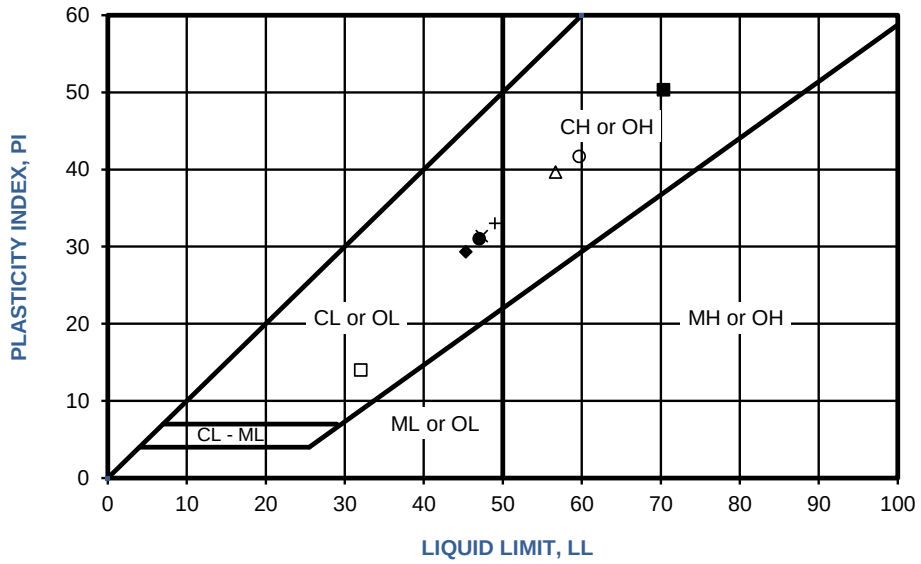
SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-1	1.0-5.0	47	16	31	CL	CL
■	B-3	15.0-16.5	70	20	50	CH	CH
◆	B-4	0.0-5.0	45	16	29	CL	CL
○	B-5	10.0-11.5	60	18	42	CH	CH
□	B-9	1.0-5.0	32	18	14	CL	CL
Δ	B-9	20.0-21.5	57	17	40	CH	CH
✘	B-11	0.5-5.0	47	16	31	CL	CL
+	B-12	1.0-4.0	49	16	33	CL	CL



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

FIGURE C-5

ATTERBERG LIMITS TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 | 11/19

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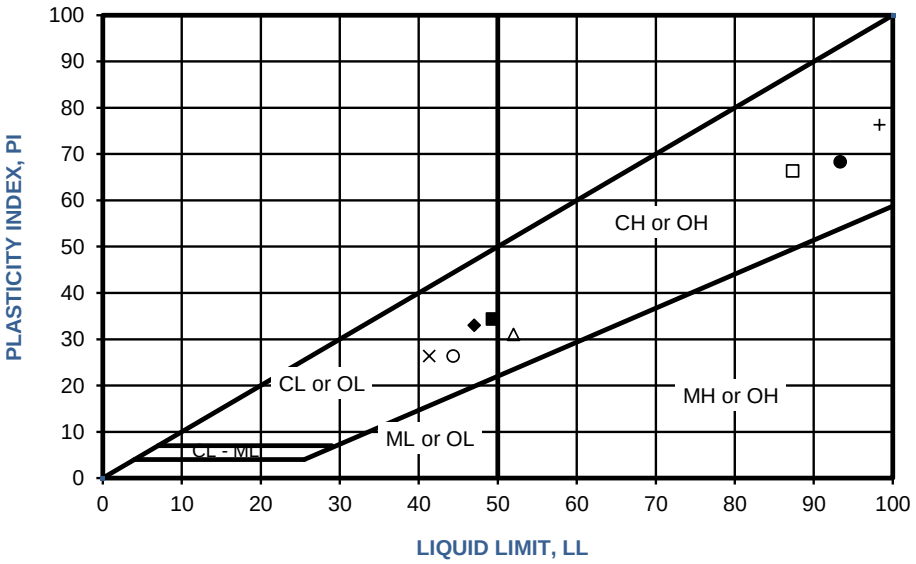
SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-13	10.0-11.5	93	25	68	CH	CH
■	B-17	0.0-5.0	49	15	34	CL	CL
◆	B-17	10.0-11.5	47	14	33	CL	CL
○	B-21	20.0-21.5	44	18	26	CL	CL
□	B-25	15.0-16.5	87	28	59	CH	CH
Δ	B-26	10.0-11.5	52	21	31	CL	CL
✕	B-27	0.0-5.0	41	15	26	CL	CL
+	B-27	15.0-16.5	98	22	76	CH	CH

NP - INDICATES NON-PLASTIC



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

FIGURE C-6

ATTERBERG LIMITS TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 | 11/19

Ninyo & Moore
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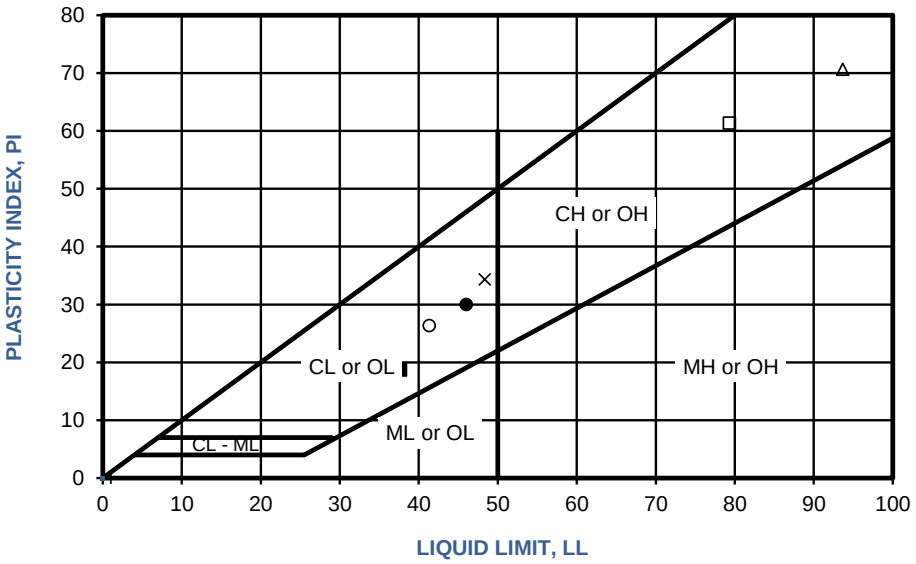
SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-28	1.0-5.0	46	16	30	CL	CL
■	B-29	35.0-36.5	38	19	19	CL	CL
◆	B-29	55.0-56.5	61	17	44	CH	CH
○	B-30	20.0-21.5	41	15	26	CL	CL
□	B-32	10.0-11.5	79	18	61	CH	CH
Δ	B-33	15.0-16.5	94	23	71	CH	CH
✘	B-34	2.0-5.0	48	14	34	CL	CL



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

FIGURE C-7

ATTERBERG LIMITS TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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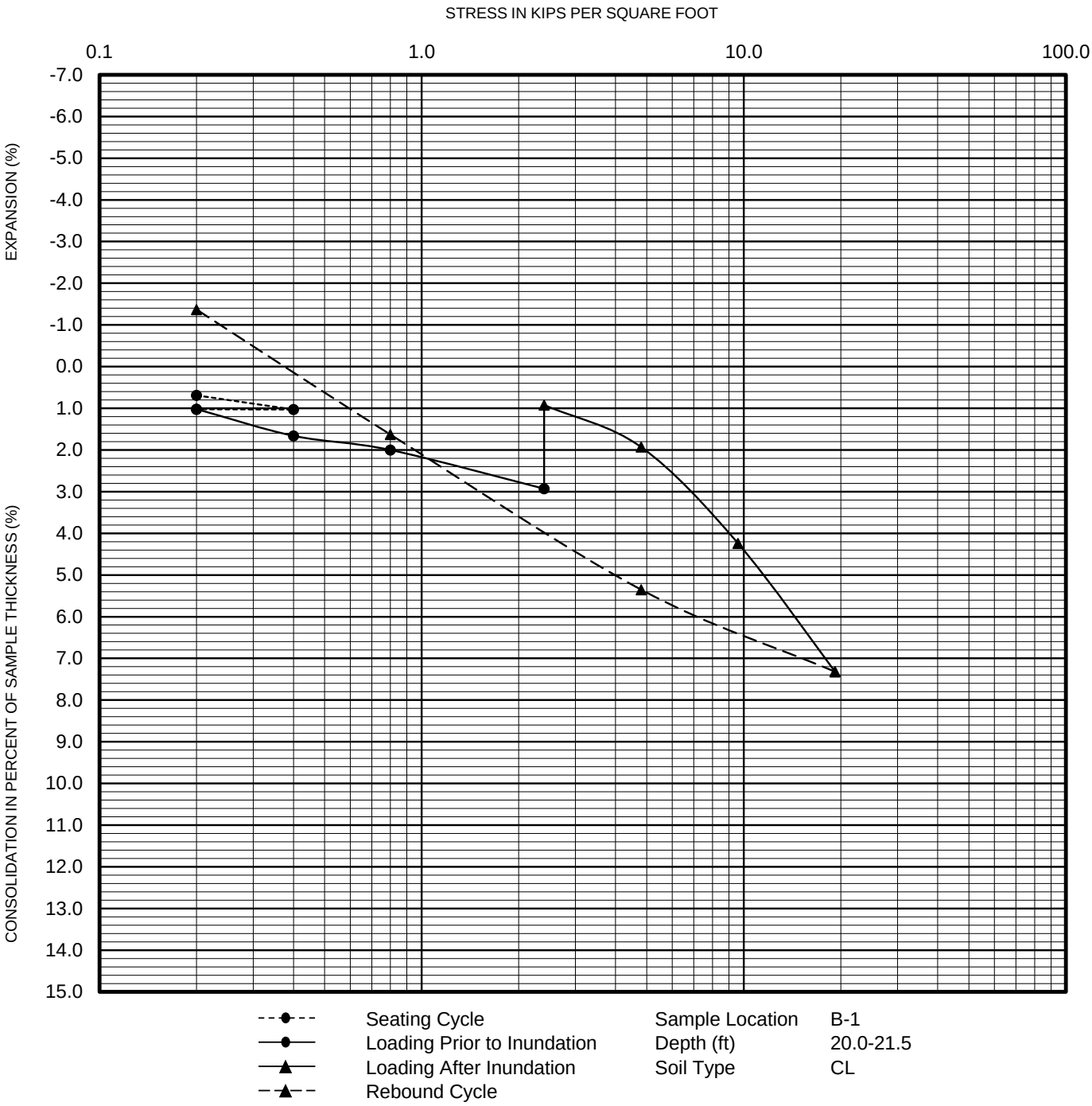

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE C-8

CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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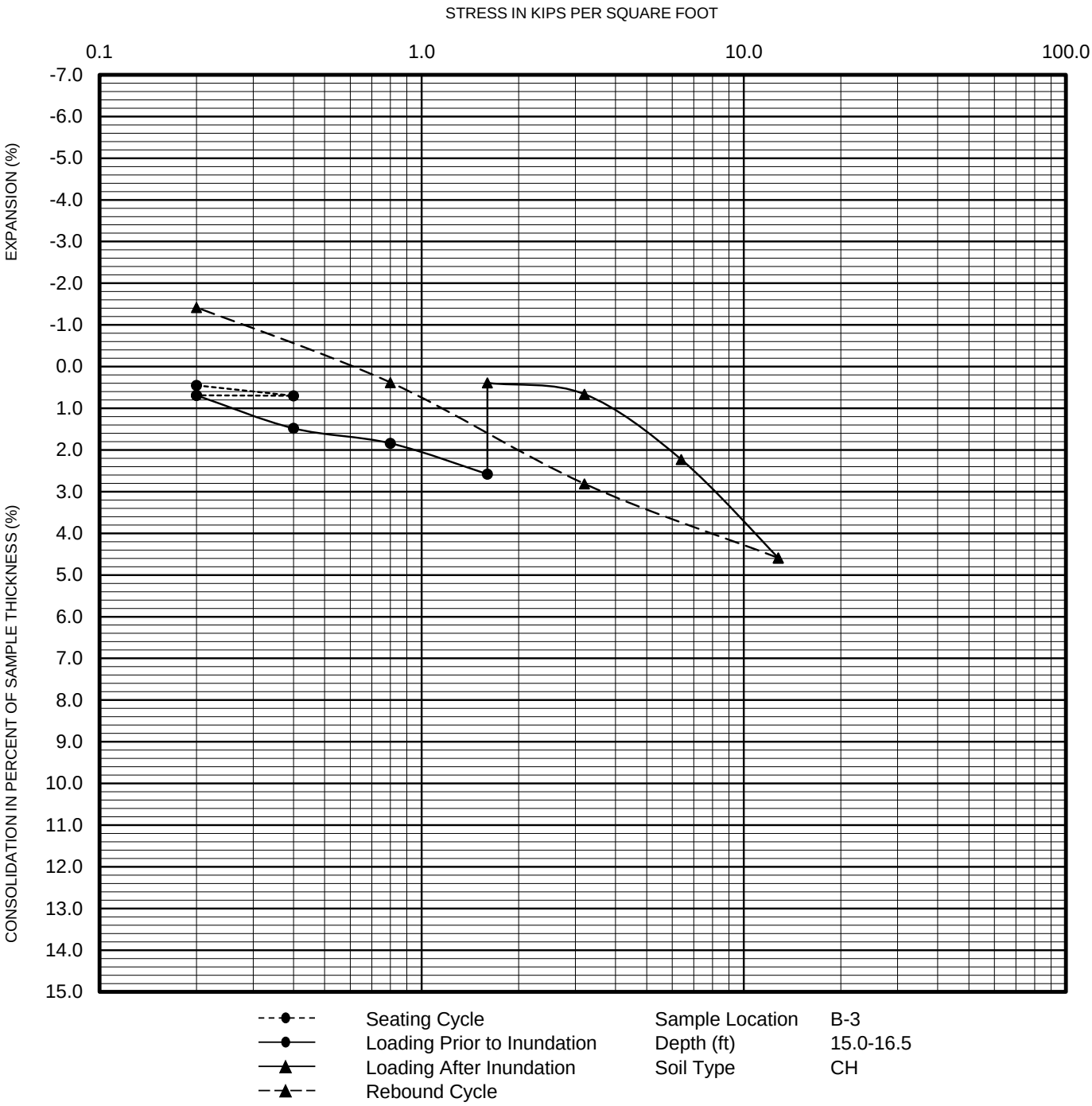

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE C-9

CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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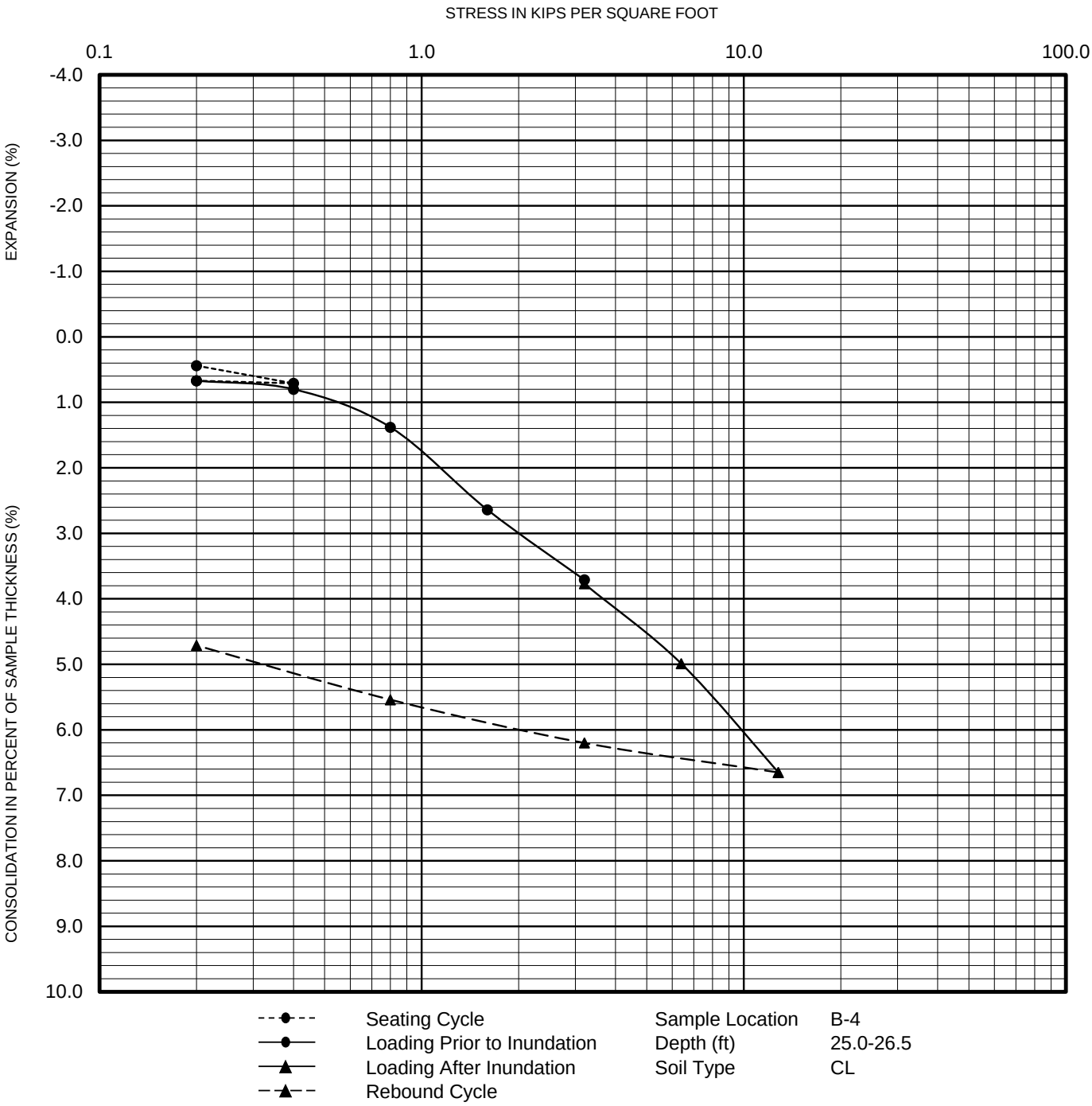

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE C-10

CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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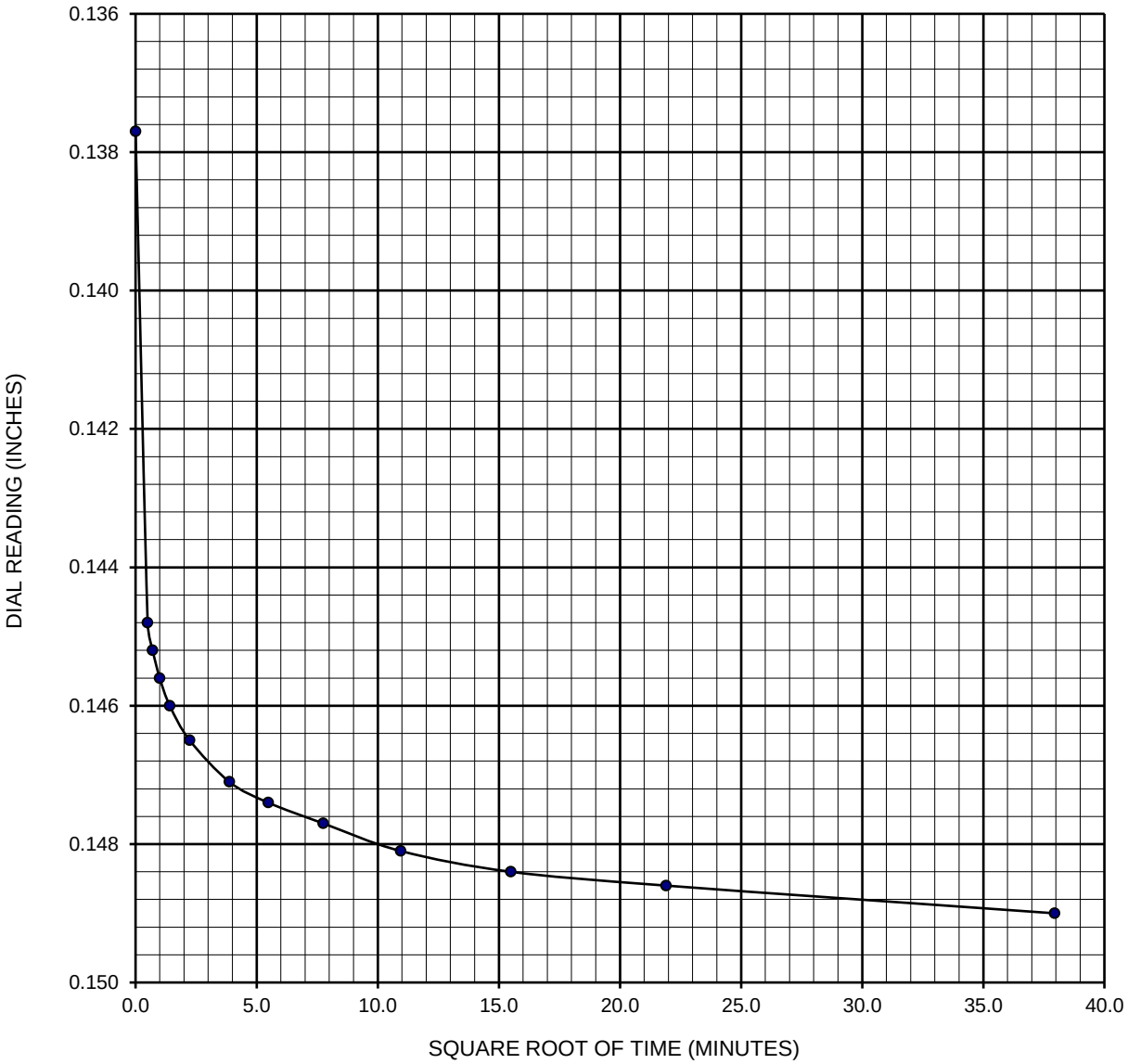

Sample Location	B-4	Load (ksf)	6.4
Depth (ft)	25.0-26.5	Soil Type	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435 - SQUARE ROOT OF TIME METHOD

FIGURE C-11

TIME RATE OF CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
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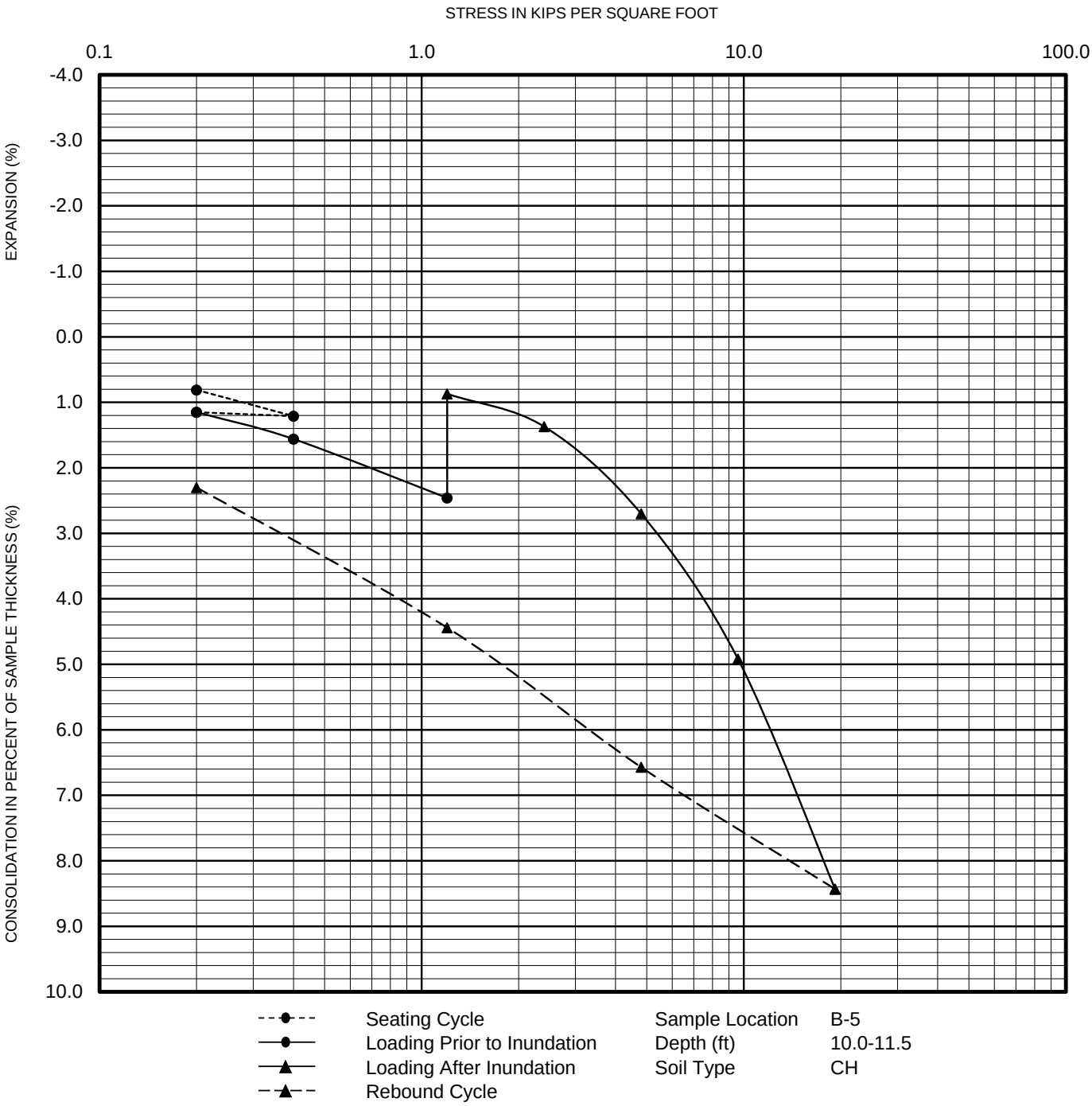

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE C-12

CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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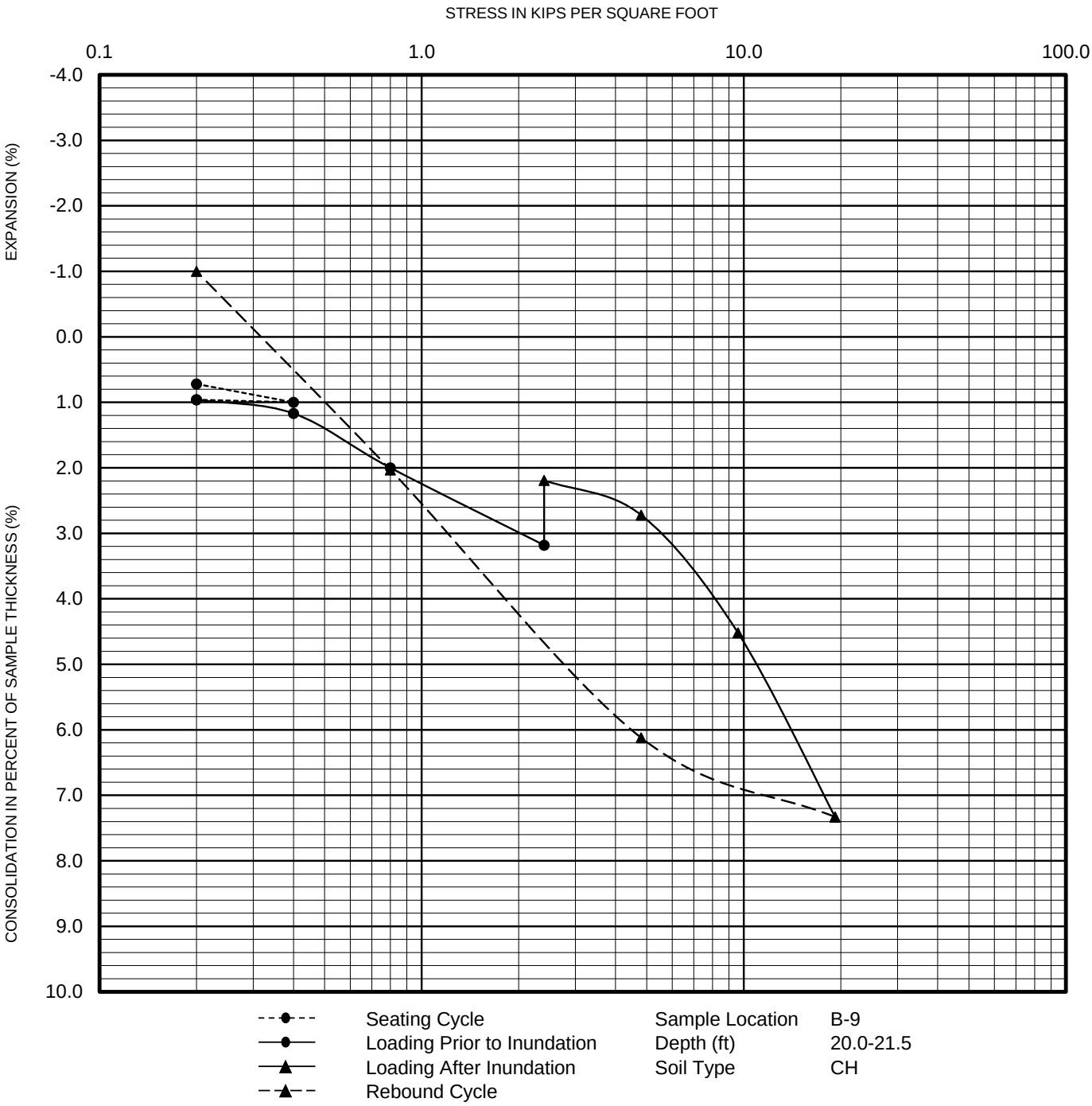

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE C-13

CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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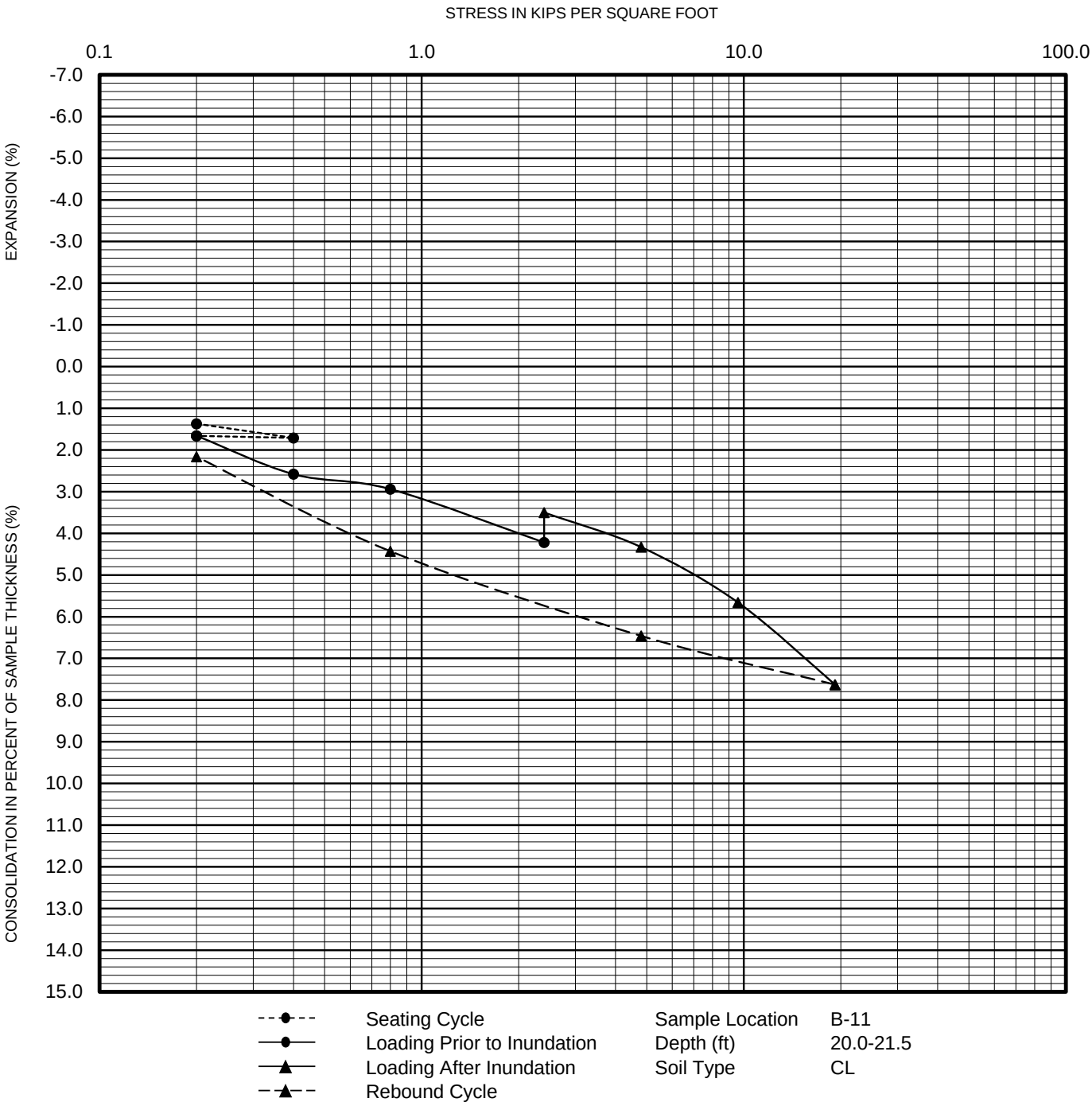

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE C-14

CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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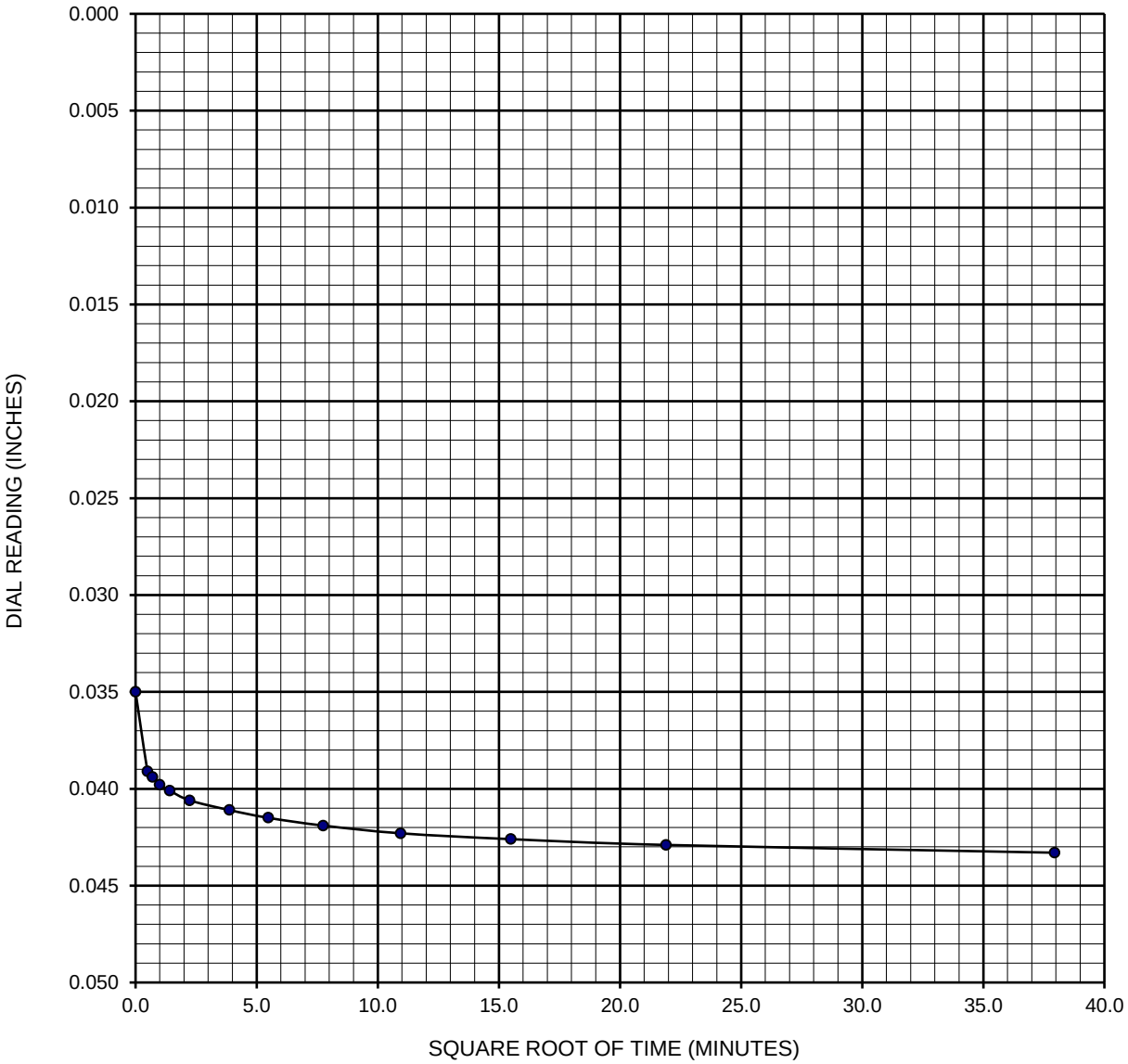

Sample Location	B-11	Load (ksf)	4.8
Depth (ft)	20.0-21.5	Soil Type	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435 - SQUARE ROOT OF TIME METHOD

FIGURE C-15

TIME RATE OF CONSOLIDTION TEST RESULTS

UCI NORTH CAMPUS
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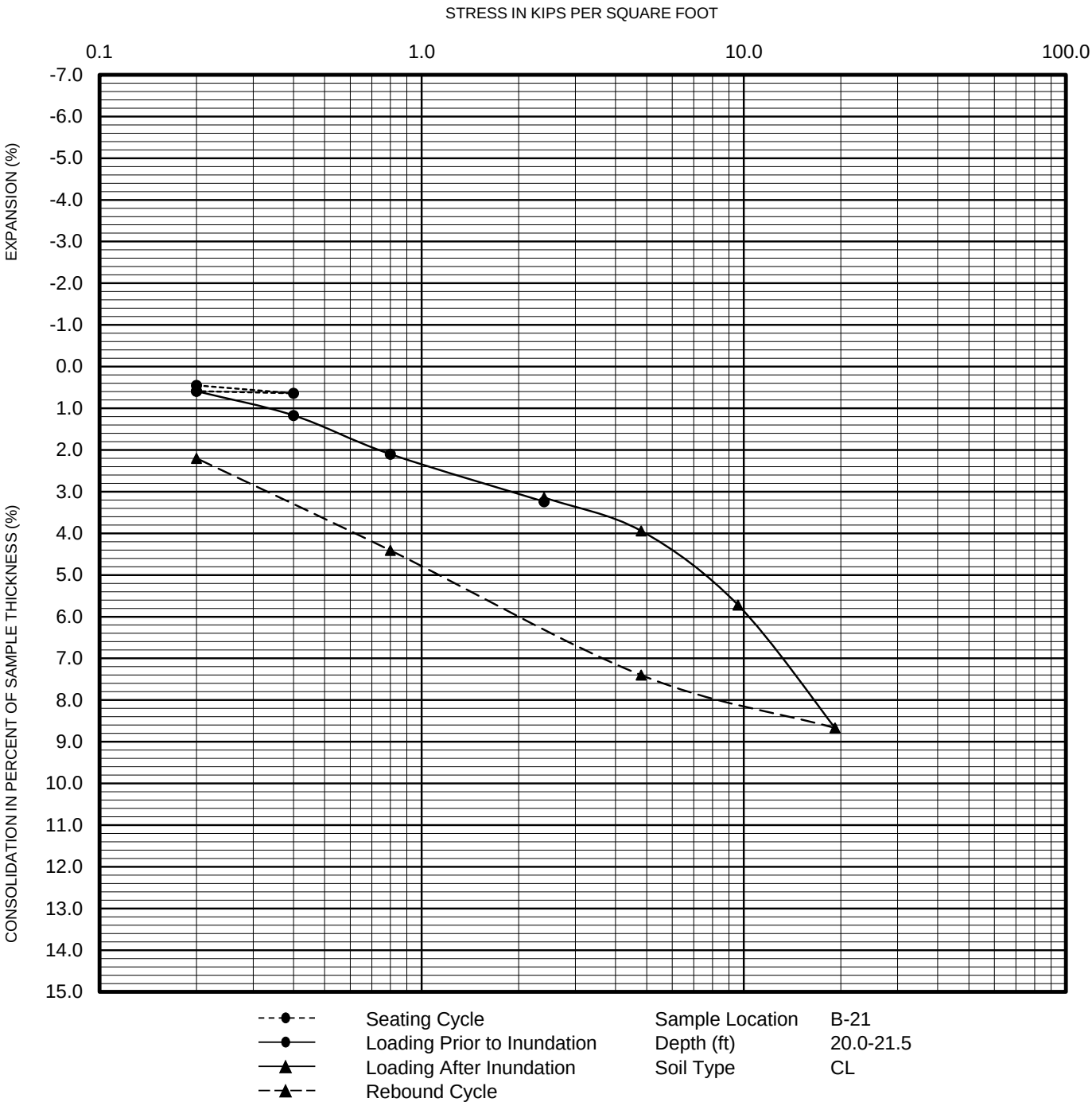

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE C-16

CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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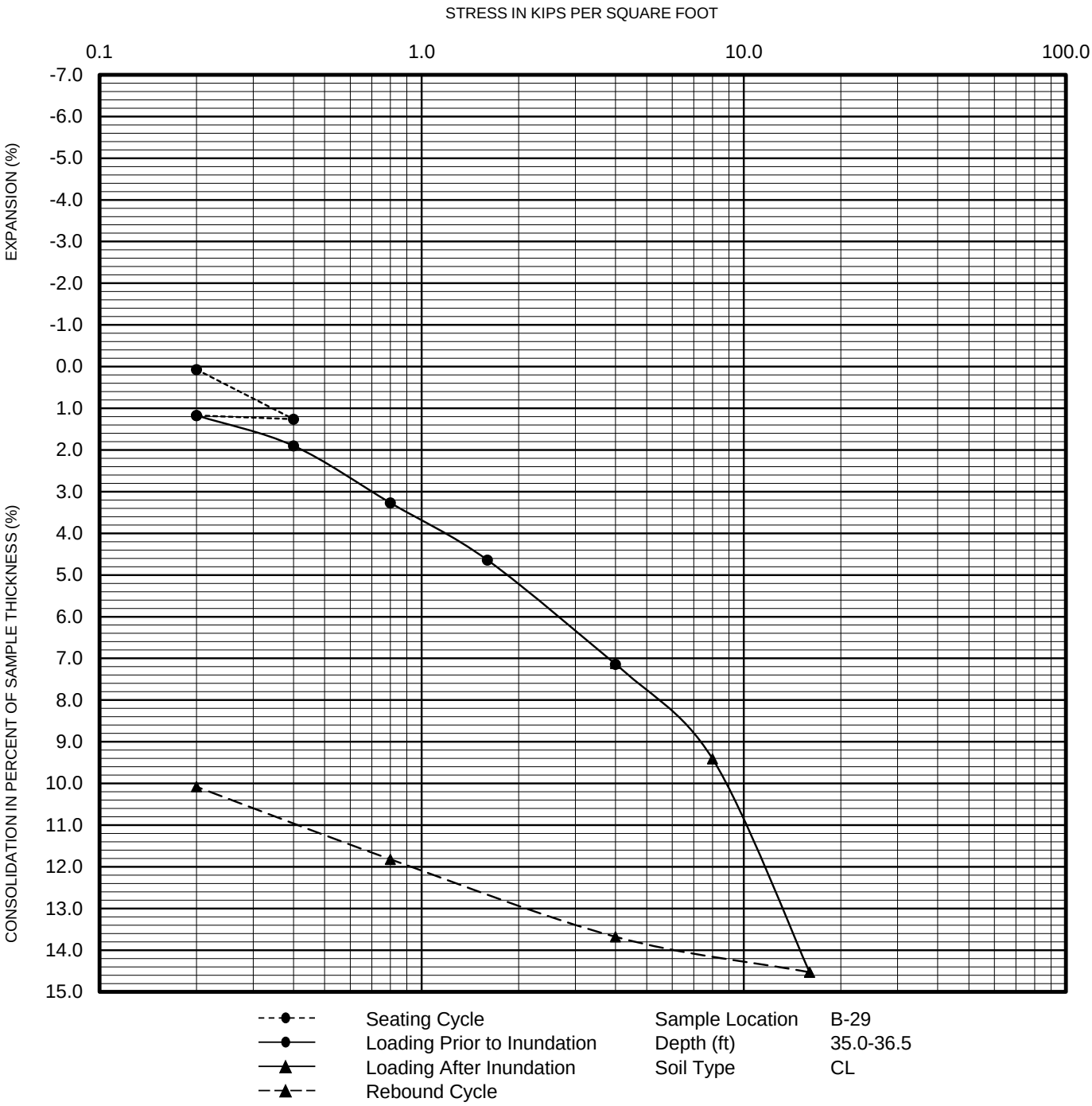

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE C-17

CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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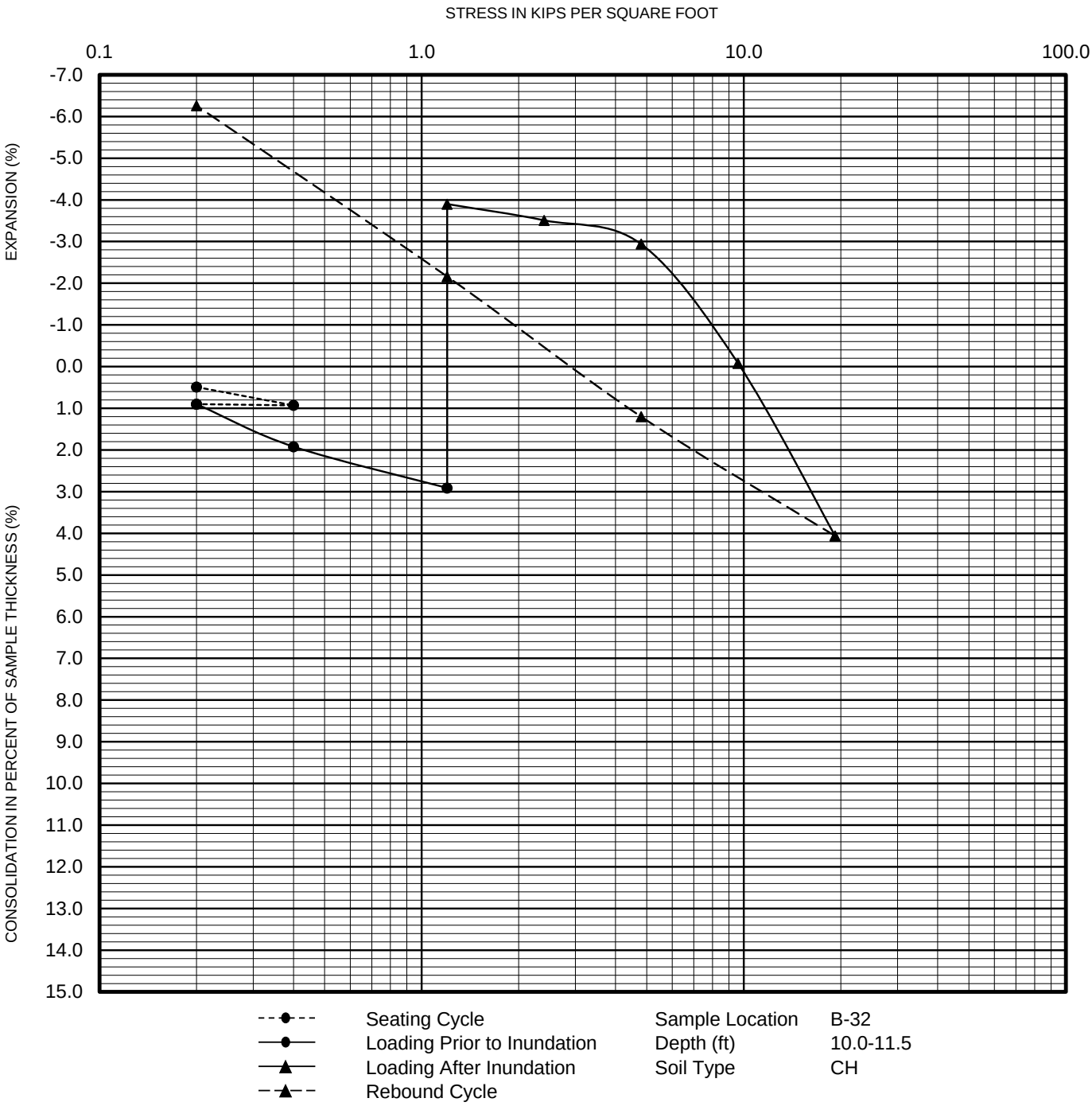

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE C-18

CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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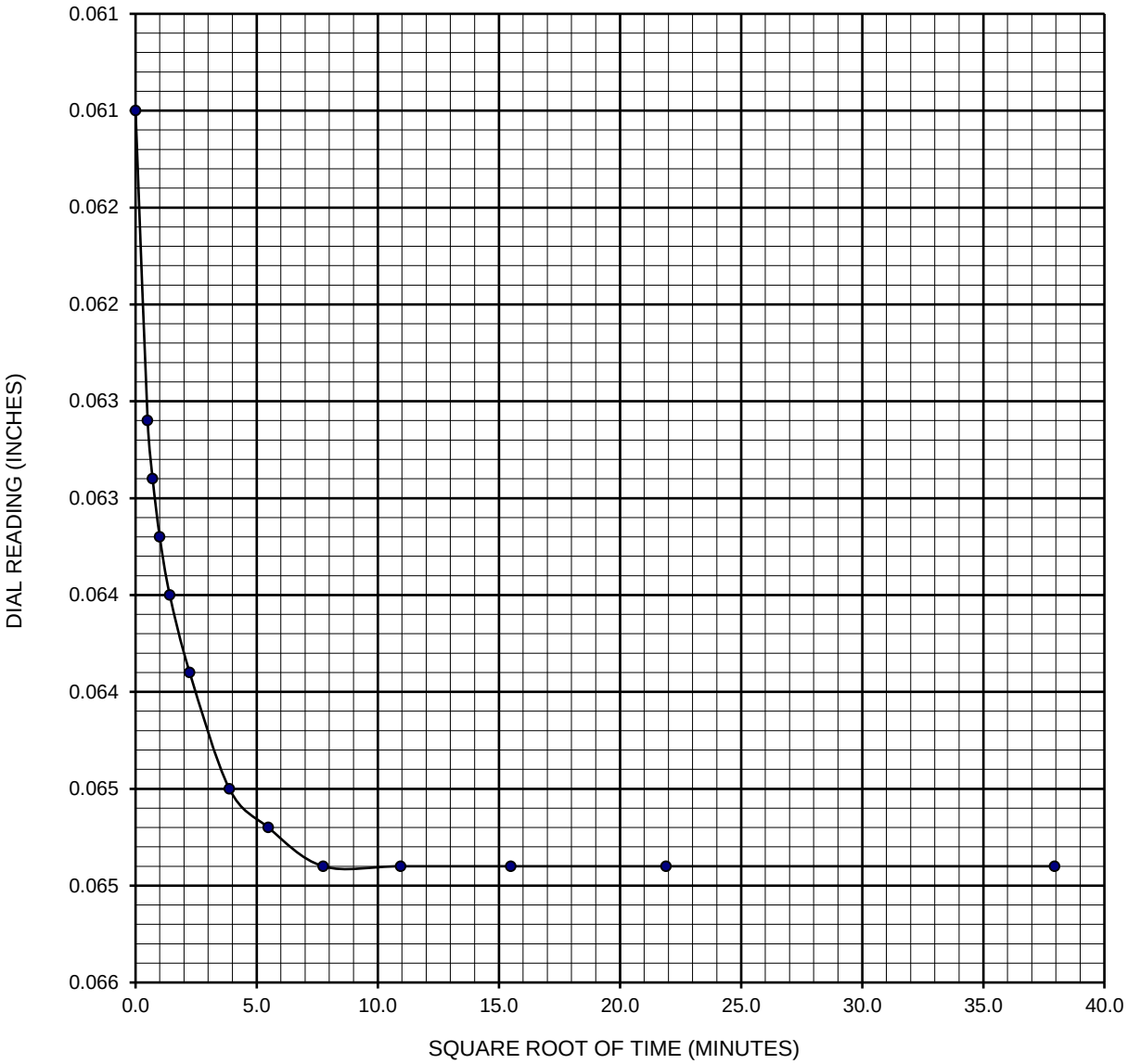

Sample Location	B-32	Load (ksf)	2.4
Depth (ft)	10.0-11.5	Soil Type	CH

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435 - SQUARE ROOT OF TIME METHOD

FIGURE C-19

TIME RATE OF CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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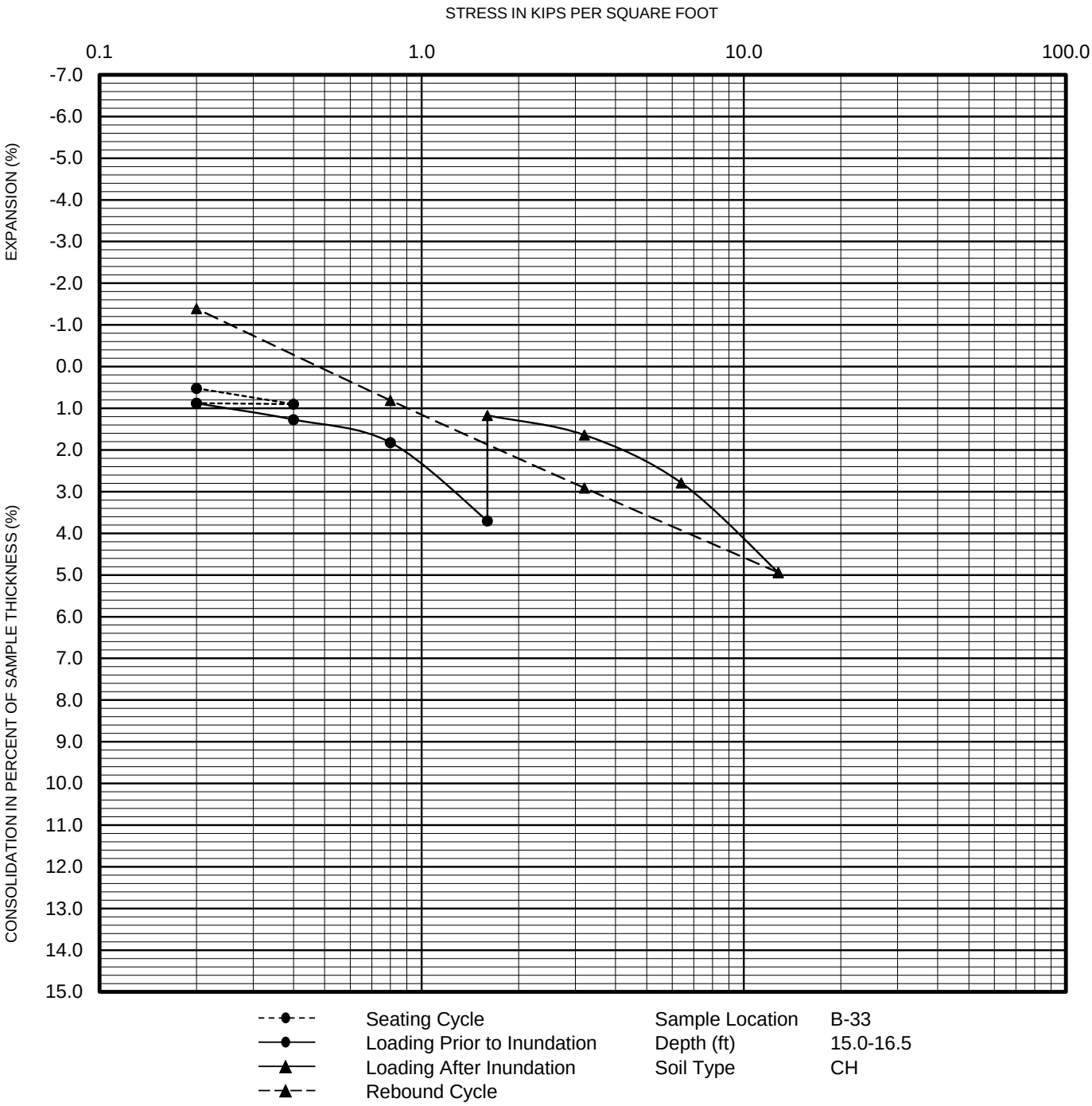

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE C-20

CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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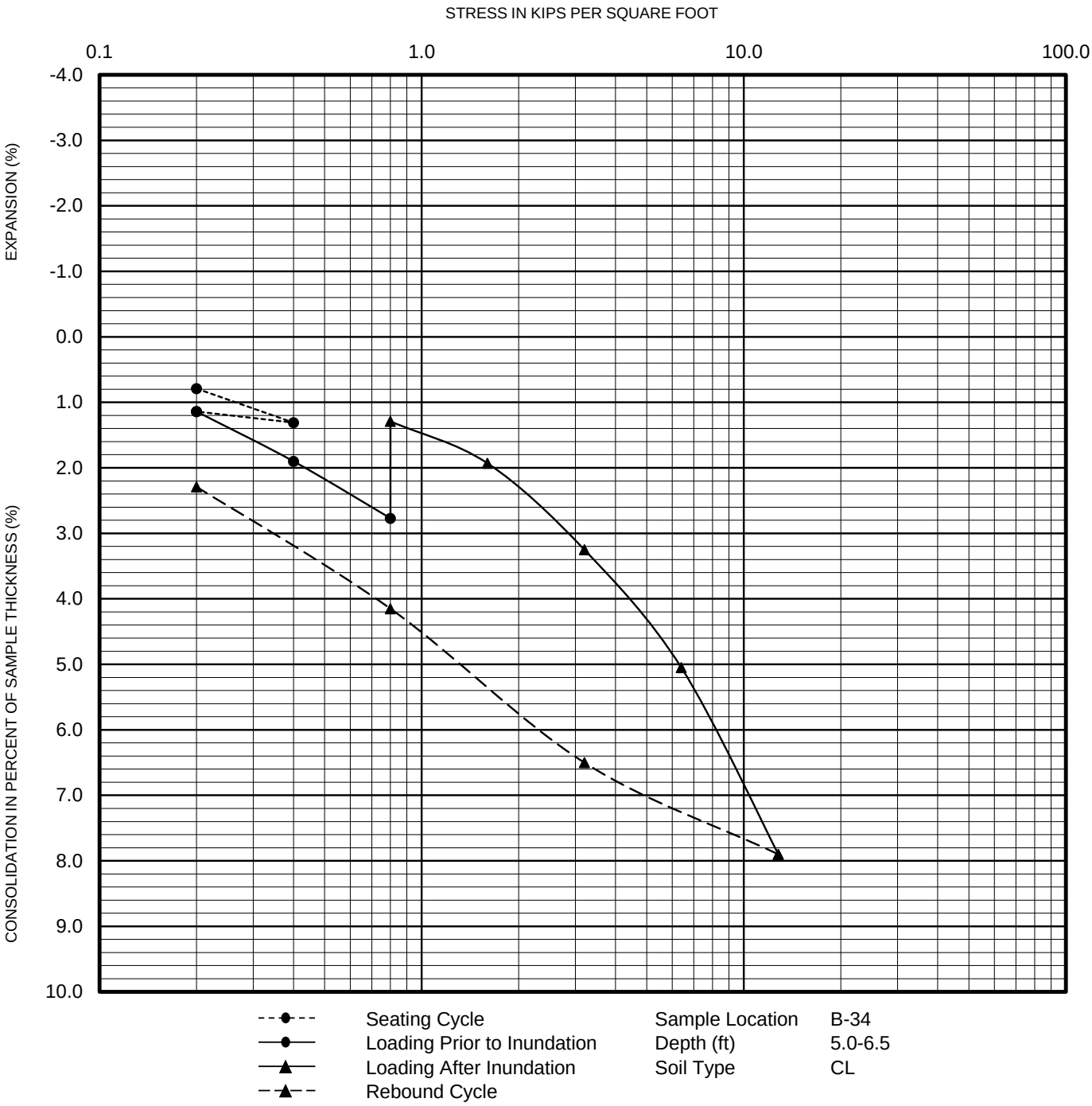

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE C-21

CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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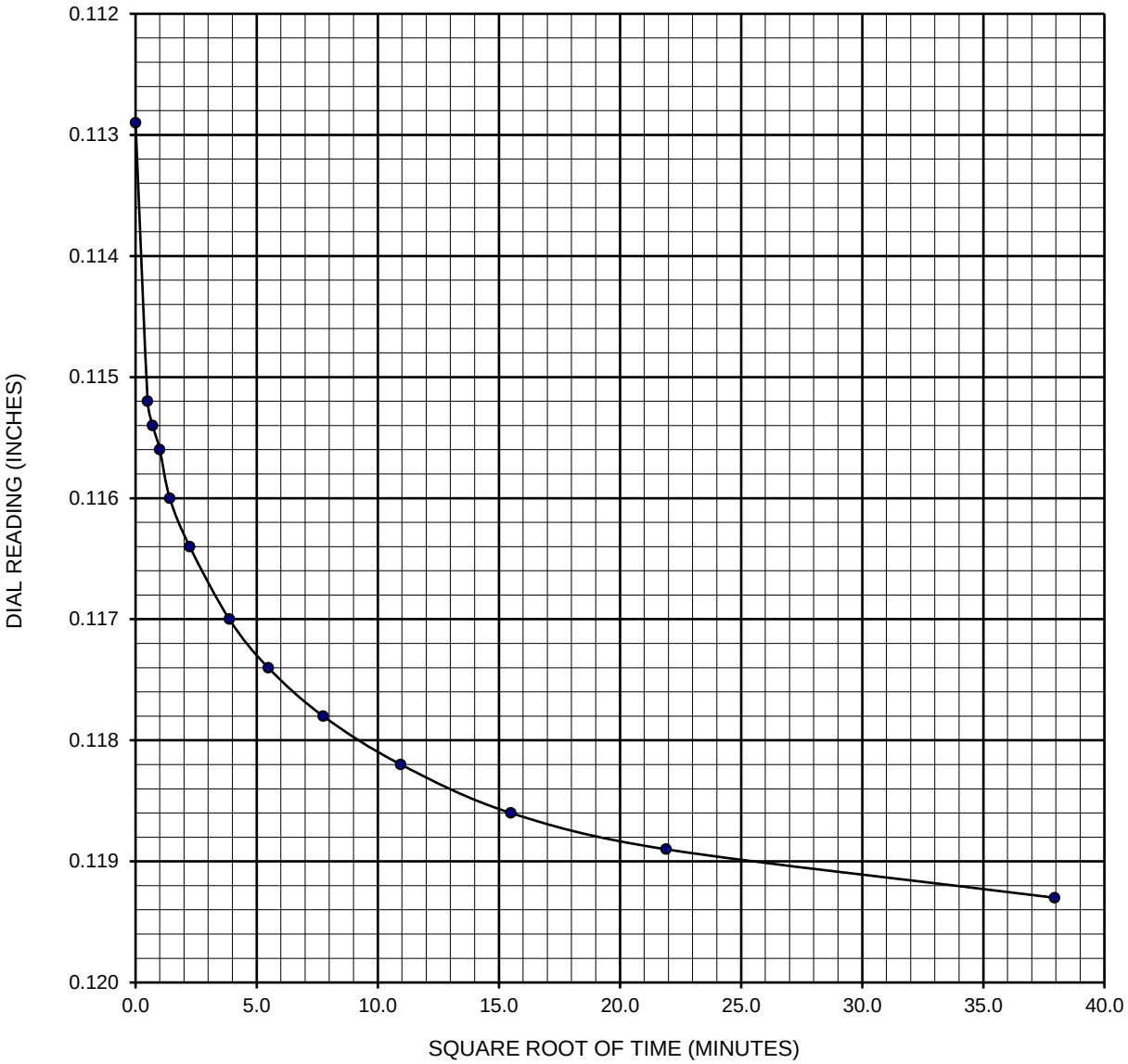

Sample Location	B-34	Load (ksf)	1.6
Depth (ft)	5.0-6.5	Soil Type	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435 - SQUARE ROOT OF TIME METHOD

FIGURE C-22

TIME RATE OF CONSOLIDATION TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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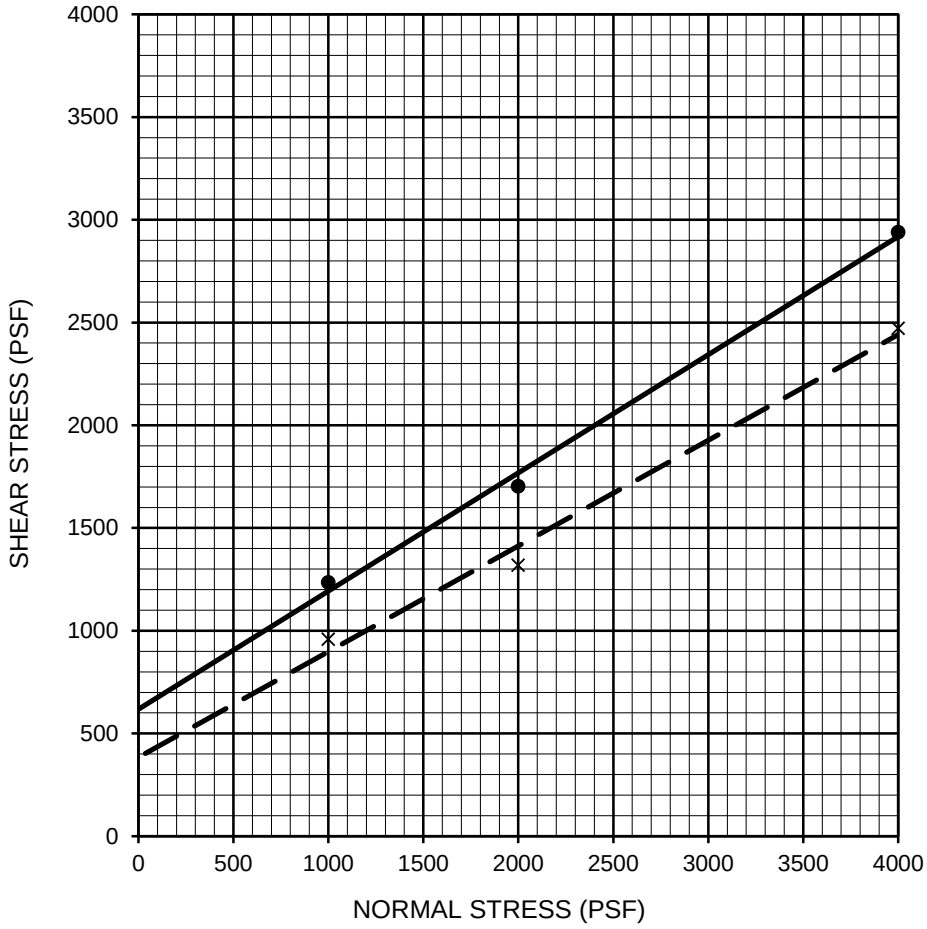

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
LEAN CLAY	—●—	B-1	10.0-11.5	Peak	618	30	CL
LEAN CLAY	– – X – –	B-1	10.0-11.5	Ultimate	384	27	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-23

DIRECT SHEAR TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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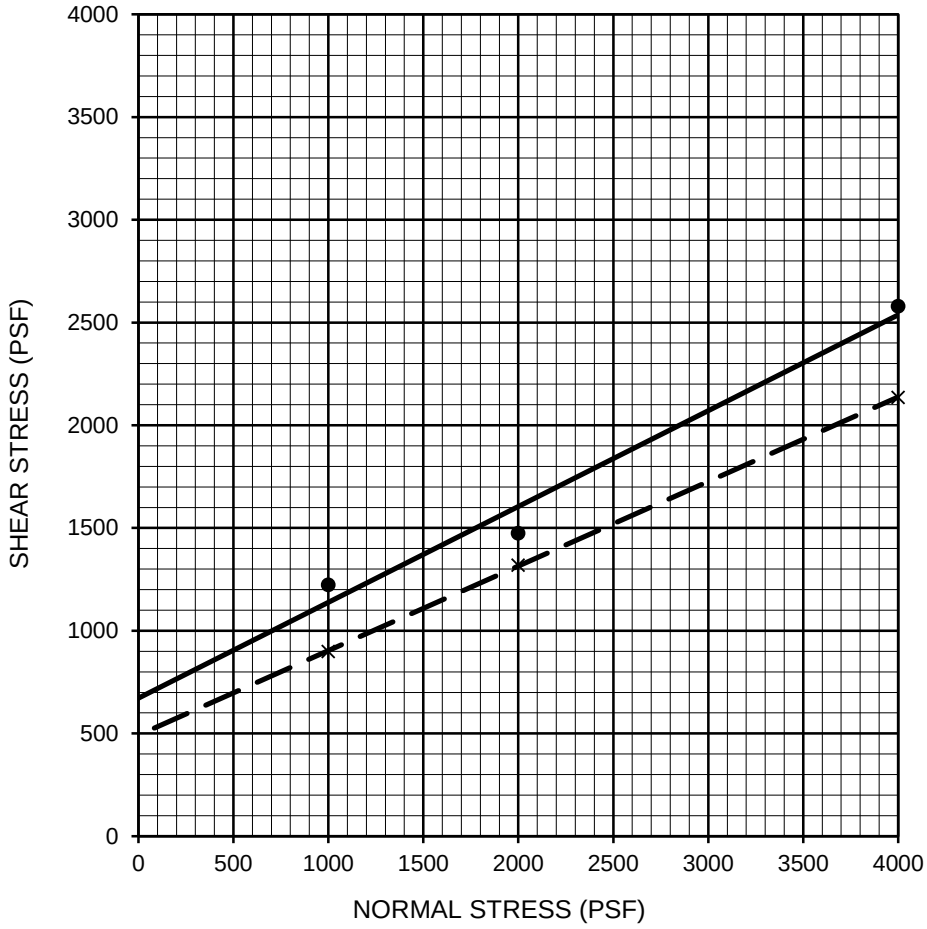

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
LEAN CLAY	—●—	B-4	15.0-16.5	Peak	672	25	CL
LEAN CLAY	– – X – –	B-4	15.0-16.5	Ultimate	492	22	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-24

DIRECT SHEAR TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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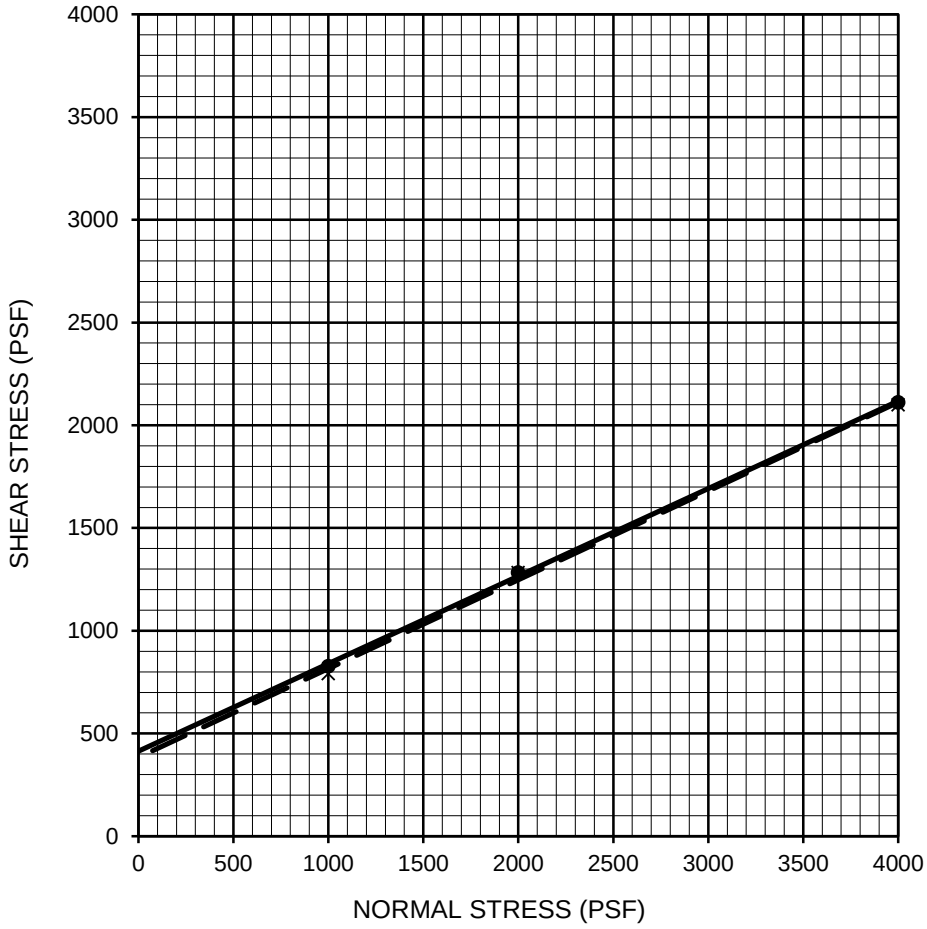

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
LEAN CLAY	—●—	B-7	0.0-5.0	Peak	414	23	CL
LEAN CLAY	– – X – –	B-7	0.0-5.0	Ultimate	384	23	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-25

DIRECT SHEAR TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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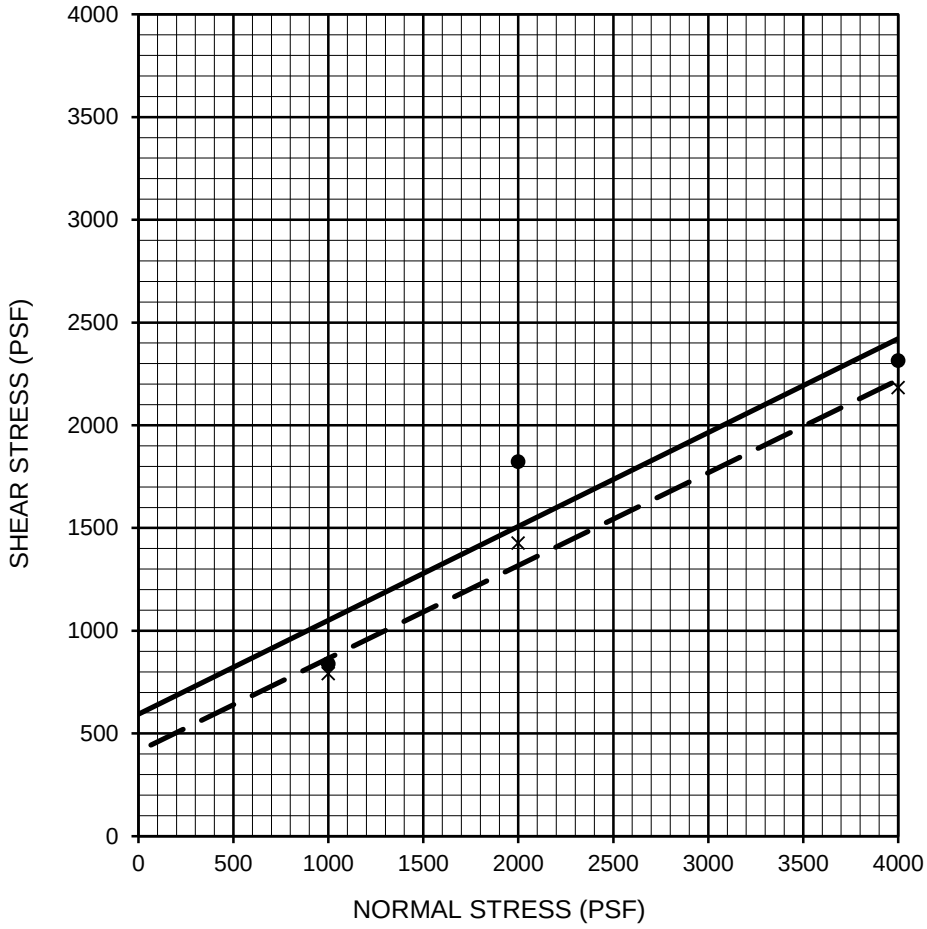

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
LEAN CLAY	●—●	B-10	5.0-6.5	Peak	594	25	CL
LEAN CLAY	– – X – –	B-10	5.0-6.5	Ultimate	414	24	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-26

DIRECT SHEAR TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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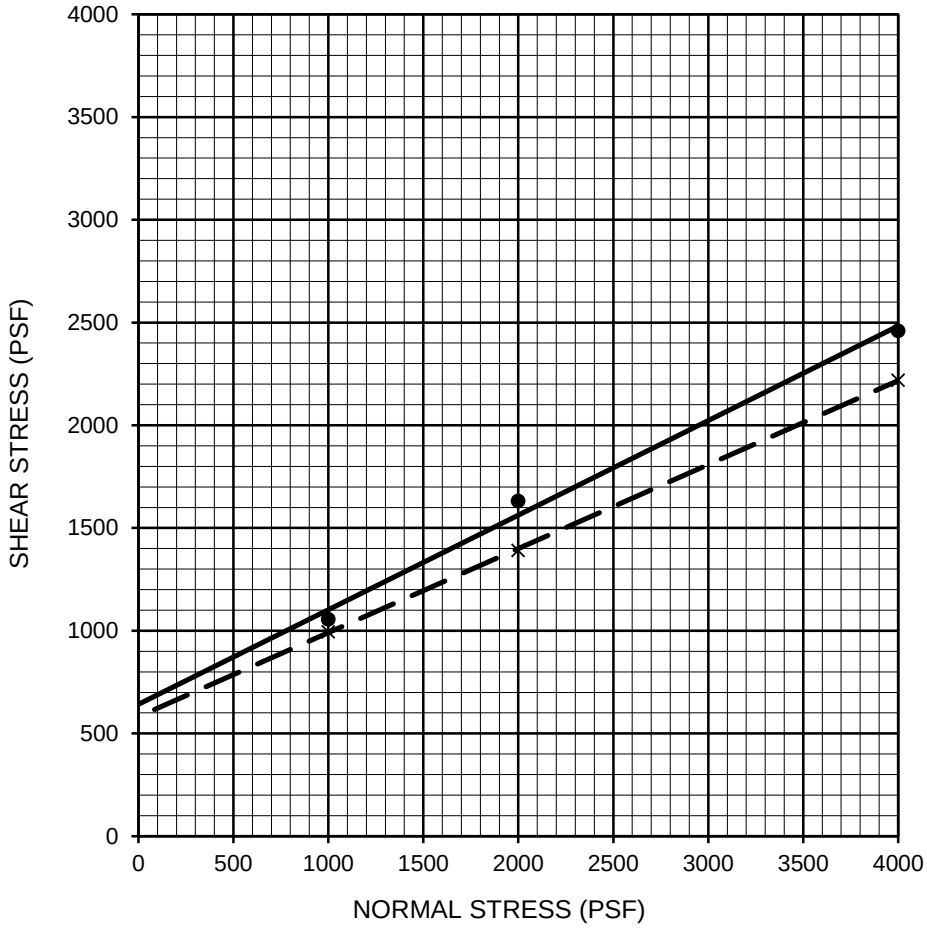

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
LEAN CLAY	—●—	B-12	5.0-6.5	Peak	642	25	CL
LEAN CLAY	– – X – –	B-12	5.0-6.5	Ultimate	582	22	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-27

DIRECT SHEAR TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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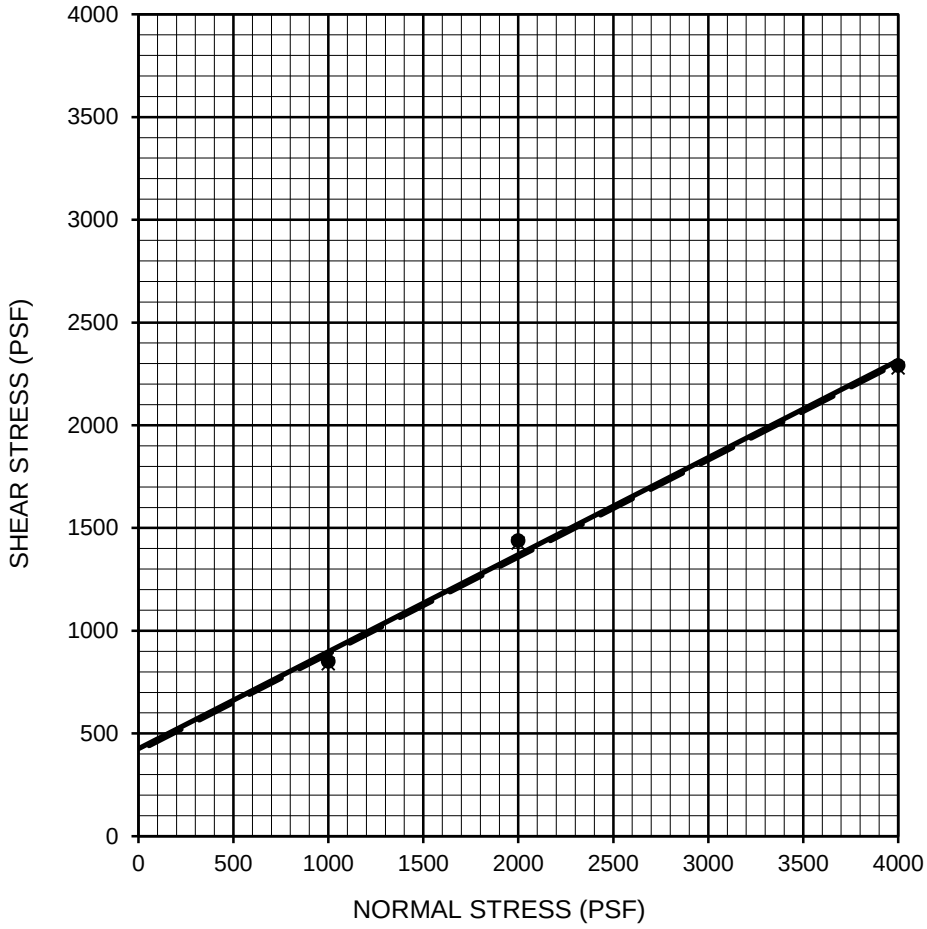

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
LEAN CLAY	●——	B-15	0.5-5.0	Peak	426	25	CL
LEAN CLAY	– – X – –	B-15	0.5-5.0	Ultimate	414	25	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-28

DIRECT SHEAR TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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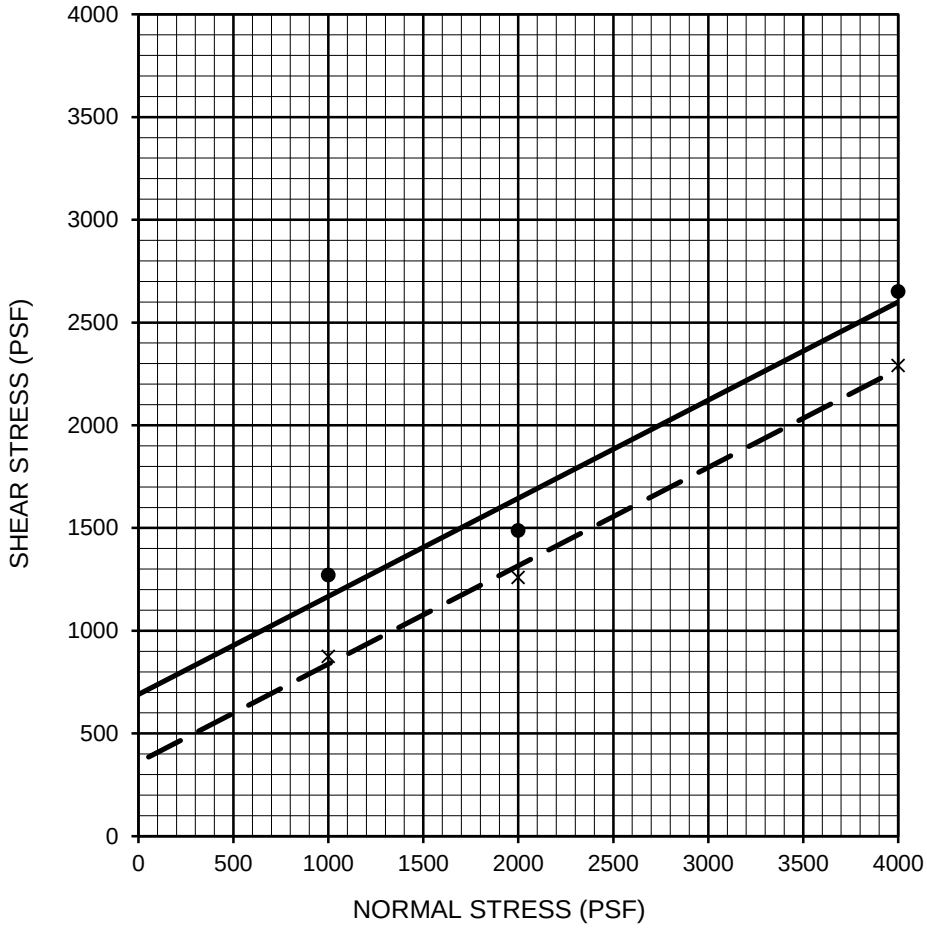

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
LEAN CLAY	●——	B-16	15.0-16.5	Peak	690	26	CL
LEAN CLAY	– – X – –	B-16	15.0-16.5	Ultimate	360	26	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-29

DIRECT SHEAR TEST RESULTS

UCI NORTH CAMPUS
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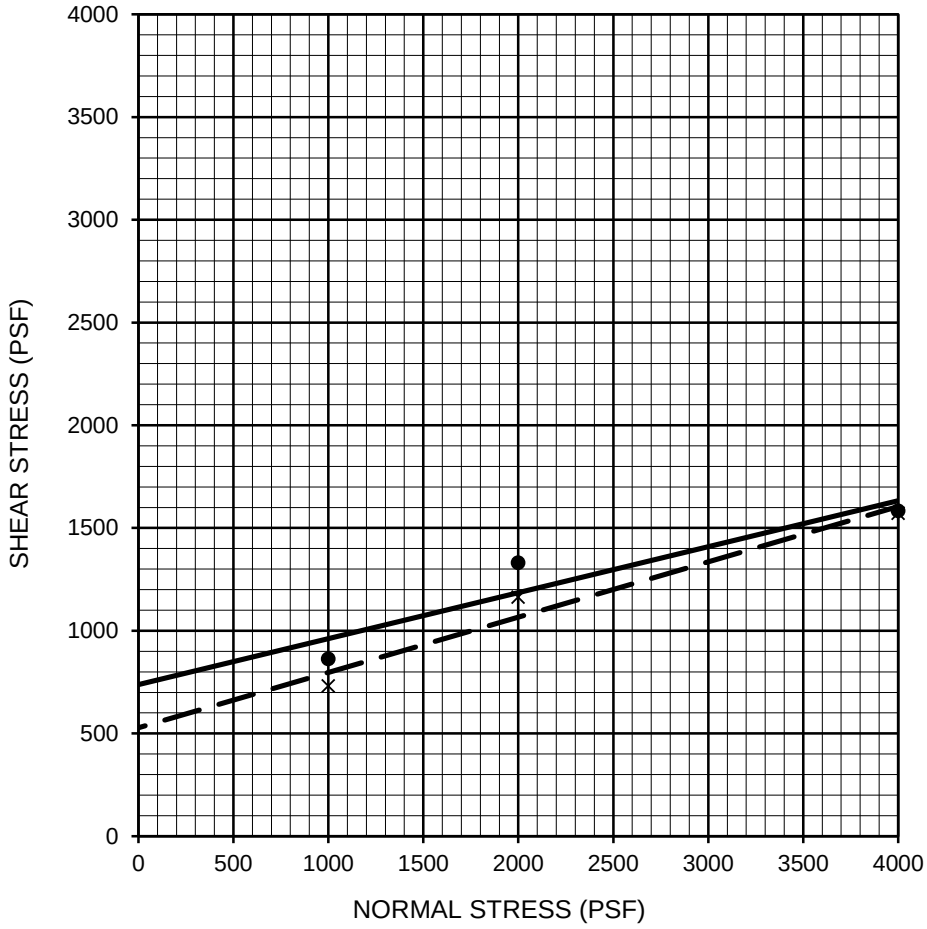

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
LEAN CLAY	—●—	B-23	5.0-6.5	Peak	738	13	CL
LEAN CLAY	– – X – –	B-23	5.0-6.5	Ultimate	528	15	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-30

DIRECT SHEAR TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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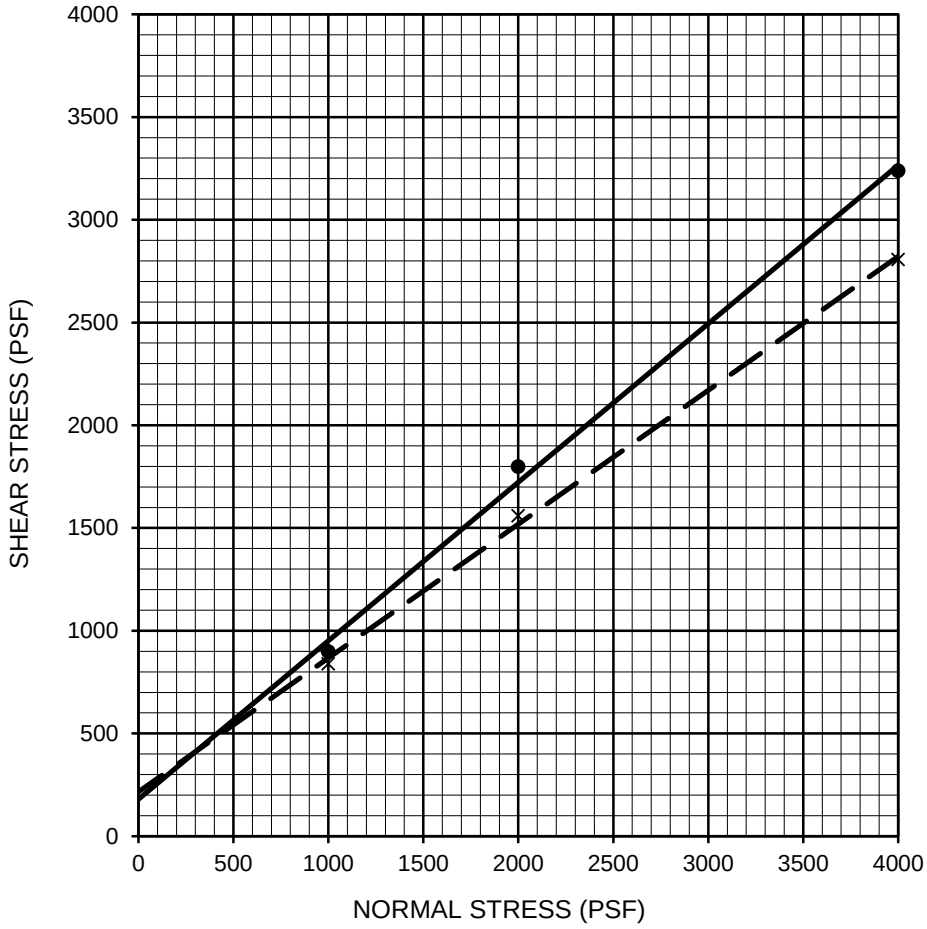

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
POORLY GRADED SAND WITH SILT	●—●	B-29	15.0-16.5	Peak	180	38	SP-SM
POORLY GRADED SAND WITH SILT	– – X – –	B-29	15.0-16.5	Ultimate	216	33	SP-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-31

DIRECT SHEAR TEST RESULTS

UCI NORTH CAMPUS
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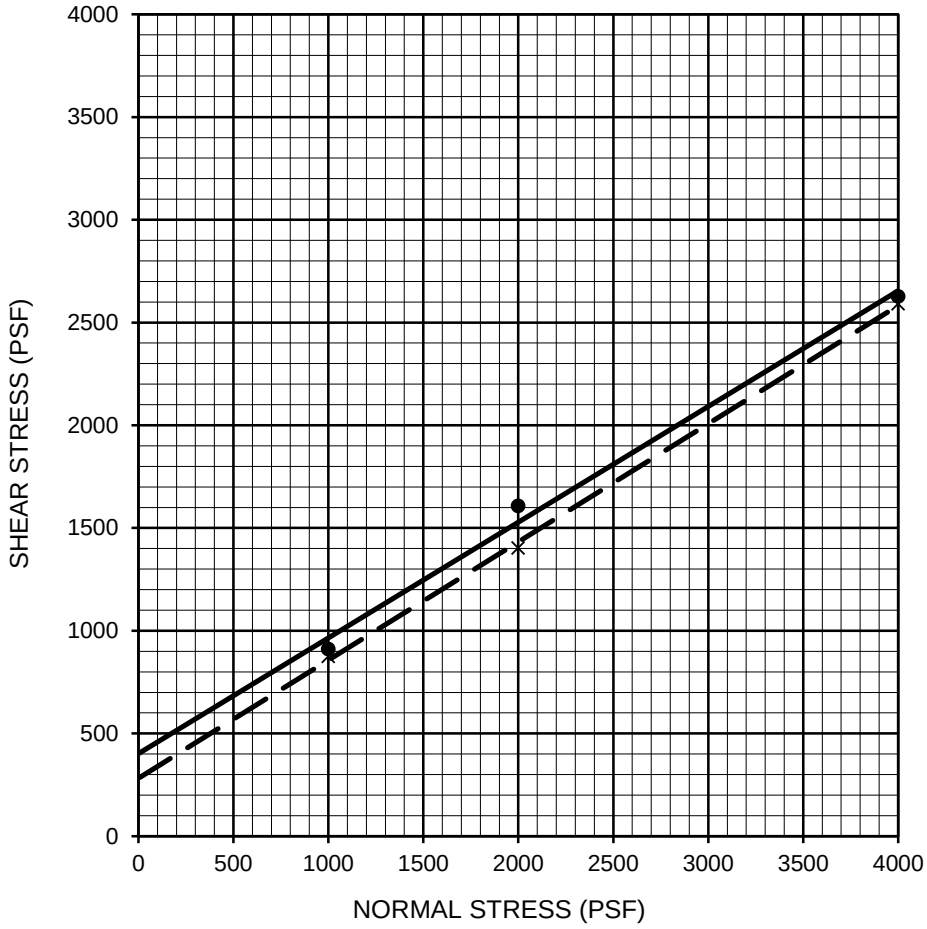

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
SILTY SAND	—●—	B-35	5.0-6.5	Peak	402	29	SP
SILTY SAND	– – X – –	B-35	5.0-6.5	Ultimate	282	30	SP

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-32

DIRECT SHEAR TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

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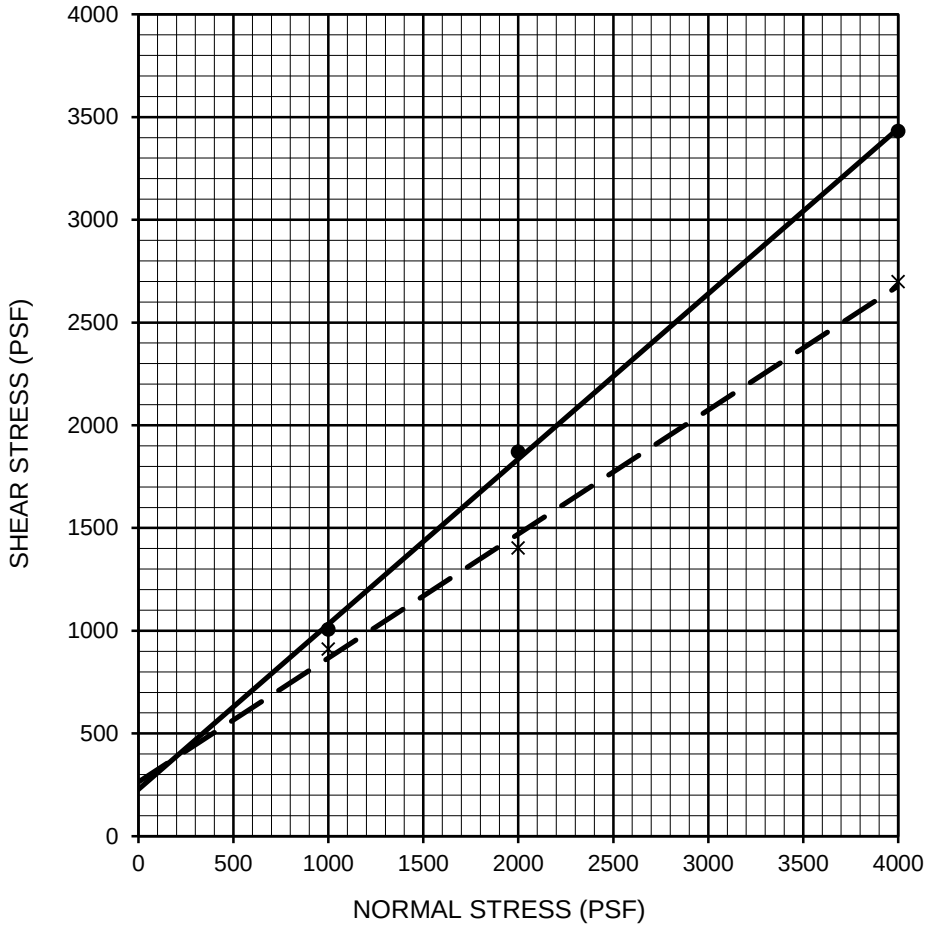

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
POORLY GRADED SAND WITH SILT & GRAVEL	●—●	B-35	10.0-11.5	Peak	228	39	SP-SM
POORLY GRADED SAND WITH SILT & GRAVEL	– – X – –	B-35	10.0-11.5	Ultimate	264	31	SP-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-33

DIRECT SHEAR TEST RESULTS

UCI NORTH CAMPUS
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SAMPLE LOCATION	SAMPLE DEPTH (ft)	INITIAL MOISTURE (percent)	COMPACTED DRY DENSITY (pcf)	FINAL MOISTURE (percent)	VOLUMETRIC SWELL (in)	EXPANSION INDEX	POTENTIAL EXPANSION
B-4	0.0-5.0	13.7	96.0	30.6	0.070	70	Medium
B-5	0.0-5.0	12.7	100.5	29.4	0.073	73	Medium
B-7	0.0-5.0	13.0	97.4	33.3	0.043	43	Low
B-8	1.0-5.0	12.5	98.9	28.4	0.029	29	Low
B-9	1.0-5.0	11.7	101.8	31.2	0.065	65	Medium
B-11	0.5-5.0	13.1	98.3	29.4	0.064	64	Medium
B-14	1.0-5.0	15.2	91.0	40.4	0.056	56	Medium
B-16	0.0-5.0	16.2	90.3	34.1	0.072	72	Medium

PERFORMED IN GENERAL ACCORDANCE WITH ☐ UBC STANDARD 18-2 ☑ ASTM D 4829

FIGURE C-34

EXPANSION INDEX TEST RESULTS

UCI NORTH CAMPUS
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SAMPLE LOCATION	SAMPLE DEPTH (ft)	INITIAL MOISTURE (percent)	COMPACTED DRY DENSITY (pcf)	FINAL MOISTURE (percent)	VOLUMETRIC SWELL (in)	EXPANSION INDEX	POTENTIAL EXPANSION
B-23	0.0-5.0	14.2	94.6	30.0	0.054	54	Medium
B-26	0.0-5.0	11.5	102.9	31.0	0.057	57	Medium
B-27	0.0-5.0	13.0	92.5	31.2	0.031	31	Low
B-34	2.0-5.0	11.2	103.7	26.3	0.066	66	Medium

PERFORMED IN GENERAL ACCORDANCE WITH ☐ UBC STANDARD 18-2 ☑ ASTM D 4829

FIGURE C-35

EXPANSION INDEX TEST RESULTS

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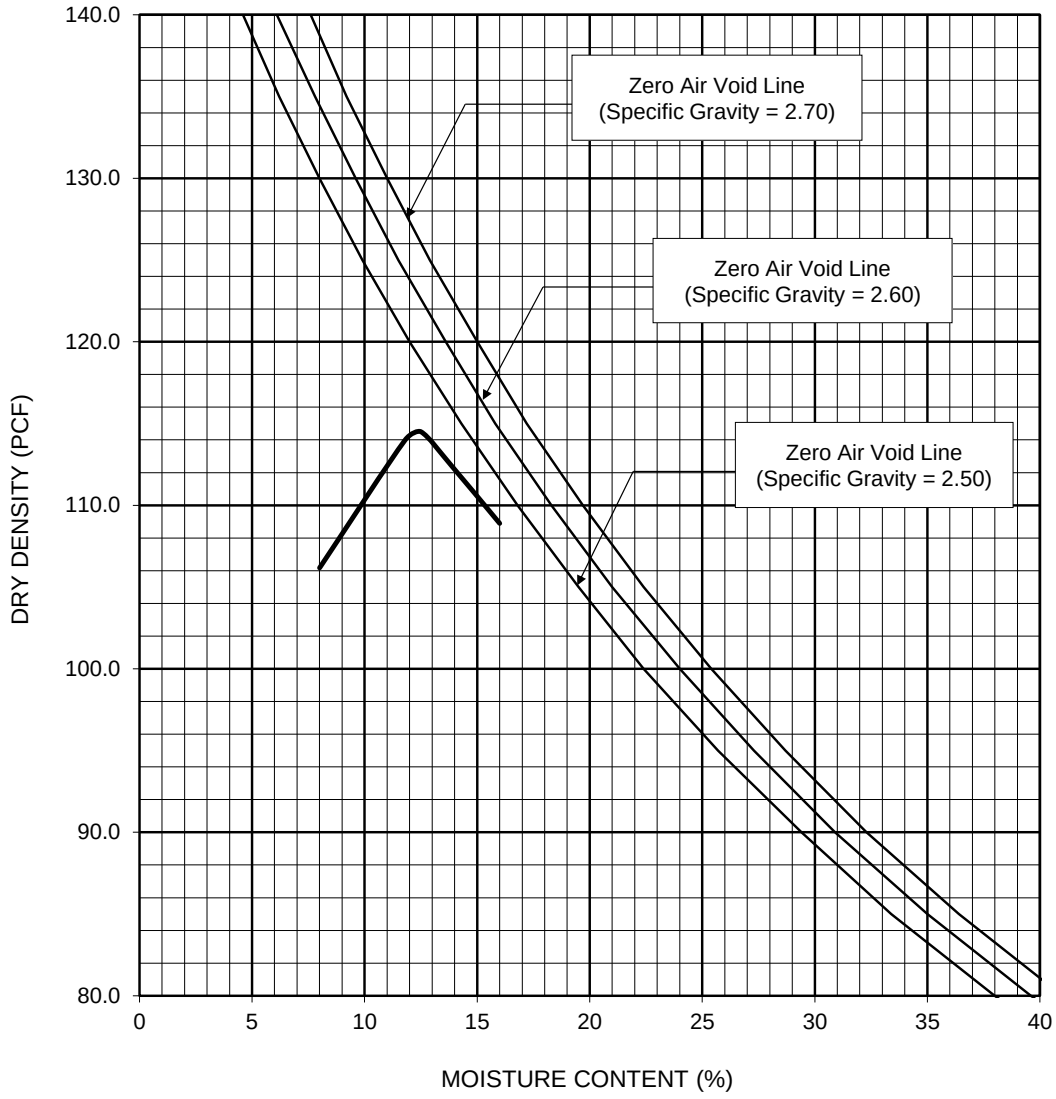


Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
B-7	0.0-5.0	Grayish Brown Lean Clay	114.5	12.5
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718)			N/A	N/A

PERFORMED IN GENERAL ACCORDANCE WITH ☑ ASTM D 1557 ☐ ASTM D 698 METHOD ☐ A ☑ B ☐ C

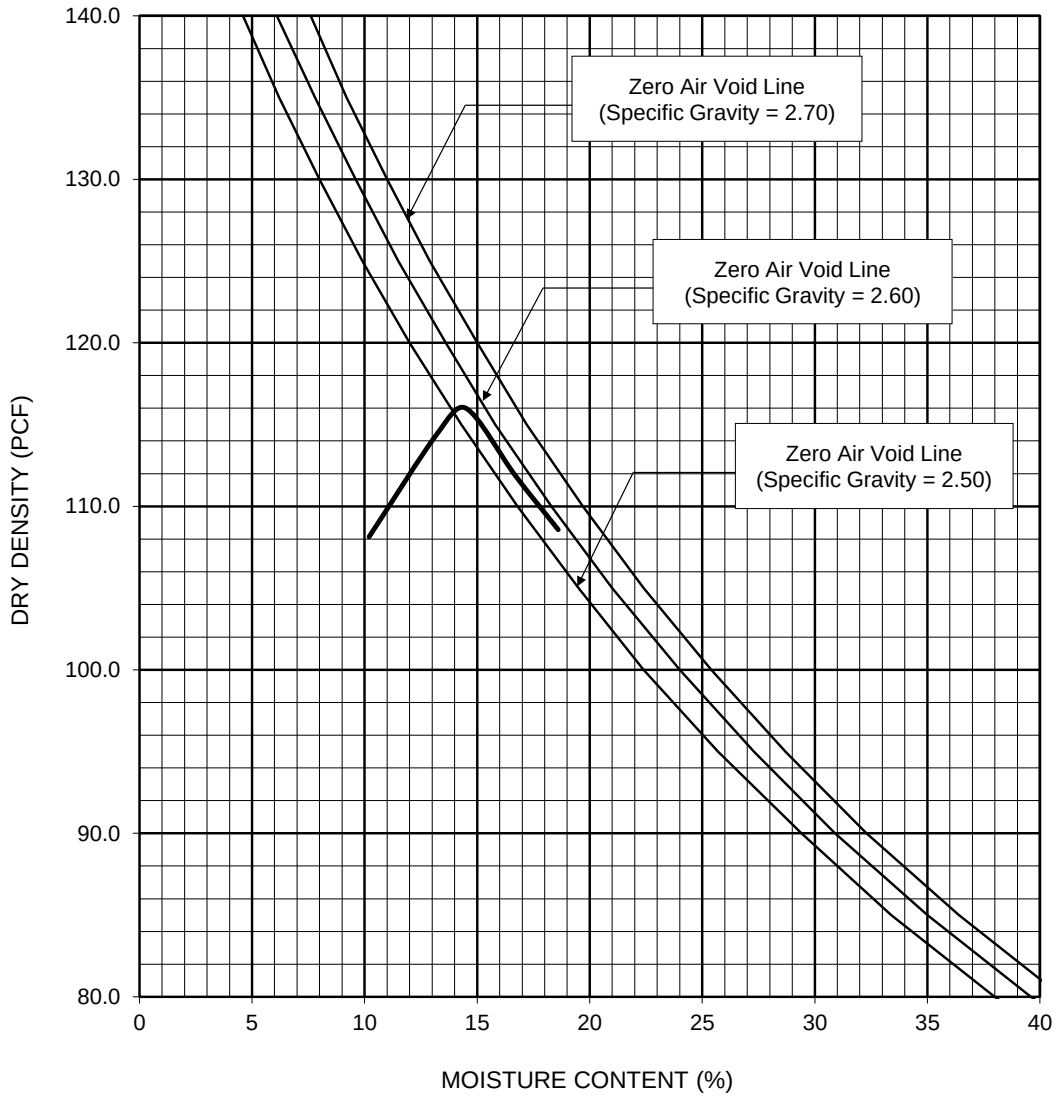
FIGURE C-36

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

PROCTOR DENSITY TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 | 11/19



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
B-15	0.5-5.0	Olive Gray Lean Clay	116.0	14.5
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718)			N/A	N/A

PERFORMED IN GENERAL ACCORDANCE WITH ☑ ASTM D 1557 ☐ ASTM D 698 METHOD ☐ A ☑ B ☐ C

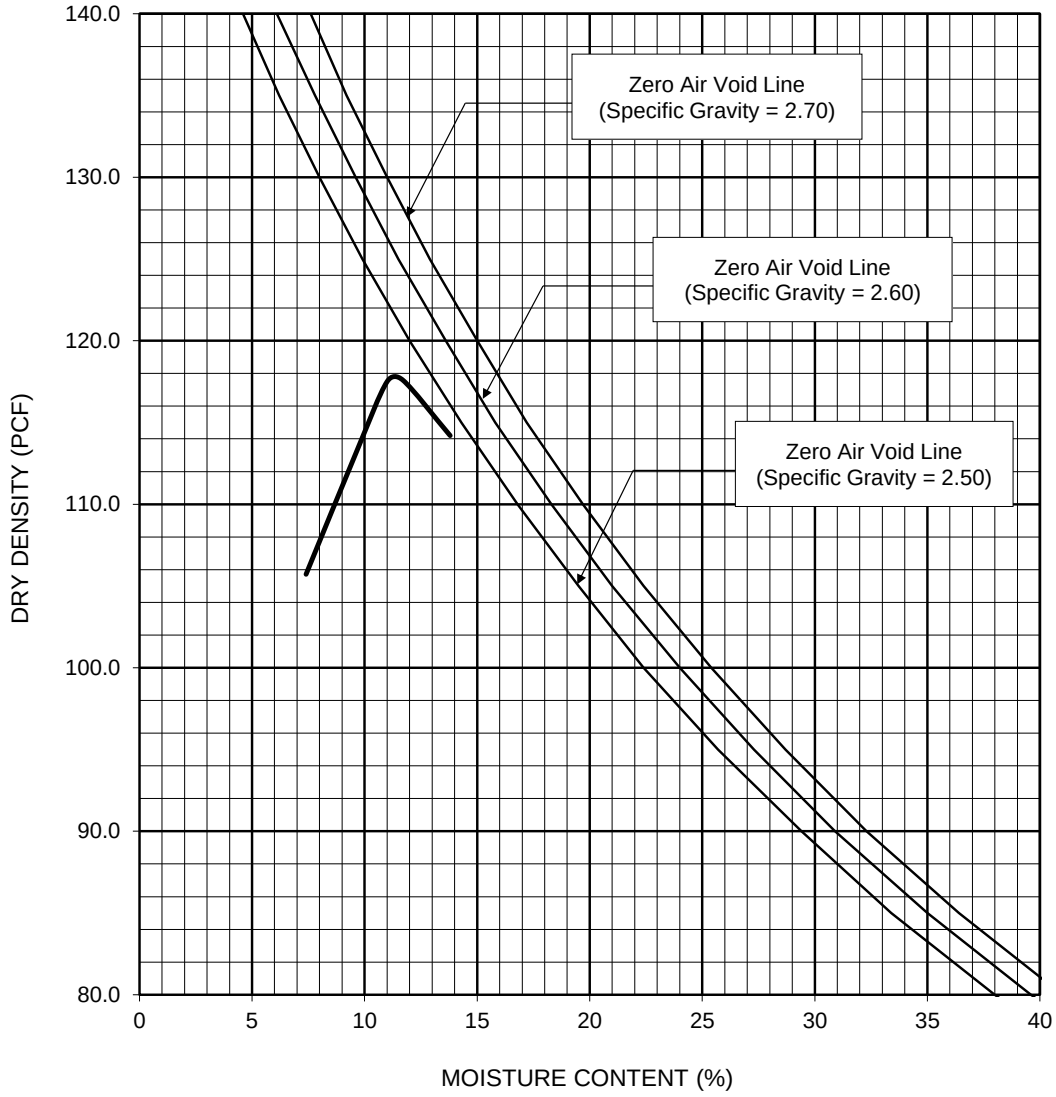
FIGURE C-37

PROCTOR DENSITY TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 | 11/19

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
B-32	0.0-5.0	Reddish Gray Lean Clay	117.5	11.0
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718)			N/A	N/A

PERFORMED IN GENERAL ACCORDANCE WITH ☑ ASTM D 1557 ☐ ASTM D 698 METHOD ☐ A ☑ B ☐ C

FIGURE C-38

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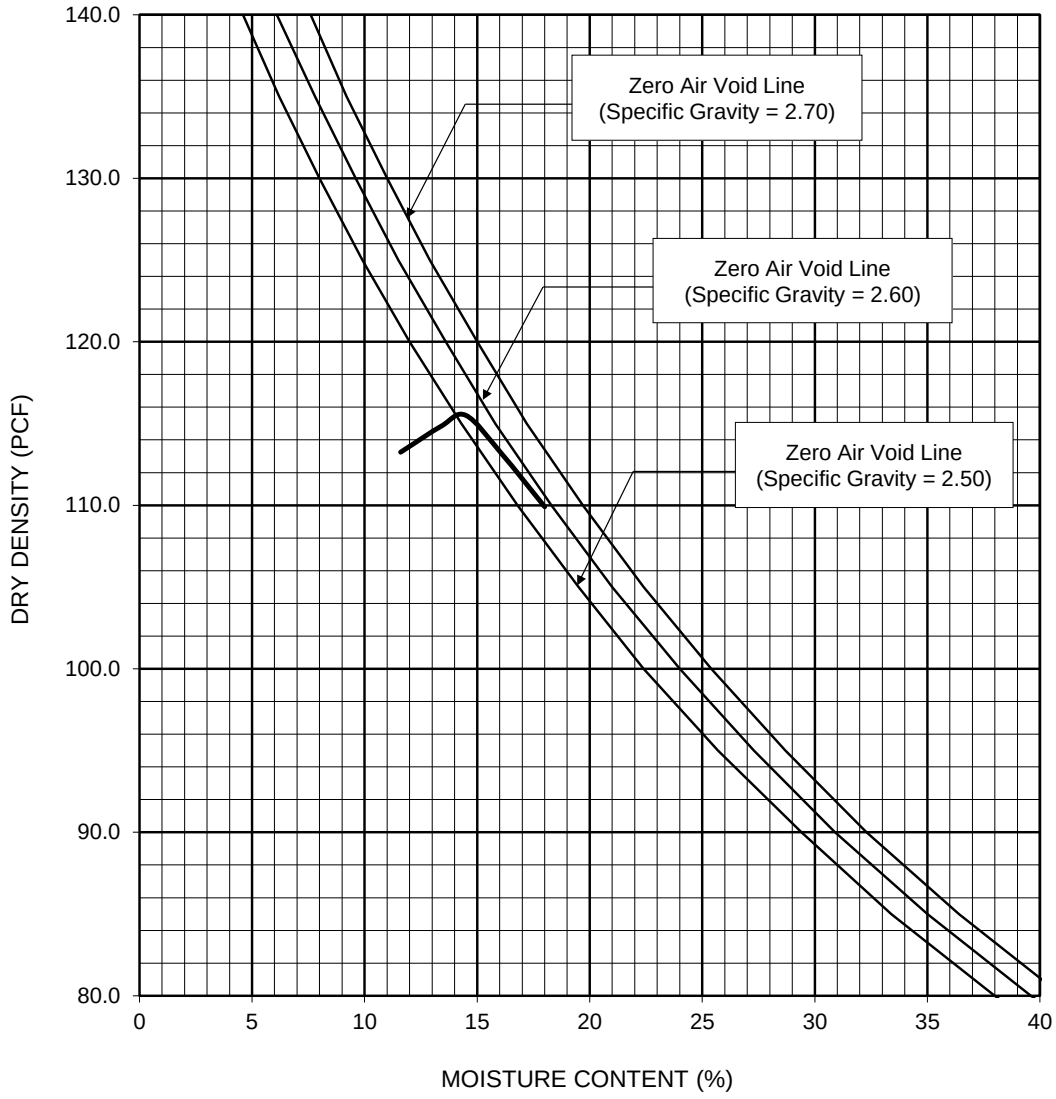
PROCTOR DENSITY TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 | 11/19



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
B-35	0.0-5.0	Yellowish Brown Sandy Silt	115.5	14.5
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718)			N/A	N/A

PERFORMED IN GENERAL ACCORDANCE WITH ☑ ASTM D 1557 ☐ ASTM D 698 METHOD ☐ A ☑ B ☐ C

FIGURE C-39

PROCTOR DENSITY TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 | 11/19

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH [1]	RESISTIVITY [1] (ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
B-1	1.0-5.0	7.3	581	340	0.034	40
B-9	1.0-5.0	7.8	1,034	180	0.018	70
B-10	1.0-5.0	7.7	684	350	0.035	230
B-14	1.0-5.0	7.8	242	1080	0.108	100
B-16	0.0-5.0	7.1	995	30	0.003	40
B-24	0.0-5.0	7.7	406	540	0.054	590
B-26	0.0-5.0	7.1	955	40	0.004	30
B-28	1.0-5.0	7.6	1,056	10	0.001	30

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

FIGURE C-40

CORROSIVITY TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 | 11/19

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH [1]	RESISTIVITY [1] (ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
B-29	1.0-5.0	7.3	701	280	0.028	70
B-34	2.0-5.0	7.5	764	350	0.035	190

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

FIGURE C-41

CORROSIVITY TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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SAMPLE LOCATION	SAMPLE DEPTH (ft)	SOIL TYPE	R-VALUE
B-9	1.0-5.0	CL	6
B-15	0.5-5.0	CL	5
B-23	0.0-5.0	CL	0
B-24	0.0-5.0	CL	5
B-26	0.0-5.0	CL	0
B-29	1.0-5.0	CL	0
B-34	2.0-5.0	CL	5

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2844/CT 301

FIGURE C-42

R-VALUE TEST RESULTS

UCI NORTH CAMPUS
IRVINE, CALIFORNIA

209570014 | 11/19

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

APPENDIX D

Analytical Testing

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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04 June 2019

Franklin Ruiz
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: UCI North Campus

Enclosed are the results of analyses for samples received by the laboratory on 05/28/19 15:22. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/04/19 08:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-10 @ 5'	T191698-01	Soil	05/24/19 10:15	05/28/19 15:22
B-11 @ 5'	T191698-02	Soil	05/24/19 10:46	05/28/19 15:22
B-21 @ 5'	T191698-03	Soil	05/24/19 13:42	05/28/19 15:22
B-22A @ 5'	T191698-04	Soil	05/24/19 12:20	05/28/19 15:22

SunStar Laboratories, Inc.

Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/04/19 08:29

DETECTIONS SUMMARY

Sample ID: B-10 @ 5' **Laboratory ID:** T191698-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**210**	1.0	mg/kg	EPA 6010b	
Chromium	**25**	2.0	mg/kg	EPA 6010b	
Cobalt	**14**	2.0	mg/kg	EPA 6010b	
Copper	**24**	1.0	mg/kg	EPA 6010b	
Lead	**11**	3.0	mg/kg	EPA 6010b	
Nickel	**22**	2.0	mg/kg	EPA 6010b	
Vanadium	**64**	5.0	mg/kg	EPA 6010b	
Zinc	**81**	1.0	mg/kg	EPA 6010b	

Sample ID: B-11 @ 5' **Laboratory ID:** T191698-02

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**200**	1.0	mg/kg	EPA 6010b	
Chromium	**24**	2.0	mg/kg	EPA 6010b	
Cobalt	**13**	2.0	mg/kg	EPA 6010b	
Copper	**22**	1.0	mg/kg	EPA 6010b	
Lead	**12**	3.0	mg/kg	EPA 6010b	
Nickel	**21**	2.0	mg/kg	EPA 6010b	
Vanadium	**59**	5.0	mg/kg	EPA 6010b	
Zinc	**76**	1.0	mg/kg	EPA 6010b	

Sample ID: B-21 @ 5' **Laboratory ID:** T191698-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**160**	1.0	mg/kg	EPA 6010b	
Chromium	**18**	2.0	mg/kg	EPA 6010b	
Cobalt	**8.6**	2.0	mg/kg	EPA 6010b	
Copper	**12**	1.0	mg/kg	EPA 6010b	
Lead	**8.8**	3.0	mg/kg	EPA 6010b	
Nickel	**15**	2.0	mg/kg	EPA 6010b	
Vanadium	**42**	5.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/04/19 08:29

Sample ID: B-21 @ 5' **Laboratory ID:** T191698-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Zinc	**43**	1.0	mg/kg	EPA 6010b	

Sample ID: B-22A @ 5' **Laboratory ID:** T191698-04

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**200**	1.0	mg/kg	EPA 6010b	
Chromium	**25**	2.0	mg/kg	EPA 6010b	
Cobalt	**13**	2.0	mg/kg	EPA 6010b	
Copper	**20**	1.0	mg/kg	EPA 6010b	
Lead	**11**	3.0	mg/kg	EPA 6010b	
Nickel	**22**	2.0	mg/kg	EPA 6010b	
Vanadium	**57**	5.0	mg/kg	EPA 6010b	
Zinc	**75**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/04/19 08:29

B-10 @ 5'

T191698-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9052844	05/28/19	05/30/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*103 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9052923	05/29/19	05/29/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	05/29/19	"	
Arsenic	ND	5.0	"	"	"	"	05/29/19	"	
Barium	**210**	1.0	"	"	"	"	05/29/19	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	05/29/19	"	
Chromium	**25**	2.0	"	"	"	"	05/29/19	"	
Cobalt	**14**	2.0	"	"	"	"	05/29/19	"	
Copper	**24**	1.0	"	"	"	"	05/29/19	"	
Lead	**11**	3.0	"	"	"	"	05/29/19	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**22**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**64**	5.0	"	"	"	"	05/29/19	"	
Zinc	**81**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9052922	05/29/19	05/29/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/04/19 08:29

B-11 @ 5'

T191698-02 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9052844	05/28/19	05/30/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*104 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9052923	05/29/19	05/29/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**200**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	05/29/19	"	
Cadmium	ND	2.0	"	"	"	"	05/29/19	"	
Chromium	**24**	2.0	"	"	"	"	"	"	
Cobalt	**13**	2.0	"	"	"	"	"	"	
Copper	**22**	1.0	"	"	"	"	"	"	
Lead	**12**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**21**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**59**	5.0	"	"	"	"	"	"	
Zinc	**76**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9052922	05/29/19	05/29/19	EPA 7471A Soil	

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B-21 @ 5'

T191698-03 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9052844	05/28/19	05/30/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*105 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9052923	05/29/19	05/29/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**160**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**18**	2.0	"	"	"	"	"	"	
Cobalt	**8.6**	2.0	"	"	"	"	"	"	
Copper	**12**	1.0	"	"	"	"	"	"	
Lead	**8.8**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**15**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**42**	5.0	"	"	"	"	"	"	
Zinc	**43**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9052922	05/29/19	05/29/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/04/19 08:29

B-22A @ 5'

T191698-04 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9052844	05/28/19	05/31/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*105 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9052923	05/29/19	05/29/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**200**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	05/29/19	"	
Cadmium	ND	2.0	"	"	"	"	05/29/19	"	
Chromium	**25**	2.0	"	"	"	"	"	"	
Cobalt	**13**	2.0	"	"	"	"	"	"	
Copper	**20**	1.0	"	"	"	"	"	"	
Lead	**11**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**22**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**57**	5.0	"	"	"	"	"	"	
Zinc	**75**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9052922	05/29/19	05/29/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/04/19 08:29

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052844 - EPA 3550B GC										
Blank (9052844-BLK1)				Prepared: 05/28/19 Analyzed: 05/30/19						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*114*		*"*	*100*		*114*	*65-135*			
LCS (9052844-BS1)				Prepared: 05/28/19 Analyzed: 05/30/19						
C13-C28 (DRO)	540	10	mg/kg	500		109	75-125			
Surrogate: p-Terphenyl	*111*		*"*	*100*		*111*	*65-135*			
LCS Dup (9052844-BSD1)				Prepared: 05/28/19 Analyzed: 05/30/19						
C13-C28 (DRO)	490	10	mg/kg	500		98.4	75-125	9.82	20	
Surrogate: p-Terphenyl	*78.5*		*"*	*100*		*78.5*	*65-135*			

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949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/04/19 08:29

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052923 - EPA 3050B										
Blank (9052923-BLK1)				Prepared & Analyzed: 05/29/19						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (9052923-BS1)				Prepared & Analyzed: 05/29/19						
Arsenic	120	5.0	mg/kg	100		120	75-125			
Barium	120	1.0	"	100		120	75-125			
Cadmium	122	2.0	"	100		122	75-125			
Chromium	118	2.0	"	100		118	75-125			
Lead	122	3.0	"	100		122	75-125			
Matrix Spike (9052923-MS1)	**Source: T191698-01**			Prepared & Analyzed: 05/29/19						
Arsenic	106	4.5	mg/kg	90.9	4.22	112	75-125			
Barium	249	0.91	"	90.9	206	47.2	75-125			QM-07
Cadmium	105	1.8	"	90.9	1.18	114	75-125			
Chromium	128	1.8	"	90.9	25.1	114	75-125			
Lead	111	2.7	"	90.9	10.7	110	75-125			

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Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/04/19 08:29

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052923 - EPA 3050B										
Matrix Spike Dup (9052923-MSD1)	**Source: T191698-01**			Prepared & Analyzed: 05/29/19						
Arsenic	118	5.0	mg/kg	100	4.22	114	75-125	10.7	20	
Barium	329	1.0	"	100	206	123	75-125	27.8	20	QM-07
Cadmium	117	2.0	"	100	1.18	116	75-125	11.0	20	
Chromium	140	2.0	"	100	25.1	115	75-125	8.78	20	
Lead	123	3.0	"	100	10.7	113	75-125	10.9	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/04/19 08:29

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052922 - EPA 7471A Soil										
Blank (9052922-BLK1)				Prepared & Analyzed: 05/29/19						
Mercury	ND	0.10	mg/kg							
LCS (9052922-BS1)				Prepared & Analyzed: 05/29/19						
Mercury	0.352	0.10	mg/kg	0.397		88.6	80-120			
Matrix Spike (9052922-MS1)	**Source: T191698-01**			Prepared & Analyzed: 05/29/19						
Mercury	0.337	0.10	mg/kg	0.385	ND	87.6	75-125			
Matrix Spike Dup (9052922-MSD1)	**Source: T191698-01**			Prepared & Analyzed: 05/29/19						
Mercury	0.344	0.10	mg/kg	0.417	ND	82.7	75-125	2.19	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/04/19 08:29

Notes and Definitions

QM-07	The spike recovery and or RPD was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Chain of Custody Record

25712 Commercentre Drive, Lake Forest, CA 92630
949-297-5020

Client: Ninyo & Moore
Address: 475 Goddard, Suite 200
Phone: (949) 753-7070 Fax: (949) 753-7071
Project Manager: Franklin Ruiz

Date: 5/28/2019 Page: 1 Of 1
Project Name: UCI North Campus
Collector: GM Client Project #: 209570014
Batch #: T191698 EDF #:

Laboratory ID #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	EPA 8015 TPH			Comments/Preservative	Total # of containers
01	B-10 @ 5'	5/28/19	10:15AM	Soil	4oz Glass Jar									X		X			ICE	1
02																				
03	B-11 @ 5'	5/28/19	10:46AM	Soil	4oz Glass Jar									X		X			ICE	1
03	B-21 @ 5'	5/28/19	1:42PM	Soil	4oz Glass Jar									X		X			ICE	1
04	B-22A @ 5'	5/28/19	12:20PM	Soil	4oz Glass Jar									X		X			ICE	1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	5/28/19		5-28-19 15:03
	5-28-19 15:22		5-28-19 15:22

Total # of containers: 4
Chain of Custody seals Y/N/NA: Y
Seals intact? Y/N/NA: Y
Received good condition/cold: 4.1°C

Turn around time: Standard

Notes

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

COC 181368

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SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #:	T19698		
Client Name:	NINYO & MOORE	Project:	UCI NORTH CAMPUS
Delivered by:	☐ **Client** ☒ **SunStar Courier** ☐ **GSO** ☐ **FedEx** ☐ **Other**		
If Courier, Received by:	HARIT	Date/Time Courier Received:	5-28-19 15:00
Lab Received by:	SUNNY	Date/Time Lab Received:	5-28-19 15:22

Total number of coolers received: 0

Temperature:	Cooler #1	2.9 °C +/- the CF (1.2°C)	=	4.1	°C corrected temperature
Temperature:	Cooler #2	°C +/- the CF (1.2°C)	=		°C corrected temperature
Temperature:	Cooler #3	°C +/- the CF (1.2°C)	=		°C corrected temperature

Temperature criteria = ≤ 6°C (no frozen containers)	Within criteria?	☒**Yes** ☐**No**
If NO:		
Samples received on ice?	☐Yes	☐**No → Complete Non-Conformance Sheet**
If on ice, samples received same day collected?	☐Yes → Acceptable	☐**No → Complete Non-Conformance Sheet**

Custody seals intact on cooler/sample	☐Yes	☐No*	☒N/A
Sample containers intact	☒Yes	☐No*	
Sample labels match Chain of Custody IDs	☒Yes	☐No*	
Total number of containers received match COC	☒Yes	☐No*	
Proper containers received for analyses requested on COC	☒Yes	☐No*	
Proper preservative indicated on COC/containers for analyses requested	☐Yes	☐No*	☒N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☒ **Yes**	☐**No***	

* Complete Non-Conformance Receiving Sheet if checked

Cooler/Sample Review - Initials and date: HP 5-28-19

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

Printed: 5/28/2019 3:53:20PM

WORK ORDER

T191698

Client: **Ninyo & Moore** **Project Manager:** **Mike Jaroudi**

Project: **UCI North Campus** **Project Number:** **209570014**

Report To:

Ninyo & Moore
Franklin Ruiz
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 06/04/19 17:00 (5 day TAT)

Received By: Sunny Lounethone Date Received: 05/28/19 15:22

Logged In By: Harit Patel Date Logged In: 05/28/19 15:30

Samples Received at: **4.1°C**

Custody Seals	No	Received On Ice	Yes
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confirı	No		

Analysis	Due	TAT	Expires	Comments
T191698-01 B-10 @ 5' [Soil] Sampled 05/24/19 10:15 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/04/19 15:00	5	11/20/19 10:15	
8015 Carbon Chain	06/04/19 15:00	5	06/07/19 10:15	
T191698-02 B-11 @ 5' [Soil] Sampled 05/24/19 10:46 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/04/19 15:00	5	11/20/19 10:46	
8015 Carbon Chain	06/04/19 15:00	5	06/07/19 10:46	
T191698-03 B-21 @ 5' [Soil] Sampled 05/24/19 13:42 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/04/19 15:00	5	11/20/19 13:42	
8015 Carbon Chain	06/04/19 15:00	5	06/07/19 13:42	
T191698-04 B-22A @ 5' [Soil] Sampled 05/24/19 12:20 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/04/19 15:00	5	11/20/19 12:20	
8015 Carbon Chain	06/04/19 15:00	5	06/07/19 12:20	

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By Date

SunStar Laboratories, Inc.
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05 June 2019

Franklin Ruiz
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: UCI North Campus

Enclosed are the results of analyses for samples received by the laboratory on 05/29/19 15:48. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/05/19 17:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-20 @ 5'	T191719-01	Soil	05/29/19 07:50	05/29/19 15:48
B-23 @ 3'	T191719-02	Soil	05/29/19 09:50	05/29/19 15:48
B-33 @ 0.5'	T191719-03	Soil	05/29/19 13:40	05/29/19 15:48

SunStar Laboratories, Inc.

Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/05/19 17:48

DETECTIONS SUMMARY

Sample ID: B-20 @ 5' **Laboratory ID:** T191719-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**200**	1.0	mg/kg	EPA 6010b	
Chromium	**16**	2.0	mg/kg	EPA 6010b	
Cobalt	**7.0**	2.0	mg/kg	EPA 6010b	
Copper	**9.9**	1.0	mg/kg	EPA 6010b	
Lead	**5.7**	3.0	mg/kg	EPA 6010b	
Nickel	**13**	2.0	mg/kg	EPA 6010b	
Vanadium	**36**	5.0	mg/kg	EPA 6010b	
Zinc	**39**	1.0	mg/kg	EPA 6010b	

Sample ID: B-23 @ 3' **Laboratory ID:** T191719-02

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**180**	1.0	mg/kg	EPA 6010b	
Chromium	**20**	2.0	mg/kg	EPA 6010b	
Cobalt	**10**	2.0	mg/kg	EPA 6010b	
Copper	**20**	1.0	mg/kg	EPA 6010b	
Lead	**8.5**	3.0	mg/kg	EPA 6010b	
Nickel	**18**	2.0	mg/kg	EPA 6010b	
Vanadium	**51**	5.0	mg/kg	EPA 6010b	
Zinc	**69**	1.0	mg/kg	EPA 6010b	

Sample ID: B-33 @ 0.5' **Laboratory ID:** T191719-03

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**30**	10	mg/kg	EPA 8015B	
Barium	**180**	1.0	mg/kg	EPA 6010b	
Chromium	**22**	2.0	mg/kg	EPA 6010b	
Cobalt	**11**	2.0	mg/kg	EPA 6010b	
Copper	**20**	1.0	mg/kg	EPA 6010b	
Lead	**11**	3.0	mg/kg	EPA 6010b	
Nickel	**18**	2.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/05/19 17:48

Sample ID: B-33 @ 0.5' **Laboratory ID:** T191719-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Vanadium	**53**	5.0	mg/kg	EPA 6010b	
Zinc	**68**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/05/19 17:48

B-20 @ 5'

T191719-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9053036	05/30/19	06/01/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*96.8 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9053022	05/30/19	05/31/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**200**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	05/31/19	"	
Cadmium	ND	2.0	"	"	"	"	05/31/19	"	
Chromium	**16**	2.0	"	"	"	"	"	"	
Cobalt	**7.0**	2.0	"	"	"	"	"	"	
Copper	**9.9**	1.0	"	"	"	"	"	"	
Lead	**5.7**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**13**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**36**	5.0	"	"	"	"	"	"	
Zinc	**39**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9053020	05/30/19	06/05/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/05/19 17:48

B-23 @ 3'

T191719-02 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9053036	05/30/19	06/01/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*90.9 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9053022	05/30/19	05/31/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**180**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**20**	2.0	"	"	"	"	"	"	
Cobalt	**10**	2.0	"	"	"	"	"	"	
Copper	**20**	1.0	"	"	"	"	"	"	
Lead	**8.5**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**18**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**51**	5.0	"	"	"	"	"	"	
Zinc	**69**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9053020	05/30/19	06/05/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/05/19 17:48

B-33 @ 0.5'

T191719-03 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9053036	05/30/19	06/01/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**30**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*94.3 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9053022	05/30/19	05/31/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**180**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	05/31/19	"	
Cadmium	ND	2.0	"	"	"	"	05/31/19	"	
Chromium	**22**	2.0	"	"	"	"	"	"	
Cobalt	**11**	2.0	"	"	"	"	"	"	
Copper	**20**	1.0	"	"	"	"	"	"	
Lead	**11**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**18**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**53**	5.0	"	"	"	"	"	"	
Zinc	**68**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9053020	05/30/19	06/05/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/05/19 17:48

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9053036 - EPA 3550B GC										
Blank (9053036-BLK1)				Prepared: 05/30/19 Analyzed: 06/01/19						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*94.7*		*"*	*99.0*		*95.6*	*65-135*			
LCS (9053036-BS1)				Prepared: 05/30/19 Analyzed: 06/01/19						
C13-C28 (DRO)	520	10	mg/kg	500		104	75-125			
Surrogate: p-Terphenyl	*89.8*		*"*	*100*		*89.8*	*65-135*			
LCS Dup (9053036-BSD1)				Prepared: 05/30/19 Analyzed: 06/01/19						
C13-C28 (DRO)	540	10	mg/kg	510		106	75-125	3.49	20	
Surrogate: p-Terphenyl	*92.2*		*"*	*102*		*90.3*	*65-135*			

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949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/05/19 17:48

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9053022 - EPA 3050B										
Blank (9053022-BLK1)				Prepared: 05/30/19 Analyzed: 05/31/19						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (9053022-BS1)				Prepared: 05/30/19 Analyzed: 05/31/19						
Arsenic	104	5.0	mg/kg	100		104	75-125			
Barium	104	1.0	"	100		104	75-125			
Cadmium	105	2.0	"	100		105	75-125			
Chromium	105	2.0	"	100		105	75-125			
Lead	104	3.0	"	100		104	75-125			
Matrix Spike (9053022-MS1)	**Source: T191705-01**			Prepared: 05/30/19 Analyzed: 05/31/19						
Arsenic	90.5	5.0	mg/kg	95.2	1.96	93.0	75-125			
Barium	243	1.0	"	95.2	200	45.2	75-125			QR-04
Cadmium	91.7	2.0	"	95.2	ND	96.3	75-125			
Chromium	123	2.0	"	95.2	35.4	91.5	75-125			
Lead	97.3	3.0	"	95.2	12.1	89.4	75-125			

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/05/19 17:48

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9053022 - EPA 3050B										
Matrix Spike Dup (9053022-MSD1)	**Source: T191705-01**			Prepared: 05/30/19 Analyzed: 05/31/19						
Arsenic	93.9	5.0	mg/kg	94.3	1.96	97.5	75-125	3.74	20	
Barium	283	1.0	"	94.3	200	88.8	75-125	15.5	20	
Cadmium	93.2	2.0	"	94.3	ND	98.8	75-125	1.57	20	
Chromium	128	2.0	"	94.3	35.4	98.2	75-125	4.40	20	
Lead	102	3.0	"	94.3	12.1	94.8	75-125	4.28	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/05/19 17:48

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9053020 - EPA 7471A Soil										
Blank (9053020-BLK1)				Prepared: 05/30/19 Analyzed: 06/05/19						
Mercury	ND	0.10	mg/kg							
LCS (9053020-BS1)				Prepared: 05/30/19 Analyzed: 06/05/19						
Mercury	0.283	0.10	mg/kg	0.315		90.0	80-120			
Matrix Spike (9053020-MS1)	**Source: T191705-01**			Prepared: 05/30/19 Analyzed: 06/05/19						
Mercury	0.341	0.10	mg/kg	0.315	0.0602	89.2	75-125			
Matrix Spike Dup (9053020-MSD1)	**Source: T191705-01**			Prepared: 05/30/19 Analyzed: 06/05/19						
Mercury	0.352	0.10	mg/kg	0.320	0.0602	91.4	75-125	3.41	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/05/19 17:48

Notes and Definitions

QR-04	The percent recovery and/or RPD was outside acceptance criteria. Results accepted based upon percent recovery results in duplicate QC sample and the CCV and CCB results.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Chain of Custody Record

25712 Commercentre Drive, Lake Forest, CA 92630
949-297-5020

Client: Ninyo & Moore
Address: 475 Goddard, Suite 200
Phone: (949) 753-7070 Fax: (949) 753-7071
Project Manager: Franklin Ruiz

Date: 5/29/19 Page: 1 Of 1
Project Name: UCI North Campus
Collector: GM Client Project #: 209570014
Batch #: T191719 EDF #:

Laboratory ID #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	EPA 8015 TPH			Comments/Preservative	Total # of containers
	B-20 @ 5'	5/29/19	7:50 AM	SOIL	4oz Glass Jar									X		X			ICE	1
	B-23 @ 3'	5/29/19	9:50 AM	SOIL	4oz Glass Jar									X		X			ICE	1
	B-33 @ 0.5'	5/29/19	1:40PM	SOIL	4oz Glass Jar									X		X			ICE	1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	5/29/19		5-29-19 15:12
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	5-29-19 15:48		5-29-19 15:48
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers	3
Chain of Custody seals Y/N/NA	Y
Seals intact? Y/N/NA	Y
Received good condition/cold	1.9c

Turn around time: Standard

Notes

Sample disposal Instructions: Disposal @ $2.00 each ___ Return to client ___ Pickup ___

COC 181369

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SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T191719

Client Name: Ninyo & Moore Project: UCI North Campus

Delivered by: ☐ Client ☑ SunStar Courier ☐ GSO ☐ FedEx ☐ Other

If Courier, Received by: Hanh Date/Time Courier Received: 5-29-19 15:12

Lab Received by: Sunny Date/Time Lab Received: 5-29-19 15:48

Total number of coolers received: 0

Temperature: Cooler #1	0.7 °C +/- the CF (1.2°C) =	1.9 °C corrected temperature		
Temperature: Cooler #2	°C +/- the CF (1.2°C) =	°C corrected temperature		
Temperature: Cooler #3	°C +/- the CF (1.2°C) =	°C corrected temperature		
Temperature criteria = ≤ 6°C (no frozen containers)	Within criteria?	☑ **Yes**	☐ **No**	
If NO:				
Samples received on ice?	☐ Yes	☐ **No → Complete Non-Conformance Sheet**		
If on ice, samples received same day collected?	☐ Yes → Acceptable	☐ **No → Complete Non-Conformance Sheet**		
Custody seals intact on cooler/sample		☐ Yes	☐ No*	☑ N/A
Sample containers intact		☑ Yes	☐ No*	
Sample labels match Chain of Custody IDs		☑ Yes	☐ No*	
Total number of containers received match COC		☑ Yes	☐ No*	
Proper containers received for analyses requested on COC		☑ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested		☐ Yes	☐ No*	☑ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times		☑ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date: HP 5-29-19

Comments:

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WORK ORDER

T191719

Client: **Ninyo & Moore** **Project Manager:** **Mike Jaroudi**
Project: **UCI North Campus** **Project Number:** **209570014**

Report To:
Ninyo & Moore
Franklin Ruiz
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 06/05/19 17:00 (5 day TAT)
Received By: Sunny Lounethone Date Received: 05/29/19 15:48
Logged In By: Harit Patel Date Logged In: 05/29/19 15:50

Samples Received at: **1.9°C**
Custody Seals No Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirı No

Analysis	Due	TAT	Expires	Comments
T191719-01 B-20 @ 5' [Soil] Sampled 05/29/19 07:50 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/05/19 15:00	5	11/25/19 07:50	
8015 Carbon Chain	06/05/19 15:00	5	06/12/19 07:50	
T191719-02 B-23 @ 3' [Soil] Sampled 05/29/19 09:50 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/05/19 15:00	5	11/25/19 09:50	
8015 Carbon Chain	06/05/19 15:00	5	06/12/19 09:50	
T191719-03 B-33 @ 0.5' [Soil] Sampled 05/29/19 13:40 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/05/19 15:00	5	11/25/19 13:40	
8015 Carbon Chain	06/05/19 15:00	5	06/12/19 13:40	

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By Date

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07 June 2019

Franklin Ruiz
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: UCI North Campus

Enclosed are the results of analyses for samples received by the laboratory on 05/31/19 15:26. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-24 @ 4'	T191763-01	Soil	05/31/19 08:15	05/31/19 15:26
B-31 @ 3'	T191763-02	Soil	05/31/19 10:58	05/31/19 15:26
B-30 @ 5'	T191763-03	Soil	05/31/19 11:15	05/31/19 15:26
B-19 @ 5'	T191763-04	Soil	05/31/19 12:40	05/31/19 15:26

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

DETECTIONS SUMMARY

Sample ID: B-24 @ 4' **Laboratory ID:** T191763-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**130**	1.0	mg/kg	EPA 6010b	
Chromium	**18**	2.0	mg/kg	EPA 6010b	
Cobalt	**13**	2.0	mg/kg	EPA 6010b	
Copper	**14**	1.0	mg/kg	EPA 6010b	
Lead	**7.1**	3.0	mg/kg	EPA 6010b	
Nickel	**18**	2.0	mg/kg	EPA 6010b	
Vanadium	**33**	5.0	mg/kg	EPA 6010b	
Zinc	**50**	1.0	mg/kg	EPA 6010b	

Sample ID: B-31 @ 3' **Laboratory ID:** T191763-02

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**36**	10	mg/kg	EPA 8015B	
Barium	**160**	1.0	mg/kg	EPA 6010b	
Chromium	**17**	2.0	mg/kg	EPA 6010b	
Cobalt	**14**	2.0	mg/kg	EPA 6010b	
Copper	**13**	1.0	mg/kg	EPA 6010b	
Lead	**8.6**	3.0	mg/kg	EPA 6010b	
Nickel	**16**	2.0	mg/kg	EPA 6010b	
Vanadium	**40**	5.0	mg/kg	EPA 6010b	
Zinc	**50**	1.0	mg/kg	EPA 6010b	

Sample ID: B-30 @ 5' **Laboratory ID:** T191763-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**120**	0.91	mg/kg	EPA 6010b	
Chromium	**21**	1.8	mg/kg	EPA 6010b	
Cobalt	**11**	1.8	mg/kg	EPA 6010b	
Copper	**18**	0.91	mg/kg	EPA 6010b	
Lead	**8.6**	2.7	mg/kg	EPA 6010b	
Nickel	**19**	1.8	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

Sample ID: B-30 @ 5' **Laboratory ID:** T191763-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Vanadium	**46**	4.5	mg/kg	EPA 6010b	
Zinc	**59**	0.91	mg/kg	EPA 6010b	

Sample ID: B-19 @ 5' **Laboratory ID:** T191763-04

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**34**	1.0	mg/kg	EPA 6010b	
Chromium	**14**	2.0	mg/kg	EPA 6010b	
Cobalt	**6.2**	2.0	mg/kg	EPA 6010b	
Copper	**8.2**	1.0	mg/kg	EPA 6010b	
Lead	**4.9**	3.0	mg/kg	EPA 6010b	
Nickel	**12**	2.0	mg/kg	EPA 6010b	
Vanadium	**31**	5.0	mg/kg	EPA 6010b	
Zinc	**33**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

B-24 @ 4'

T191763-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060316	06/03/19	06/03/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*89.7 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060306	06/03/19	06/03/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	06/03/19	"	
Arsenic	ND	5.0	"	"	"	"	06/03/19	"	
Barium	**130**	1.0	"	"	"	"	06/03/19	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	06/03/19	"	
Chromium	**18**	2.0	"	"	"	"	06/03/19	"	
Cobalt	**13**	2.0	"	"	"	"	06/03/19	"	
Copper	**14**	1.0	"	"	"	"	06/03/19	"	
Lead	**7.1**	3.0	"	"	"	"	06/03/19	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**18**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**33**	5.0	"	"	"	"	06/03/19	"	
Zinc	**50**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060312	06/03/19	06/03/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

B-31 @ 3'

T191763-02 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060316	06/03/19	06/03/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**36**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*102 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060306	06/03/19	06/03/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**160**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/03/19	"	
Cadmium	ND	2.0	"	"	"	"	06/03/19	"	
Chromium	**17**	2.0	"	"	"	"	"	"	
Cobalt	**14**	2.0	"	"	"	"	"	"	
Copper	**13**	1.0	"	"	"	"	"	"	
Lead	**8.6**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**16**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**40**	5.0	"	"	"	"	"	"	
Zinc	**50**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060312	06/03/19	06/03/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

B-30 @ 5'

T191763-03 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060316	06/03/19	06/03/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*94.1 %*		*65-135*	"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	2.7	mg/kg	1	9060306	06/03/19	06/03/19	EPA 6010b	
Silver	ND	1.8	"	"	"	"	"	"	
Arsenic	ND	4.5	"	"	"	"	"	"	
Barium	**120**	0.91	"	"	"	"	"	"	
Beryllium	ND	0.91	"	"	"	"	"	"	
Cadmium	ND	1.8	"	"	"	"	"	"	
Chromium	**21**	1.8	"	"	"	"	"	"	
Cobalt	**11**	1.8	"	"	"	"	"	"	
Copper	**18**	0.91	"	"	"	"	"	"	
Lead	**8.6**	2.7	"	"	"	"	"	"	
Molybdenum	ND	4.5	"	"	"	"	"	"	
Nickel	**19**	1.8	"	"	"	"	"	"	
Selenium	ND	4.5	"	"	"	"	"	"	
Thallium	ND	1.8	"	"	"	"	"	"	
Vanadium	**46**	4.5	"	"	"	"	"	"	
Zinc	**59**	0.91	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060312	06/03/19	06/03/19	EPA 7471A Soil	

SunStar Laboratories, Inc.

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Mike Jaroudi, Project Manager

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PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

B-19 @ 5'

T191763-04 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060316	06/03/19	06/03/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*87.7 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060306	06/03/19	06/03/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	06/03/19	"	
Arsenic	ND	5.0	"	"	"	"	06/03/19	"	
Barium	**34**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/03/19	"	
Cadmium	ND	2.0	"	"	"	"	06/03/19	"	
Chromium	**14**	2.0	"	"	"	"	"	"	
Cobalt	**6.2**	2.0	"	"	"	"	"	"	
Copper	**8.2**	1.0	"	"	"	"	06/03/19	"	
Lead	**4.9**	3.0	"	"	"	"	06/03/19	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**12**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**31**	5.0	"	"	"	"	06/03/19	"	
Zinc	**33**	1.0	"	"	"	"	06/03/19	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060312	06/03/19	06/03/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060316 - EPA 3550B GC										
Blank (9060316-BLK1)				Prepared & Analyzed: 06/03/19						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*106*		*"*	*100*		*106*	*65-135*			
LCS (9060316-BS1)				Prepared & Analyzed: 06/03/19						
C13-C28 (DRO)	550	10	mg/kg	505		110	75-125			
Surrogate: p-Terphenyl	*103*		*"*	*101*		*102*	*65-135*			
Matrix Spike (9060316-MS1)	**Source: T191763-01**			Prepared & Analyzed: 06/03/19						
C13-C28 (DRO)	570	10	mg/kg	495	ND	114	75-125			
Surrogate: p-Terphenyl	*96.7*		*"*	*99.0*		*97.6*	*65-135*			
Matrix Spike Dup (9060316-MSD1)	**Source: T191763-01**			Prepared & Analyzed: 06/03/19						
C13-C28 (DRO)	520	10	mg/kg	500	ND	105	75-125	7.86	20	
Surrogate: p-Terphenyl	*92.4*		*"*	*100*		*92.4*	*65-135*			

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060306 - EPA 3050B										
Blank (9060306-BLK1)				Prepared & Analyzed: 06/03/19						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (9060306-BS1)				Prepared & Analyzed: 06/03/19						
Arsenic	94.5	5.0	mg/kg	100		94.5	75-125			
Barium	95.7	1.0	"	100		95.7	75-125			
Cadmium	96.0	2.0	"	100		96.0	75-125			
Chromium	95.9	2.0	"	100		95.9	75-125			
Lead	96.6	3.0	"	100		96.6	75-125			
Matrix Spike (9060306-MS1)		**Source: T191763-01**		Prepared & Analyzed: 06/03/19						
Arsenic	81.7	5.0	mg/kg	91.7	1.20	87.7	75-125			
Barium	215	1.0	"	91.7	133	88.8	75-125			
Cadmium	80.5	2.0	"	91.7	0.792	86.9	75-125			
Chromium	100	2.0	"	91.7	17.8	90.0	75-125			
Lead	83.5	3.0	"	91.7	7.05	83.3	75-125			

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060306 - EPA 3050B										
Matrix Spike Dup (9060306-MSD1)	**Source: T191763-01**			Prepared & Analyzed: 06/03/19						
Arsenic	91.6	5.0	mg/kg	91.7	1.20	98.6	75-125	11.5	20	
Barium	255	1.0	"	91.7	133	133	75-125	17.2	20	QR-04
Cadmium	91.1	2.0	"	91.7	0.792	98.4	75-125	12.3	20	
Chromium	115	2.0	"	91.7	17.8	105	75-125	13.2	20	
Lead	94.4	3.0	"	91.7	7.05	95.2	75-125	12.3	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060312 - EPA 7471A Soil										
Blank (9060312-BLK1)				Prepared: 06/03/19 Analyzed: 06/04/19						
Mercury	ND	0.10	mg/kg							
LCS (9060312-BS1)				Prepared: 06/03/19 Analyzed: 06/04/19						
Mercury	0.400	0.10	mg/kg	0.410		97.6	80-120			
Matrix Spike (9060312-MS1)	**Source: T191752-01**			Prepared: 06/03/19 Analyzed: 06/04/19						
Mercury	0.406	0.10	mg/kg	0.403	ND	101	75-125			
Matrix Spike Dup (9060312-MSD1)	**Source: T191752-01**			Prepared: 06/03/19 Analyzed: 06/04/19						
Mercury	0.401	0.10	mg/kg	0.410	ND	97.9	75-125	1.14	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:23

Notes and Definitions

QR-04	The percent recovery and/or RPD was outside acceptance criteria. Results accepted based upon percent recovery results in duplicate QC sample and the CCV and CCB results.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Mike Jaroudi, Project Manager

SunStar Laboratories

25712 Commercentre Drive, Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: Ninyo & Moore
Address: 475 Goddard, Suite 200, Irvine, CA
Phone: (949) 753-7071 Fax: (949) 753-7071
Project Manager: Franklin Ruiz

Date: 5/31/19 Page: 1 Of 1
Project Name: UCI North Campus
Collector: GM Client Project #: 209570014
Batch #: 19 1763 EDF #:

Laboratory ID #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	EPA 8015 TPH			Comments/Preservative	Total # of containers
01	B-24 @ 4'	5/31/19	8:15 AM	SOIL	4oz Glass Jar									X		X			ICE	1
02	B-31 @ 3'	5/31/19	10:58 AM	SOIL	4oz Glass Jar									X		X			ICE	1
03	B-30 @ 5'	5/31/19	11:41 AM	SOIL	4oz Glass Jar									X		X			ICE	1
04	B-19 @ 5'	5/31/19	12:40 PM	SOIL	4oz Glass Jar									X		X			ICE	1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	5/31/19	Paul Ruiz	5-31-19 15:04
Paul Ruiz	5-31-19 15:26		5-31-19 1526
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers: 4
Chain of Custody seals Y/N/NA: Y
Seals intact? Y/N/NA: Y
Received good condition/cold: 3.5

Turn around time: Standard

Notes

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

COC 181365

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SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T19 1763

Client Name: Ninyo & Moore - Irvine Project: UCI North Campus

Delivered by: ☐ Client ☑ SunStar Courier ☐ GSO ☐ FedEx ☐ Other

If Courier, Received by: Paul Date/Time Courier Received: 5-31-19 15:04

Lab Received by: Dan Date/Time Lab Received: 5-31-19 15:26

Total number of coolers received: 0

Temperature: Cooler #1	2.3 °C +/- the CF (1.2°C) =	3.5	°C corrected temperature	
Temperature: Cooler #2	°C +/- the CF (1.2°C) =		°C corrected temperature	
Temperature: Cooler #3	°C +/- the CF (1.2°C) =		°C corrected temperature	
Temperature criteria = ≤ 6°C (no frozen containers)	Within criteria?		☑ **Yes** ☐ **No**	
If NO:				
Samples received on ice?	☐ Yes		☐ **No → Complete Non-Conformance Sheet**	
If on ice, samples received same day collected?	☐ Yes → Acceptable		☐ **No → Complete Non-Conformance Sheet**	

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☑ N/A
Sample containers intact	☑ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☑ Yes	☐ No*	
Total number of containers received match COC	☑ Yes	☐ No*	
Proper containers received for analyses requested on COC	☑ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☑ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☑ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date: PB 5-31-19

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

WORK ORDER

T191763

Client: Ninyo & Moore
Project: UCI North Campus
Project Manager: Mike Jaroudi
Project Number: 209570014

Report To:
Ninyo & Moore
Franklin Ruiz
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 06/07/19 17:00 (5 day TAT)
Received By: Dan Marteski
Date Received: 05/31/19 15:26
Logged In By: Paul Berner
Date Logged In: 05/31/19 15:36

Samples Received at: **3.5°C**
Custody Seals No
Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirı No

Analysis	Due	TAT	Expires	Comments
T191763-01 B-24 @ 4' [Soil] Sampled 05/31/19 08:15 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/07/19 15:00	5	11/27/19 08:15	
8015 Carbon Chain	06/07/19 15:00	5	06/14/19 08:15	
T191763-02 B-31 @ 3' [Soil] Sampled 05/31/19 10:58 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/07/19 15:00	5	11/27/19 10:58	
8015 Carbon Chain	06/07/19 15:00	5	06/14/19 10:58	
T191763-03 B-30 @ 5' [Soil] Sampled 05/31/19 11:15 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/07/19 15:00	5	11/27/19 11:15	
8015 Carbon Chain	06/07/19 15:00	5	06/14/19 11:15	
T191763-04 B-19 @ 5' [Soil] Sampled 05/31/19 12:40 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/07/19 15:00	5	11/27/19 12:40	
8015 Carbon Chain	06/07/19 15:00	5	06/14/19 12:40	

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By

Date

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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949.297.5027 Fax

07 June 2019

Franklin Ruiz
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: UCI North Campus

Enclosed are the results of analyses for samples received by the laboratory on 05/31/19 15:26. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-32 @ 3'	T191764-01	Soil	05/30/19 07:30	05/31/19 15:26
B-27 @ 1'	T191764-02	Soil	05/30/19 12:00	05/31/19 15:26
B-26 @ 5'	T191764-03	Soil	05/30/19 13:05	05/31/19 15:26
B-25 @ 5'	T191764-04	Soil	05/30/19 14:08	05/31/19 15:26

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

DETECTIONS SUMMARY

Sample ID: B-32 @ 3' **Laboratory ID:** T191764-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**200**	1.0	mg/kg	EPA 6010b	
Chromium	**25**	2.0	mg/kg	EPA 6010b	
Cobalt	**12**	2.0	mg/kg	EPA 6010b	
Copper	**22**	1.0	mg/kg	EPA 6010b	
Lead	**12**	3.0	mg/kg	EPA 6010b	
Nickel	**20**	2.0	mg/kg	EPA 6010b	
Vanadium	**60**	5.0	mg/kg	EPA 6010b	
Zinc	**77**	1.0	mg/kg	EPA 6010b	

Sample ID: B-27 @ 1' **Laboratory ID:** T191764-02

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**44**	10	mg/kg	EPA 8015B	
Barium	**130**	1.0	mg/kg	EPA 6010b	
Chromium	**19**	2.0	mg/kg	EPA 6010b	
Cobalt	**9.5**	2.0	mg/kg	EPA 6010b	
Copper	**15**	1.0	mg/kg	EPA 6010b	
Lead	**13**	3.0	mg/kg	EPA 6010b	
Nickel	**15**	2.0	mg/kg	EPA 6010b	
Vanadium	**45**	5.0	mg/kg	EPA 6010b	
Zinc	**57**	1.0	mg/kg	EPA 6010b	

Sample ID: B-26 @ 5' **Laboratory ID:** T191764-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**160**	1.0	mg/kg	EPA 6010b	
Chromium	**24**	2.0	mg/kg	EPA 6010b	
Cobalt	**13**	2.0	mg/kg	EPA 6010b	
Copper	**21**	1.0	mg/kg	EPA 6010b	
Lead	**11**	3.0	mg/kg	EPA 6010b	
Nickel	**20**	2.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

Sample ID: B-26 @ 5' **Laboratory ID:** T191764-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Vanadium	**60**	5.0	mg/kg	EPA 6010b	
Zinc	**67**	1.0	mg/kg	EPA 6010b	

Sample ID: B-25 @ 5' **Laboratory ID:** T191764-04

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**290**	1.0	mg/kg	EPA 6010b	
Chromium	**22**	2.0	mg/kg	EPA 6010b	
Cobalt	**14**	2.0	mg/kg	EPA 6010b	
Copper	**26**	1.0	mg/kg	EPA 6010b	
Lead	**10**	3.0	mg/kg	EPA 6010b	
Nickel	**21**	2.0	mg/kg	EPA 6010b	
Vanadium	**61**	5.0	mg/kg	EPA 6010b	
Zinc	**85**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

B-32 @ 3'

T191764-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060316	06/03/19	06/03/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*82.3 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060306	06/03/19	06/03/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**200**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**25**	2.0	"	"	"	"	"	"	
Cobalt	**12**	2.0	"	"	"	"	"	"	
Copper	**22**	1.0	"	"	"	"	"	"	
Lead	**12**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**20**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**60**	5.0	"	"	"	"	"	"	
Zinc	**77**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

SunStar Laboratories, Inc.

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Mike Jaroudi, Project Manager

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Providing Quality Analytical Services Nationwide

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Lake Forest, California 92630
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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

B-27 @ 1'

T191764-02 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060316	06/03/19	06/03/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**44**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*86.8 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060306	06/03/19	06/03/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	06/03/19	"	
Arsenic	ND	5.0	"	"	"	"	06/03/19	"	
Barium	**130**	1.0	"	"	"	"	06/03/19	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	06/03/19	"	
Chromium	**19**	2.0	"	"	"	"	06/03/19	"	
Cobalt	**9.5**	2.0	"	"	"	"	06/03/19	"	
Copper	**15**	1.0	"	"	"	"	06/03/19	"	
Lead	**13**	3.0	"	"	"	"	06/03/19	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**15**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**45**	5.0	"	"	"	"	06/03/19	"	
Zinc	**57**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

SunStar Laboratories, Inc.

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949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

B-26 @ 5'

T191764-03 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060316	06/03/19	06/03/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*92.7 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060306	06/03/19	06/03/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	06/03/19	"	
Arsenic	ND	5.0	"	"	"	"	06/03/19	"	
Barium	**160**	1.0	"	"	"	"	06/03/19	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	06/03/19	"	
Chromium	**24**	2.0	"	"	"	"	06/03/19	"	
Cobalt	**13**	2.0	"	"	"	"	06/03/19	"	
Copper	**21**	1.0	"	"	"	"	06/03/19	"	
Lead	**11**	3.0	"	"	"	"	06/03/19	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**20**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**60**	5.0	"	"	"	"	06/03/19	"	
Zinc	**67**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

SunStar Laboratories, Inc.

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

B-25 @ 5'

T191764-04 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060316	06/03/19	06/04/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*89.4 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060306	06/03/19	06/03/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**290**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/03/19	"	
Cadmium	ND	2.0	"	"	"	"	06/03/19	"	
Chromium	**22**	2.0	"	"	"	"	"	"	
Cobalt	**14**	2.0	"	"	"	"	"	"	
Copper	**26**	1.0	"	"	"	"	"	"	
Lead	**10**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**21**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**61**	5.0	"	"	"	"	"	"	
Zinc	**85**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

SunStar Laboratories, Inc.

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060316 - EPA 3550B GC										
Blank (9060316-BLK1)				Prepared & Analyzed: 06/03/19						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*106*		*"*	*100*		*106*	*65-135*			
LCS (9060316-BS1)				Prepared & Analyzed: 06/03/19						
C13-C28 (DRO)	550	10	mg/kg	505		110	75-125			
Surrogate: p-Terphenyl	*103*		*"*	*101*		*102*	*65-135*			
Matrix Spike (9060316-MS1)	**Source: T191763-01**			Prepared & Analyzed: 06/03/19						
C13-C28 (DRO)	570	10	mg/kg	495	ND	114	75-125			
Surrogate: p-Terphenyl	*96.7*		*"*	*99.0*		*97.6*	*65-135*			
Matrix Spike Dup (9060316-MSD1)	**Source: T191763-01**			Prepared & Analyzed: 06/03/19						
C13-C28 (DRO)	520	10	mg/kg	500	ND	105	75-125	7.86	20	
Surrogate: p-Terphenyl	*92.4*		*"*	*100*		*92.4*	*65-135*			

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060306 - EPA 3050B										
Blank (9060306-BLK1)				Prepared & Analyzed: 06/03/19						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (9060306-BS1)				Prepared & Analyzed: 06/03/19						
Arsenic	94.5	5.0	mg/kg	100		94.5	75-125			
Barium	95.7	1.0	"	100		95.7	75-125			
Cadmium	96.0	2.0	"	100		96.0	75-125			
Chromium	95.9	2.0	"	100		95.9	75-125			
Lead	96.6	3.0	"	100		96.6	75-125			
Matrix Spike (9060306-MS1)		**Source: T191763-01**		Prepared & Analyzed: 06/03/19						
Arsenic	81.7	5.0	mg/kg	91.7	1.20	87.7	75-125			
Barium	215	1.0	"	91.7	133	88.8	75-125			
Cadmium	80.5	2.0	"	91.7	0.792	86.9	75-125			
Chromium	100	2.0	"	91.7	17.8	90.0	75-125			
Lead	83.5	3.0	"	91.7	7.05	83.3	75-125			

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060306 - EPA 3050B										
Matrix Spike Dup (9060306-MSD1)	**Source: T191763-01**			Prepared & Analyzed: 06/03/19						
Arsenic	91.6	5.0	mg/kg	91.7	1.20	98.6	75-125	11.5	20	
Barium	255	1.0	"	91.7	133	133	75-125	17.2	20	QR-04
Cadmium	91.1	2.0	"	91.7	0.792	98.4	75-125	12.3	20	
Chromium	115	2.0	"	91.7	17.8	105	75-125	13.2	20	
Lead	94.4	3.0	"	91.7	7.05	95.2	75-125	12.3	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060415 - EPA 7471A Soil										
Blank (9060415-BLK1)				Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	ND	0.10	mg/kg							
LCS (9060415-BS1)				Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	0.277	0.10	mg/kg	0.315		88.0	80-120			
Matrix Spike (9060415-MS1)	**Source: T191764-01**			Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	0.286	0.10	mg/kg	0.325	ND	87.8	75-125			
Matrix Spike Dup (9060415-MSD1)	**Source: T191764-01**			Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	0.299	0.10	mg/kg	0.315	ND	95.2	75-125	4.74	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/07/19 11:25

Notes and Definitions

QR-04	The percent recovery and/or RPD was outside acceptance criteria. Results accepted based upon percent recovery results in duplicate QC sample and the CCV and CCB results.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Mike Jaroudi, Project Manager

SunStar Laboratories

25712 Commercentre Drive, Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: Ninyo & Moore
Address: 475 Goddard, Suite 200
Phone: (949) 753-7070 Fax: (949) 753-7071
Project Manager: Franklin Ruiz

Date: 5/30/19 Page: 1 Of 1
Project Name: UCI North Campus
Collector: GM Client Project #: 20957001G
Batch #: T19 1764 EDF #:

Laboratory ID #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	EPA 8015 TPH				Comments/Preservative	Total # of containers
01	B-32 @ 3'	5/30/19	7:30 AM	SOIL	4oz Glass Jar									X		X				ICE	1
02	B-27 @ 1'	5/30/19	12:00 PM	SOIL	4oz Glass Jar									X		X				ICE	1
03	B-26 @ 5'	5/30/19	1:05 PM	SOIL	4oz Glass Jar									X		X				ICE	1
04	B-25 @ 5'	5/30/19	2:08 PM	SOIL	4oz Glass Jar									X		X				ICE	1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	5/31/19	Paul Ruiz	5-31-19 15:04
Paul Ruiz	5-31-19 15:26		
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
			5-31-19 1526

Total # of containers	4
Chain of Custody seals Y/N/NA	Y
Seals intact? Y/N/NA	Y
Received good condition/cold	3.5

Turn around time: Standard

Notes

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

COC 181367

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SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T19 1764

Client Name: Ninyo & Moore - Irvine Project: UCI North Campus

Delivered by: ☐ Client ☐ SunStar Courier ☐ GSO ☐ FedEx ☐ Other

If Courier, Received by: Paul Date/Time Courier Received: 5-31-19 15:04

Lab Received by: Dan Date/Time Lab Received: 5-31-19 15:26

Total number of coolers received: 0

Temperature: Cooler #1	2.3 °C +/- the CF (1.2°C) =	3.5	°C corrected temperature	
Temperature: Cooler #2	°C +/- the CF (1.2°C) =		°C corrected temperature	
Temperature: Cooler #3	°C +/- the CF (1.2°C) =		°C corrected temperature	
Temperature criteria = ≤ 6°C (no frozen containers)	Within criteria?		☑ **Yes**	☐ **No**
If NO:				
Samples received on ice?	☐ Yes		☐ **No → Complete Non-Conformance Sheet**	
If on ice, samples received same day collected?	☐ Yes → Acceptable		☐ **No → Complete Non-Conformance Sheet**	

Custody seals intact on cooler/sample	☑ Yes	☐ No*	☐ N/A
Sample containers intact	☑ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☑ Yes	☐ No*	
Total number of containers received match COC	☑ Yes	☐ No*	
Proper containers received for analyses requested on COC	☑ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☑ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☑ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date: PB 5-31-19

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

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PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T191764

Client: Ninyo & Moore
Project: UCI North Campus
Project Manager: Mike Jaroudi
Project Number: 209570014

Report To:
Ninyo & Moore
Franklin Ruiz
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 06/07/19 17:00 (5 day TAT)
Received By: Dan Marteski
Date Received: 05/31/19 15:26
Logged In By: Paul Berner
Date Logged In: 05/31/19 15:59

Samples Received at: **3.5°C**
Custody Seals No
Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirı No

Analysis	Due	TAT	Expires	Comments
T191764-01 B-32 @ 3' [Soil] Sampled 05/30/19 07:30 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/07/19 15:00	5	11/26/19 07:30	
8015 Carbon Chain	06/07/19 15:00	5	06/13/19 07:30	
T191764-02 B-27 @ 1' [Soil] Sampled 05/30/19 12:00 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/07/19 15:00	5	11/26/19 12:00	
8015 Carbon Chain	06/07/19 15:00	5	06/13/19 12:00	
T191764-03 B-26 @ 5' [Soil] Sampled 05/30/19 13:05 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/07/19 15:00	5	11/26/19 13:05	
8015 Carbon Chain	06/07/19 15:00	5	06/13/19 13:05	
T191764-04 B-25 @ 5' [Soil] Sampled 05/30/19 14:08 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/07/19 15:00	5	11/26/19 14:08	
8015 Carbon Chain	06/07/19 15:00	5	06/13/19 14:08	

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By

Date

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949.297.5027 Fax

11 June 2019

Franklin Ruiz
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: UCI North Campus

Enclosed are the results of analyses for samples received by the laboratory on 06/03/19 17:26. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:43

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-4@5'	T191780-01	Soil	06/03/19 09:40	06/03/19 17:26
B-5@5'	T191780-02	Soil	06/03/19 13:15	06/03/19 17:26
B-6@3'	T191780-03	Soil	06/03/19 14:30	06/03/19 17:26

SunStar Laboratories, Inc.

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Mike Jaroudi, Project Manager

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PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:43

DETECTIONS SUMMARY

Sample ID: B-4@5' **Laboratory ID:** T191780-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Arsenic	**5.6**	5.0	mg/kg	EPA 6010b	
Barium	**200**	1.0	mg/kg	EPA 6010b	
Beryllium	**1.4**	1.0	mg/kg	EPA 6010b	
Chromium	**29**	2.0	mg/kg	EPA 6010b	
Cobalt	**15**	2.0	mg/kg	EPA 6010b	
Copper	**27**	1.0	mg/kg	EPA 6010b	
Lead	**16**	3.0	mg/kg	EPA 6010b	
Nickel	**25**	2.0	mg/kg	EPA 6010b	
Vanadium	**70**	5.0	mg/kg	EPA 6010b	
Zinc	**97**	1.0	mg/kg	EPA 6010b	

Sample ID: B-5@5' **Laboratory ID:** T191780-02

Analyte	Result	Reporting Limit	Units	Method	Notes
Arsenic	**6.8**	5.0	mg/kg	EPA 6010b	
Barium	**260**	1.0	mg/kg	EPA 6010b	
Beryllium	**1.4**	1.0	mg/kg	EPA 6010b	
Chromium	**29**	2.0	mg/kg	EPA 6010b	
Cobalt	**14**	2.0	mg/kg	EPA 6010b	
Copper	**26**	1.0	mg/kg	EPA 6010b	
Lead	**15**	3.0	mg/kg	EPA 6010b	
Nickel	**24**	2.0	mg/kg	EPA 6010b	
Vanadium	**70**	5.0	mg/kg	EPA 6010b	
Zinc	**97**	1.0	mg/kg	EPA 6010b	

Sample ID: B-6@3' **Laboratory ID:** T191780-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**150**	1.0	mg/kg	EPA 6010b	
Beryllium	**1.0**	1.0	mg/kg	EPA 6010b	
Chromium	**24**	2.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:43

Sample ID: B-6@3' **Laboratory ID:** T191780-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Cobalt	**12**	2.0	mg/kg	EPA 6010b	
Copper	**20**	1.0	mg/kg	EPA 6010b	
Lead	**8.4**	3.0	mg/kg	EPA 6010b	
Nickel	**19**	2.0	mg/kg	EPA 6010b	
Vanadium	**54**	5.0	mg/kg	EPA 6010b	
Zinc	**79**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:43

B-4@5'

T191780-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060426	06/04/19	06/06/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*94.6 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060416	06/04/19	06/04/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	**5.6**	5.0	"	"	"	"	"	"	
Barium	**200**	1.0	"	"	"	"	"	"	
Beryllium	**1.4**	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**29**	2.0	"	"	"	"	"	"	
Cobalt	**15**	2.0	"	"	"	"	"	"	
Copper	**27**	1.0	"	"	"	"	"	"	
Lead	**16**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**25**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**70**	5.0	"	"	"	"	"	"	
Zinc	**97**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:43

B-5@5'

T191780-02 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060426	06/04/19	06/06/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*105 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060416	06/04/19	06/04/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	**6.8**	5.0	"	"	"	"	"	"	
Barium	**260**	1.0	"	"	"	"	"	"	
Beryllium	**1.4**	1.0	"	"	"	"	06/04/19	"	
Cadmium	ND	2.0	"	"	"	"	06/04/19	"	
Chromium	**29**	2.0	"	"	"	"	"	"	
Cobalt	**14**	2.0	"	"	"	"	"	"	
Copper	**26**	1.0	"	"	"	"	"	"	
Lead	**15**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**24**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**70**	5.0	"	"	"	"	"	"	
Zinc	**97**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

SunStar Laboratories, Inc.

Mike Jaroudi, Project Manager

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475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:43

B-6@3'

T191780-03 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060426	06/04/19	06/06/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*111 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060416	06/04/19	06/04/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**150**	1.0	"	"	"	"	"	"	
Beryllium	**1.0**	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**24**	2.0	"	"	"	"	"	"	
Cobalt	**12**	2.0	"	"	"	"	"	"	
Copper	**20**	1.0	"	"	"	"	"	"	
Lead	**8.4**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**19**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**54**	5.0	"	"	"	"	"	"	
Zinc	**79**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:43

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060426 - EPA 3550B GC										
Blank (9060426-BLK1)				Prepared: 06/04/19 Analyzed: 06/06/19						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*111*		*"*	*100*		*111*	*65-135*			
LCS (9060426-BS1)				Prepared: 06/04/19 Analyzed: 06/06/19						
C13-C28 (DRO)	490	10	mg/kg	500		98.3	75-125			
Surrogate: p-Terphenyl	*115*		*"*	*100*		*115*	*65-135*			
LCS Dup (9060426-BSD1)				Prepared: 06/04/19 Analyzed: 06/06/19						
C13-C28 (DRO)	460	10	mg/kg	500		92.1	75-125	6.58	20	
Surrogate: p-Terphenyl	*108*		*"*	*100*		*108*	*65-135*			

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:43

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060416 - EPA 3050B										
Blank (9060416-BLK1)				Prepared & Analyzed: 06/04/19						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (9060416-BS1)				Prepared & Analyzed: 06/04/19						
Arsenic	101	5.0	mg/kg	100		101	75-125			
Barium	102	1.0	"	100		102	75-125			
Cadmium	102	2.0	"	100		102	75-125			
Chromium	101	2.0	"	100		101	75-125			
Lead	99.4	3.0	"	100		99.4	75-125			
Matrix Spike (9060416-MS1)	**Source: T191772-01**			Prepared & Analyzed: 06/04/19						
Arsenic	86.7	5.0	mg/kg	94.3	1.26	90.5	75-125			
Barium	260	1.0	"	94.3	161	105	75-125			
Cadmium	88.3	2.0	"	94.3	0.874	92.6	75-125			
Chromium	138	2.0	"	94.3	49.9	93.6	75-125			
Lead	90.4	3.0	"	94.3	5.97	89.5	75-125			

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Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:43

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060416 - EPA 3050B										
Matrix Spike Dup (9060416-MSD1)	**Source: T191772-01**			Prepared & Analyzed: 06/04/19						
Arsenic	92.5	5.0	mg/kg	97.1	1.26	94.0	75-125	6.51	20	
Barium	266	1.0	"	97.1	161	108	75-125	2.29	20	
Cadmium	95.2	2.0	"	97.1	0.874	97.1	75-125	7.53	20	
Chromium	147	2.0	"	97.1	49.9	99.9	75-125	6.10	20	
Lead	97.3	3.0	"	97.1	5.97	94.1	75-125	7.38	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:43

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060415 - EPA 7471A Soil										
Blank (9060415-BLK1)				Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	ND	0.10	mg/kg							
LCS (9060415-BS1)				Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	0.277	0.10	mg/kg	0.315		88.0	80-120			
Matrix Spike (9060415-MS1)	**Source: T191764-01**			Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	0.286	0.10	mg/kg	0.325	ND	87.8	75-125			
Matrix Spike Dup (9060415-MSD1)	**Source: T191764-01**			Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	0.299	0.10	mg/kg	0.315	ND	95.2	75-125	4.74	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:43

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

SunStar Laboratories, Inc.

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SunStar Laboratories

25712 Commercentre Drive, Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: Mayo & Moore
Address: 475 Goddard Suite 200
Phone: (949) 753-7070 Fax: (949) 753-7071
Project Manager: Franklin Ruiz

Date: 6/3/19 Page: 1 Of 1
Project Name: UCI North Campus
Collector: GM Client Project #: 209520014
Batch #: T191780 EDF #:

Laboratory ID #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	EPA 5035B TPH			Comments/Preservative	Total # of containers
01	B-4 @ 5'	6/3/19	9:40 AM	SOIL	4 oz Glass Jar									X		X			ICE	1
02	B-5 @ 5'	6/3/19	1:15 PM	SOIL	4 oz Glass Jar									X		X			ICE	1
03	B-6 @ 3'	6/3/19	2:30 PM	SOIL	4 oz Glass Jar									X		X			ICE	1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	6/3/19		6-3-19 14:38
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	6-3-19 17:26		6-3-19 1726
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers
Chain of Custody seals Y/N/NA: N
Seals intact? Y/N/NA: NA
Received good condition/cold: 2.0

Turn around time:

Notes

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

COC 181364

SunStar Laboratories — Celebrating 20 Years!

SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T19 1780

Client Name: Ninyo & Moore - Irvine Project: UCI North Campus

Delivered by: ☐ Client ☑ SunStar Courier ☐ GSO ☐ FedEx ☐ Other

If Courier, Received by: Trans Date/Time Courier Received: 6-3-19 14:38

Lab Received by: Dan Date/Time Lab Received: 6-3-19 17:26

Total number of coolers received: 0

Temperature: Cooler #1	0.8 °C +/- the CF (1.2°C) =	2.0	°C corrected temperature
Temperature: Cooler #2	°C +/- the CF (1.2°C) =		°C corrected temperature
Temperature: Cooler #3	°C +/- the CF (1.2°C) =		°C corrected temperature
Temperature criteria = ≤ 6°C (no frozen containers)	Within criteria?	☑ Yes	☐ No
If NO:			
Samples received on ice?	☐ Yes	☐ No → **Complete Non-Conformance Sheet**	
If on ice, samples received same day collected?	☐ Yes → Acceptable	☐ No → **Complete Non-Conformance Sheet**	

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☑ N/A
Sample containers intact	☑ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☑ Yes	☐ No*	
Total number of containers received match COC	☑ Yes	☐ No*	
Proper containers received for analyses requested on COC	☑ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☑ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☑ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date: TB 6-3-19

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T191780

Client: **Ninyo & Moore** **Project Manager:** **Mike Jaroudi**
Project: **UCI North Campus** **Project Number:** **209570014**

Report To:
Ninyo & Moore
Franklin Ruiz
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 06/11/19 17:00 (5 day TAT)
Received By: Dan Marteski Date Received: 06/03/19 17:26
Logged In By: Travis Berner Date Logged In: 06/03/19 17:31

Samples Received at: **2°C**
Custody Seals No Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirı No

Analysis	Due	TAT	Expires	Comments
T191780-01 B-4@5' [Soil] Sampled 06/03/19 09:40 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/11/19 15:00	5	11/30/19 09:40	
8015 Carbon Chain	06/11/19 15:00	5	06/17/19 09:40	
T191780-02 B-5@5' [Soil] Sampled 06/03/19 13:15 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/11/19 15:00	5	11/30/19 13:15	
8015 Carbon Chain	06/11/19 15:00	5	06/17/19 13:15	
T191780-03 B-6@3' [Soil] Sampled 06/03/19 14:30 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/11/19 15:00	5	11/30/19 14:30	
8015 Carbon Chain	06/11/19 15:00	5	06/17/19 14:30	

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By Date

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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11 June 2019

Franklin Ruiz
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: UCI North Campus

Enclosed are the results of analyses for samples received by the laboratory on 06/03/19 17:26. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-29@5'	T191782-01	Soil	06/01/19 07:35	06/03/19 17:26
B-1@5'	T191782-02	Soil	06/01/19 12:19	06/03/19 17:26
B-2@5'	T191782-03	Soil	06/01/19 13:02	06/03/19 17:26
B-7@5'	T191782-04	Soil	06/01/19 14:35	06/03/19 17:26
B-3@5'	T191782-05	Soil	06/01/19 15:50	06/03/19 17:26

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

DETECTIONS SUMMARY

Sample ID: B-29@5' **Laboratory ID:** T191782-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**110**	1.0	mg/kg	EPA 6010b	
Beryllium	**1.2**	1.0	mg/kg	EPA 6010b	
Chromium	**26**	2.0	mg/kg	EPA 6010b	
Cobalt	**15**	2.0	mg/kg	EPA 6010b	
Copper	**23**	1.0	mg/kg	EPA 6010b	
Lead	**11**	3.0	mg/kg	EPA 6010b	
Nickel	**26**	2.0	mg/kg	EPA 6010b	
Vanadium	**63**	5.0	mg/kg	EPA 6010b	
Zinc	**87**	1.0	mg/kg	EPA 6010b	

Sample ID: B-1@5' **Laboratory ID:** T191782-02

Analyte	Result	Reporting Limit	Units	Method	Notes
Antimony	**3.1**	3.0	mg/kg	EPA 6010b	
Barium	**170**	1.0	mg/kg	EPA 6010b	
Beryllium	**1.2**	1.0	mg/kg	EPA 6010b	
Chromium	**25**	2.0	mg/kg	EPA 6010b	
Cobalt	**13**	2.0	mg/kg	EPA 6010b	
Copper	**24**	1.0	mg/kg	EPA 6010b	
Lead	**9.5**	3.0	mg/kg	EPA 6010b	
Nickel	**20**	2.0	mg/kg	EPA 6010b	
Vanadium	**62**	5.0	mg/kg	EPA 6010b	
Zinc	**79**	1.0	mg/kg	EPA 6010b	

Sample ID: B-2@5' **Laboratory ID:** T191782-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**620**	1.0	mg/kg	EPA 6010b	
Beryllium	**1.1**	1.0	mg/kg	EPA 6010b	
Chromium	**24**	2.0	mg/kg	EPA 6010b	
Cobalt	**12**	2.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

Sample ID: B-2@5' **Laboratory ID:** T191782-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Copper	**23**	1.0	mg/kg	EPA 6010b	
Lead	**8.8**	3.0	mg/kg	EPA 6010b	
Nickel	**20**	2.0	mg/kg	EPA 6010b	
Vanadium	**61**	5.0	mg/kg	EPA 6010b	
Zinc	**78**	1.0	mg/kg	EPA 6010b	

Sample ID: B-7@5' **Laboratory ID:** T191782-04

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**240**	1.0	mg/kg	EPA 6010b	
Beryllium	**1.1**	1.0	mg/kg	EPA 6010b	
Chromium	**22**	2.0	mg/kg	EPA 6010b	
Cobalt	**13**	2.0	mg/kg	EPA 6010b	
Copper	**19**	1.0	mg/kg	EPA 6010b	
Lead	**9.5**	3.0	mg/kg	EPA 6010b	
Nickel	**19**	2.0	mg/kg	EPA 6010b	
Vanadium	**57**	5.0	mg/kg	EPA 6010b	
Zinc	**73**	1.0	mg/kg	EPA 6010b	

Sample ID: B-3@5' **Laboratory ID:** T191782-05

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**380**	1.0	mg/kg	EPA 6010b	
Beryllium	**1.2**	1.0	mg/kg	EPA 6010b	
Chromium	**26**	2.0	mg/kg	EPA 6010b	
Cobalt	**14**	2.0	mg/kg	EPA 6010b	
Copper	**26**	1.0	mg/kg	EPA 6010b	
Lead	**11**	3.0	mg/kg	EPA 6010b	
Nickel	**22**	2.0	mg/kg	EPA 6010b	
Vanadium	**64**	5.0	mg/kg	EPA 6010b	
Zinc	**100**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

B-29@5'

T191782-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060426	06/04/19	06/06/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*113 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060416	06/04/19	06/04/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**110**	1.0	"	"	"	"	"	"	
Beryllium	**1.2**	1.0	"	"	"	"	06/04/19	"	
Cadmium	ND	2.0	"	"	"	"	06/04/19	"	
Chromium	**26**	2.0	"	"	"	"	"	"	
Cobalt	**15**	2.0	"	"	"	"	"	"	
Copper	**23**	1.0	"	"	"	"	"	"	
Lead	**11**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**26**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**63**	5.0	"	"	"	"	"	"	
Zinc	**87**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

B-1@5'

T191782-02 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060426	06/04/19	06/06/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*114 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	**3.1**	3.0	mg/kg	1	9060416	06/04/19	06/04/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**170**	1.0	"	"	"	"	"	"	
Beryllium	**1.2**	1.0	"	"	"	"	06/04/19	"	
Cadmium	ND	2.0	"	"	"	"	06/04/19	"	
Chromium	**25**	2.0	"	"	"	"	"	"	
Cobalt	**13**	2.0	"	"	"	"	"	"	
Copper	**24**	1.0	"	"	"	"	"	"	
Lead	**9.5**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**20**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**62**	5.0	"	"	"	"	"	"	
Zinc	**79**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

B-2@5'

T191782-03 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060426	06/04/19	06/06/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*110 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060416	06/04/19	06/04/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**620**	1.0	"	"	"	"	"	"	
Beryllium	**1.1**	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**24**	2.0	"	"	"	"	"	"	
Cobalt	**12**	2.0	"	"	"	"	"	"	
Copper	**23**	1.0	"	"	"	"	"	"	
Lead	**8.8**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**20**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**61**	5.0	"	"	"	"	"	"	
Zinc	**78**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
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Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

B-7@5'

T191782-04 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060426	06/04/19	06/06/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*115 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060416	06/04/19	06/04/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**240**	1.0	"	"	"	"	"	"	
Beryllium	**1.1**	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**22**	2.0	"	"	"	"	"	"	
Cobalt	**13**	2.0	"	"	"	"	"	"	
Copper	**19**	1.0	"	"	"	"	"	"	
Lead	**9.5**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**19**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**57**	5.0	"	"	"	"	"	"	
Zinc	**73**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

B-3@5'

T191782-05 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060426	06/04/19	06/06/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*113 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060416	06/04/19	06/04/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**380**	1.0	"	"	"	"	"	"	
Beryllium	**1.2**	1.0	"	"	"	"	06/04/19	"	
Cadmium	ND	2.0	"	"	"	"	06/04/19	"	
Chromium	**26**	2.0	"	"	"	"	"	"	
Cobalt	**14**	2.0	"	"	"	"	"	"	
Copper	**26**	1.0	"	"	"	"	"	"	
Lead	**11**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**22**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**64**	5.0	"	"	"	"	"	"	
Zinc	**100**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060415	06/04/19	06/05/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060426 - EPA 3550B GC										
Blank (9060426-BLK1)				Prepared: 06/04/19 Analyzed: 06/06/19						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*111*		*"*	*100*		*111*	*65-135*			
LCS (9060426-BS1)				Prepared: 06/04/19 Analyzed: 06/06/19						
C13-C28 (DRO)	490	10	mg/kg	500		98.3	75-125			
Surrogate: p-Terphenyl	*115*		*"*	*100*		*115*	*65-135*			
LCS Dup (9060426-BSD1)				Prepared: 06/04/19 Analyzed: 06/06/19						
C13-C28 (DRO)	460	10	mg/kg	500		92.1	75-125	6.58	20	
Surrogate: p-Terphenyl	*108*		*"*	*100*		*108*	*65-135*			

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060416 - EPA 3050B										
Blank (9060416-BLK1)				Prepared & Analyzed: 06/04/19						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (9060416-BS1)				Prepared & Analyzed: 06/04/19						
Arsenic	101	5.0	mg/kg	100		101	75-125			
Barium	102	1.0	"	100		102	75-125			
Cadmium	102	2.0	"	100		102	75-125			
Chromium	101	2.0	"	100		101	75-125			
Lead	99.4	3.0	"	100		99.4	75-125			
Matrix Spike (9060416-MS1)	**Source: T191772-01**			Prepared & Analyzed: 06/04/19						
Arsenic	86.7	5.0	mg/kg	94.3	1.26	90.5	75-125			
Barium	260	1.0	"	94.3	161	105	75-125			
Cadmium	88.3	2.0	"	94.3	0.874	92.6	75-125			
Chromium	138	2.0	"	94.3	49.9	93.6	75-125			
Lead	90.4	3.0	"	94.3	5.97	89.5	75-125			

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Mike Jaroudi, Project Manager

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Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060416 - EPA 3050B										
Matrix Spike Dup (9060416-MSD1)	**Source: T191772-01**			Prepared & Analyzed: 06/04/19						
Arsenic	92.5	5.0	mg/kg	97.1	1.26	94.0	75-125	6.51	20	
Barium	266	1.0	"	97.1	161	108	75-125	2.29	20	
Cadmium	95.2	2.0	"	97.1	0.874	97.1	75-125	7.53	20	
Chromium	147	2.0	"	97.1	49.9	99.9	75-125	6.10	20	
Lead	97.3	3.0	"	97.1	5.97	94.1	75-125	7.38	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060415 - EPA 7471A Soil										
Blank (9060415-BLK1)				Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	ND	0.10	mg/kg							
LCS (9060415-BS1)				Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	0.277	0.10	mg/kg	0.315		88.0	80-120			
Matrix Spike (9060415-MS1)	**Source: T191764-01**			Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	0.286	0.10	mg/kg	0.325	ND	87.8	75-125			
Matrix Spike Dup (9060415-MSD1)	**Source: T191764-01**			Prepared: 06/04/19 Analyzed: 06/05/19						
Mercury	0.299	0.10	mg/kg	0.315	ND	95.2	75-125	4.74	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/11/19 08:45

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Mike Jaroudi, Project Manager

SunStar Laboratories

Chain of Custody Record

25712 Commercentre Drive, Lake Forest, CA 92630
949-297-5020

Client: Ninyo & Moore
Address: 475 Goddard, Suite 200
Phone: (949) 753-7070 Fax: (949) 753-7071
Project Manager: Franklin Ruiz

Date: 6/1/2019 Page: 1 Of 1
Project Name: UCI North Campus
Collector: GM Client Project #: 209570014
Batch #: T19 1782 EDF #:

Laboratory ID #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	EPA 8015B TPH				Comments/Preservative	Total # of containers
01	B-29@5'	6/1/19	7:35AM	SOIL	4oz Glass Jar									X		X				ICE	1
02	B-1@5'	6/1/19	12:19PM	SOIL	4oz Glass Jar									X		X				ICE	1
03	B-2@5'	6/1/19	1:02PM	SOIL	4oz Glass Jar									X		X				ICE	1
04	B-4@5'	6/1/19	2:35PM	SOIL	4oz Glass Jar									X		X				ICE	1
05	B-3@5'	6/1/19	3:50PM	SOIL	4oz Glass Jar									X		X				ICE	1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	6/3/19		6-3-19 14:38
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	6-3-19 17:26		6-3-19 17:26
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers	5
Chain of Custody seals Y/N/NA	N
Seals intact? Y/N/NA	NA
Received good condition/cold	2.0

Turn around time:

Notes

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

COC 181366

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SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T191782

Client Name: Nixon & Moore - Irvine Project:

Delivered by: ☐ Client ☑ SunStar Courier ☐ GSO ☐ FedEx ☐ Other

If Courier, Received by: Travis Date/Time Courier Received: 6-3-19 14:38

Lab Received by: Dan Date/Time Lab Received: 6-3-19 17:26

Total number of coolers received: 0

Temperature: Cooler #1	.8 °C +/- the CF (1.2°C) =	2.0	°C corrected temperature
Temperature: Cooler #2	°C +/- the CF (1.2°C) =		°C corrected temperature
Temperature: Cooler #3	°C +/- the CF (1.2°C) =		°C corrected temperature
Temperature criteria = ≤ 6°C (no frozen containers)	Within criteria?	☑ Yes	☐ No
If NO:			
Samples received on ice?	☐ Yes	☐ No → **Complete Non-Conformance Sheet**	
If on ice, samples received same day collected?	☐ Yes → Acceptable	☐ No → **Complete Non-Conformance Sheet**	

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☑ N/A
Sample containers intact	☑ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☑ Yes	☐ No*	
Total number of containers received match COC	☑ Yes	☐ No*	
Proper containers received for analyses requested on COC	☑ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☑ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☑ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date: TB 6-3-19

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

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PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T191782

Client: Ninyo & Moore
Project: UCI North Campus
Project Manager: Mike Jaroudi
Project Number: 209570014

Report To:
Ninyo & Moore
Franklin Ruiz
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 06/11/19 17:00 (5 day TAT)
Received By: Dan Marteski
Date Received: 06/03/19 17:26
Logged In By: Travis Berner
Date Logged In: 06/03/19 17:45

Samples Received at: **2°C**
Custody Seals No Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirı No

Analysis	Due	TAT	Expires	Comments
T191782-01 B-29@5' [Soil] Sampled 06/01/19 07:35 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/11/19 15:00	5	11/28/19 07:35	
8015 Carbon Chain	06/11/19 15:00	5	06/15/19 07:35	
T191782-02 B-1@5' [Soil] Sampled 06/01/19 12:19 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/11/19 15:00	5	11/28/19 12:19	
8015 Carbon Chain	06/11/19 15:00	5	06/15/19 12:19	
T191782-03 B-2@5' [Soil] Sampled 06/01/19 13:02 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/11/19 15:00	5	11/28/19 13:02	
8015 Carbon Chain	06/11/19 15:00	5	06/15/19 13:02	
T191782-04 B-7@5' [Soil] Sampled 06/01/19 14:35 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/11/19 15:00	5	11/28/19 14:35	
8015 Carbon Chain	06/11/19 15:00	5	06/15/19 14:35	
T191782-05 B-3@5' [Soil] Sampled 06/01/19 15:50 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/11/19 15:00	5	11/28/19 15:50	
8015 Carbon Chain	06/11/19 15:00	5	06/15/19 15:50	

Reviewed By Date

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T191782

Client:	**Ninyo & Moore**	**Project Manager:**	**Mike Jaroudi**
Project:	**UCI North Campus**	**Project Number:**	**209570014**

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By

Date

SunStar Laboratories, Inc.
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12 June 2019

Franklin Ruiz
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: UCI North Campus

Enclosed are the results of analyses for samples received by the laboratory on 06/05/19 16:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/12/19 11:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-34 @ 5	T191835-01	Soil	06/04/19 10:28	06/05/19 16:50
B-35 @ 5	T191835-02	Soil	06/04/19 15:25	06/05/19 16:50

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/12/19 11:03

DETECTIONS SUMMARY

Sample ID: B-34 @ 5 **Laboratory ID:** T191835-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**170**	1.0	mg/kg	EPA 6010b	
Chromium	**13**	2.0	mg/kg	EPA 6010b	
Cobalt	**5.1**	2.0	mg/kg	EPA 6010b	
Copper	**8.7**	1.0	mg/kg	EPA 6010b	
Lead	**3.7**	3.0	mg/kg	EPA 6010b	
Nickel	**9.9**	2.0	mg/kg	EPA 6010b	
Vanadium	**29**	5.0	mg/kg	EPA 6010b	
Zinc	**30**	1.0	mg/kg	EPA 6010b	

Sample ID: B-35 @ 5 **Laboratory ID:** T191835-02

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**44**	1.0	mg/kg	EPA 6010b	
Chromium	**8.1**	2.0	mg/kg	EPA 6010b	
Cobalt	**2.7**	2.0	mg/kg	EPA 6010b	
Copper	**2.8**	1.0	mg/kg	EPA 6010b	
Nickel	**3.7**	2.0	mg/kg	EPA 6010b	
Vanadium	**16**	5.0	mg/kg	EPA 6010b	
Zinc	**18**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/12/19 11:03

B-34 @ 5

T191835-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060609	06/06/19	06/07/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*123 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060611	06/06/19	06/11/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**170**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/11/19	"	
Cadmium	ND	2.0	"	"	"	"	06/11/19	"	
Chromium	**13**	2.0	"	"	"	"	"	"	
Cobalt	**5.1**	2.0	"	"	"	"	"	"	
Copper	**8.7**	1.0	"	"	"	"	"	"	
Lead	**3.7**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**9.9**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**29**	5.0	"	"	"	"	"	"	
Zinc	**30**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060610	06/06/19	06/07/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/12/19 11:03

B-35 @ 5

T191835-02 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9060609	06/06/19	06/07/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*113 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9060611	06/06/19	06/11/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**44**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**8.1**	2.0	"	"	"	"	"	"	
Cobalt	**2.7**	2.0	"	"	"	"	"	"	
Copper	**2.8**	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**3.7**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**16**	5.0	"	"	"	"	"	"	
Zinc	**18**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9060610	06/06/19	06/07/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/12/19 11:03

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060609 - EPA 3550B GC										
Blank (9060609-BLK1)				Prepared: 06/06/19 Analyzed: 06/07/19						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*127*		*"*	*100*		*127*	*65-135*			
LCS (9060609-BS1)				Prepared: 06/06/19 Analyzed: 06/07/19						
C13-C28 (DRO)	530	10	mg/kg	500		107	75-125			
Surrogate: p-Terphenyl	*121*		*"*	*100*		*121*	*65-135*			
Matrix Spike (9060609-MS1)	**Source: T191820-03**			Prepared: 06/06/19 Analyzed: 06/07/19						
C13-C28 (DRO)	520	10	mg/kg	510	ND	101	75-125			
Surrogate: p-Terphenyl	*115*		*"*	*102*		*112*	*65-135*			
Matrix Spike Dup (9060609-MSD1)	**Source: T191820-03**			Prepared: 06/06/19 Analyzed: 06/07/19						
C13-C28 (DRO)	510	10	mg/kg	505	ND	101	75-125	1.28	20	
Surrogate: p-Terphenyl	*117*		*"*	*101*		*116*	*65-135*			

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/12/19 11:03

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060611 - EPA 3050B										
Blank (9060611-BLK1)				Prepared: 06/06/19 Analyzed: 06/11/19						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (9060611-BS1)				Prepared: 06/06/19 Analyzed: 06/11/19						
Arsenic	19.5	5.0	mg/kg	25.0		78.0	75-125			
Barium	20.0	1.0	"	25.0		80.1	75-125			
Cadmium	20.0	2.0	"	25.0		80.1	75-125			
Chromium	20.0	2.0	"	25.0		79.9	75-125			
Lead	19.9	3.0	"	25.0		79.6	75-125			
Matrix Spike (9060611-MS1)	**Source: T191837-01**			Prepared: 06/06/19 Analyzed: 06/11/19						
Arsenic	18.6	5.0	mg/kg	24.8	ND	74.9	75-125			QM-05
Barium	59.9	1.0	"	24.8	38.8	85.5	75-125			
Cadmium	18.8	2.0	"	24.8	0.282	74.7	75-125			QM-05
Chromium	22.0	2.0	"	24.8	5.72	65.9	75-125			QM-05
Lead	18.8	3.0	"	24.8	0.841	72.6	75-125			QM-05

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Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/12/19 11:03

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060611 - EPA 3050B										
Matrix Spike Dup (9060611-MSD1)	**Source: T191837-01**			Prepared: 06/06/19 Analyzed: 06/11/19						
Arsenic	16.7	5.0	mg/kg	24.0	ND	69.5	75-125	10.5	20	QM-05
Barium	53.2	1.0	"	24.0	38.8	59.9	75-125	12.0	20	QM-05
Cadmium	17.1	2.0	"	24.0	0.282	70.1	75-125	9.09	20	QM-05
Chromium	20.3	2.0	"	24.0	5.72	60.8	75-125	7.94	20	QM-05
Lead	17.9	3.0	"	24.0	0.841	70.8	75-125	5.08	20	QM-05

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Mike Jaroudi, Project Manager

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949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/12/19 11:03

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060610 - EPA 7471A Soil										
Blank (9060610-BLK1)				Prepared: 06/06/19 Analyzed: 06/07/19						
Mercury	ND	0.10	mg/kg							
LCS (9060610-BS1)				Prepared: 06/06/19 Analyzed: 06/07/19						
Mercury	0.259	0.10	mg/kg	0.320		81.0	80-120			
Matrix Spike (9060610-MS1)	**Source: T191835-01**			Prepared: 06/06/19 Analyzed: 06/07/19						
Mercury	0.210	0.10	mg/kg	0.305	ND	69.0	75-125			QM-05
Matrix Spike Dup (9060610-MSD1)	**Source: T191835-01**			Prepared: 06/06/19 Analyzed: 06/07/19						
Mercury	0.242	0.10	mg/kg	0.320	ND	75.8	75-125	14.1	20	

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Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/12/19 11:03

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS was within acceptance criteria. The data is acceptable as no negative impact on data is expected.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Mike Jaroudi, Project Manager

SunStar Laboratories

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949-297-5020

Chain of Custody Record

Client: Ninyo & Moore
Address: 475 Goddard, Suite 200
Phone: (949) 753-7070 Fax: (949) 753-7071
Project Manager: Franklin Ruiz

Date: 6/4/19 Page: 1 Of 1
Project Name: UCI North Campus
Collector: GM Client Project #: 209570014
Batch #: T191835 EDF #:

Laboratory ID #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	EPA 8015B TPH			Comments/Preservative	Total # of containers
01	B-34 @ 5'	6/4/19	10:25AM	SOIL	4oz Glass Jar									X		X			ICE	1
02	B-35 @ 5'	6/4/19	3:25PM	SOIL	4oz Glass Jar									X		X			ICE	1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	6/5/19		6-5-19 15:59
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	6-5-19 16:50		6-5-19 16:50
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers	2
Chain of Custody seals Y/N/NA	Y
Seals intact? Y/N/NA	Y
Received good condition/cold	3.4

Turn around time:

Notes

Sample disposal Instructions: Disposal @ $2.00 each ___ Return to client ___ Pickup ___

COC 181362

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SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T191835 T191835

Client Name: Ninyo & Moore

Project: UCI North Campus

Delivered by: ☐ Client ☒ SunStar Courier ☐ GSO ☐ FedEx ☐ Other

If Courier, Received by: Travis

Date/Time Courier Received: 6.5.19 / 15:59

Lab Received by: Sunny

Date/Time Lab Received: 6.5.19 / 16:50

Total number of coolers received: 0

Temperature:	Cooler #1 2.2	°C +/- the CF (1.2°C) = 3.4	°C corrected temperature
Temperature:	Cooler #2	°C +/- the CF (1.2°C) =	°C corrected temperature
Temperature:	Cooler #3	°C +/- the CF (1.2°C) =	°C corrected temperature

Temperature criteria = ≤ 6°C (no frozen containers) Within criteria? ☒ **Yes** ☐ **No**

If NO:

Samples received on ice? ☐ Yes ☐ **No → Complete Non-Conformance Sheet**

If on ice, samples received same day collected? ☐ Yes → Acceptable ☐ **No → Complete Non-Conformance Sheet**

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☒ N/A
Sample containers intact	☒ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☒ Yes	☐ No*	
Total number of containers received match COC	☒ Yes	☐ No*	
Proper containers received for analyses requested on COC	☒ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☒ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☒ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked

Cooler/Sample Review - Initials and date: SL 6.5.19

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

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PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T191835

Client: **Ninyo & Moore** **Project Manager:** **Mike Jaroudi**
Project: **UCI North Campus** **Project Number:** **209570014**

Report To:
Ninyo & Moore
Franklin Ruiz
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 06/13/19 17:00 (5 day TAT)
Received By: Sunny Lounethone Date Received: 06/05/19 16:50
Logged In By: Sunny Lounethone Date Logged In: 06/05/19 18:00

Samples Received at: **3.4°C**
Custody Seals No Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirı No

Analysis	Due	TAT	Expires	Comments
T191835-01 B-34 @ 5 [Soil] Sampled 06/04/19 10:28 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/13/19 15:00	5	12/01/19 10:28	
8015 Carbon Chain	06/13/19 15:00	5	06/18/19 10:28	
T191835-02 B-35 @ 5 [Soil] Sampled 06/04/19 15:25 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/13/19 15:00	5	12/01/19 15:25	
8015 Carbon Chain	06/13/19 15:00	5	06/18/19 15:25	

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By Date

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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14 June 2019

Franklin Ruiz
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: UCI North Campus

Enclosed are the results of analyses for samples received by the laboratory on 06/07/19 14:23. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Lake Forest, California 92630
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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/14/19 08:36

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-9@5	T191867-01	Soil	06/07/19 07:30	06/07/19 14:23
B-12@4	T191867-02	Soil	06/07/19 12:08	06/07/19 14:23

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/14/19 08:36

DETECTIONS SUMMARY

Sample ID: B-9@5 **Laboratory ID:** T191867-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**39**	1.0	mg/kg	EPA 6010b	
Chromium	**14**	2.0	mg/kg	EPA 6010b	
Cobalt	**8.2**	2.0	mg/kg	EPA 6010b	
Copper	**16**	1.0	mg/kg	EPA 6010b	
Lead	**5.5**	3.0	mg/kg	EPA 6010b	
Nickel	**13**	2.0	mg/kg	EPA 6010b	
Vanadium	**34**	5.0	mg/kg	EPA 6010b	
Zinc	**63**	1.0	mg/kg	EPA 6010b	

Sample ID: B-12@4 **Laboratory ID:** T191867-02

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**61**	1.0	mg/kg	EPA 6010b	
Chromium	**12**	2.0	mg/kg	EPA 6010b	
Cobalt	**6.9**	2.0	mg/kg	EPA 6010b	
Copper	**11**	1.0	mg/kg	EPA 6010b	
Lead	**4.7**	3.0	mg/kg	EPA 6010b	
Nickel	**11**	2.0	mg/kg	EPA 6010b	
Vanadium	**29**	5.0	mg/kg	EPA 6010b	
Zinc	**39**	1.0	mg/kg	EPA 6010b	

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Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/14/19 08:36

B-9@5

T191867-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061026	06/10/19	06/10/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*105 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061033	06/10/19	06/12/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**39**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/12/19	"	
Cadmium	ND	2.0	"	"	"	"	06/12/19	"	
Chromium	**14**	2.0	"	"	"	"	"	"	
Cobalt	**8.2**	2.0	"	"	"	"	"	"	
Copper	**16**	1.0	"	"	"	"	"	"	
Lead	**5.5**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**13**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**34**	5.0	"	"	"	"	"	"	
Zinc	**63**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061020	06/10/19	06/11/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/14/19 08:36

B-12@4

T191867-02 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061026	06/10/19	06/10/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*111 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061033	06/10/19	06/12/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**61**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**12**	2.0	"	"	"	"	"	"	
Cobalt	**6.9**	2.0	"	"	"	"	"	"	
Copper	**11**	1.0	"	"	"	"	"	"	
Lead	**4.7**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**11**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**29**	5.0	"	"	"	"	"	"	
Zinc	**39**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061020	06/10/19	06/11/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/14/19 08:36

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061026 - EPA 3550B GC										
Blank (9061026-BLK1)				Prepared & Analyzed: 06/10/19						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*109*		*"*	*99.0*		*111*	*65-135*			
LCS (9061026-BS1)				Prepared: 06/10/19 Analyzed: 06/11/19						
C13-C28 (DRO)	550	10	mg/kg	495		111	75-125			
Surrogate: p-Terphenyl	*125*		*"*	*99.0*		*126*	*65-135*			
Matrix Spike (9061026-MS1)	**Source: T191867-01**			Prepared: 06/10/19 Analyzed: 06/11/19						
C13-C28 (DRO)	510	10	mg/kg	500	ND	102	75-125			
Surrogate: p-Terphenyl	*107*		*"*	*100*		*107*	*65-135*			
Matrix Spike Dup (9061026-MSD1)	**Source: T191867-01**			Prepared: 06/10/19 Analyzed: 06/11/19						
C13-C28 (DRO)	490	10	mg/kg	495	ND	98.1	75-125	4.40	20	
Surrogate: p-Terphenyl	*104*		*"*	*99.0*		*105*	*65-135*			

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475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/14/19 08:36

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061033 - EPA 3050B										
Blank (9061033-BLK1)				Prepared: 06/10/19 Analyzed: 06/12/19						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (9061033-BS1)				Prepared: 06/10/19 Analyzed: 06/12/19						
Arsenic	81.5	5.0	mg/kg	100		81.5	75-125			
Barium	84.6	1.0	"	100		84.6	75-125			
Cadmium	84.9	2.0	"	100		84.9	75-125			
Chromium	84.9	2.0	"	100		84.9	75-125			
Lead	83.3	3.0	"	100		83.3	75-125			
Matrix Spike (9061033-MS1)	**Source: T191867-01**			Prepared: 06/10/19 Analyzed: 06/12/19						
Arsenic	57.4	5.0	mg/kg	98.0	3.17	55.3	75-125			QM-01
Barium	91.0	1.0	"	98.0	38.8	53.2	75-125			QM-01
Cadmium	55.8	2.0	"	98.0	0.743	56.2	75-125			QM-01
Chromium	69.0	2.0	"	98.0	13.6	56.5	75-125			QM-01
Lead	57.5	3.0	"	98.0	5.50	53.0	75-125			QM-01

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/14/19 08:36

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061033 - EPA 3050B										
Matrix Spike Dup (9061033-MSD1)	**Source: T191867-01**			Prepared: 06/10/19 Analyzed: 06/12/19						
Arsenic	54.7	5.0	mg/kg	91.7	3.17	56.1	75-125	4.83	20	QM-01
Barium	87.0	1.0	"	91.7	38.8	52.6	75-125	4.43	20	QM-01
Cadmium	53.6	2.0	"	91.7	0.743	57.6	75-125	4.05	20	QM-01
Chromium	67.0	2.0	"	91.7	13.6	58.3	75-125	2.88	20	QM-01
Lead	54.9	3.0	"	91.7	5.50	53.9	75-125	4.53	20	QM-01

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/14/19 08:36

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061020 - EPA 7471A Soil										
Blank (9061020-BLK1)				Prepared: 06/10/19 Analyzed: 06/11/19						
Mercury	ND	0.10	mg/kg							
LCS (9061020-BS1)				Prepared: 06/10/19 Analyzed: 06/11/19						
Mercury	0.273	0.10	mg/kg	0.310		88.1	80-120			
Matrix Spike (9061020-MS1)	**Source: T191859-01**			Prepared: 06/10/19 Analyzed: 06/11/19						
Mercury	0.417	0.10	mg/kg	0.325	0.465	NR	75-125			QM-01
Matrix Spike Dup (9061020-MSD1)	**Source: T191859-01**			Prepared: 06/10/19 Analyzed: 06/11/19						
Mercury	0.541	0.10	mg/kg	0.310	0.465	24.5	75-125	25.8	20	QM-01

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Mike Jaroudi, Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/14/19 08:36

Notes and Definitions

QM-01	The % recovery is outside of established control limits due to matrix interference and/or sample dilution due to matrix effect. The batch was accepted based on acceptable LCS recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Mike Jaroudi, Project Manager

SunStar Laboratories

25712 Commercentre Drive, Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: Ninyo & Moore
Address: 475 Goddard Suite 200, Irvine
Phone: (949) 753-7070 Fax: (949) 753-7071
Project Manager: Franklin Ruiz

Date: 6/7/2019 Page: 1 Of 1
Project Name: UCI North Campus
Collector: Garrett Mottle (GM) Client Project #: 209570014
Batch #: 719867 EDF #:

Laboratory ID #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	EPA 8015 B TPH			Comments/Preservative	Total # of containers
01	B-9 @ 5'	6/7/19	7:30 AM	SOIL	4oz Glass Jar									X		X			ICE	1
02	B-12 @ 4'	6/7/19	12:08 PM	SOIL	4oz Glass Jar									X		X			ICE	1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	6/7/19		6-7-19 14:23
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers	2
Chain of Custody seals Y/N/NA	Y
Seals intact? Y/N/NA	Y
Received good condition/cold	2.4

Turn around time: Standard

Notes

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

COC 181363

SunStar Laboratories — Celebrating 20 Years!

SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T191867

Client Name: Ninyo & Moore

Project: UCI North Campus

Delivered by: ☒ Client ☐ SunStar Courier ☐ GSO ☐ FedEx ☐ Other

If Courier, Received by: _____ Date/Time Courier Received: _____

Lab Received by: Sunny Date/Time Lab Received: 6.7.19 / 14:38

Total number of coolers received: 0

Temperature: Cooler #1	1.2 °C +/- the CF (1.2°C) =	2.4 °C	corrected temperature
Temperature: Cooler #2	°C +/- the CF (1.2°C) =		°C corrected temperature
Temperature: Cooler #3	°C +/- the CF (1.2°C) =		°C corrected temperature
Temperature criteria = ≤ 6°C (no frozen containers)	Within criteria?	☒ **Yes**	☐ **No**
If NO: Samples received on ice?	☐ Yes	☐ **No → Complete Non-Conformance Sheet**	
If on ice, samples received same day collected?	☐ Yes → Acceptable	☐ **No → Complete Non-Conformance Sheet**	

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☒ N/A
Sample containers intact	☒ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☒ Yes	☐ No*	
Total number of containers received match COC	☒ Yes	☐ No*	
Proper containers received for analyses requested on COC	☒ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☒ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☒ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked

Cooler/Sample Review - Initials and date: SR 6.7.19

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

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PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T191867

Client: **Ninyo & Moore** **Project Manager:** **Mike Jaroudi**
Project: **UCI North Campus** **Project Number:** **209570014**

Report To:
Ninyo & Moore
Franklin Ruiz
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 06/14/19 17:00 (5 day TAT)
Received By: Sunny Lounethone Date Received: 06/07/19 14:23
Logged In By: Sunny Lounethone Date Logged In: 06/07/19 16:00

Samples Received at: **2.4°C**
Custody Seals No Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirı No

Analysis	Due	TAT	Expires	Comments
T191867-01 B-9@5 [Soil] Sampled 06/07/19 07:30 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/14/19 15:00	5	12/04/19 07:30	
8015 Carbon Chain	06/14/19 15:00	5	06/21/19 07:30	
T191867-02 B-12@4 [Soil] Sampled 06/07/19 12:08 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/14/19 15:00	5	12/04/19 12:08	
8015 Carbon Chain	06/14/19 15:00	5	06/21/19 12:08	

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By Date

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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17 June 2019

Franklin Ruiz
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: UCI North Campus

Enclosed are the results of analyses for samples received by the laboratory on 06/10/19 11:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-28@5'	T191887-01	Soil	06/08/19 08:17	06/10/19 11:30
B-8@5'	T191887-02	Soil	06/08/19 09:13	06/10/19 11:30
B-18@5'	T191887-03	Soil	06/08/19 11:00	06/10/19 11:30
B-17@3'	T191887-04	Soil	06/08/19 11:52	06/10/19 11:30

SunStar Laboratories, Inc.

Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

DETECTIONS SUMMARY

Sample ID: B-28@5' **Laboratory ID:** T191887-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**94**	1.0	mg/kg	EPA 6010b	
Chromium	**12**	2.0	mg/kg	EPA 6010b	
Cobalt	**6.8**	2.0	mg/kg	EPA 6010b	
Copper	**11**	1.0	mg/kg	EPA 6010b	
Lead	**5.9**	3.0	mg/kg	EPA 6010b	
Nickel	**11**	2.0	mg/kg	EPA 6010b	
Vanadium	**31**	5.0	mg/kg	EPA 6010b	
Zinc	**38**	1.0	mg/kg	EPA 6010b	

Sample ID: B-8@5' **Laboratory ID:** T191887-02

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**67**	1.0	mg/kg	EPA 6010b	
Chromium	**13**	2.0	mg/kg	EPA 6010b	
Cobalt	**6.1**	2.0	mg/kg	EPA 6010b	
Copper	**12**	1.0	mg/kg	EPA 6010b	
Lead	**4.6**	3.0	mg/kg	EPA 6010b	
Nickel	**10**	2.0	mg/kg	EPA 6010b	
Vanadium	**30**	5.0	mg/kg	EPA 6010b	
Zinc	**48**	1.0	mg/kg	EPA 6010b	

Sample ID: B-18@5' **Laboratory ID:** T191887-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**79**	1.0	mg/kg	EPA 6010b	
Chromium	**9.2**	2.0	mg/kg	EPA 6010b	
Cobalt	**3.6**	2.0	mg/kg	EPA 6010b	
Copper	**4.7**	1.0	mg/kg	EPA 6010b	
Nickel	**5.7**	2.0	mg/kg	EPA 6010b	
Vanadium	**22**	5.0	mg/kg	EPA 6010b	
Zinc	**21**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

Sample ID: B-17@3' **Laboratory ID:** T191887-04

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**100**	1.0	mg/kg	EPA 6010b	
Chromium	**11**	2.0	mg/kg	EPA 6010b	
Cobalt	**5.3**	2.0	mg/kg	EPA 6010b	
Copper	**7.7**	1.0	mg/kg	EPA 6010b	
Lead	**3.8**	3.0	mg/kg	EPA 6010b	
Nickel	**8.8**	2.0	mg/kg	EPA 6010b	
Vanadium	**27**	5.0	mg/kg	EPA 6010b	
Zinc	**29**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

B-28@5'

T191887-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061027	06/10/19	06/12/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*106 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061117	06/11/19	06/12/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**94**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**12**	2.0	"	"	"	"	"	"	
Cobalt	**6.8**	2.0	"	"	"	"	"	"	
Copper	**11**	1.0	"	"	"	"	"	"	
Lead	**5.9**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**11**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**31**	5.0	"	"	"	"	"	"	
Zinc	**38**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061118	06/11/19	06/12/19	EPA 7471A Soil	

SunStar Laboratories, Inc.

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

B-8@5'

T191887-02 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061027	06/10/19	06/12/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*105 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061117	06/11/19	06/12/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**67**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/12/19	"	
Cadmium	ND	2.0	"	"	"	"	06/12/19	"	
Chromium	**13**	2.0	"	"	"	"	"	"	
Cobalt	**6.1**	2.0	"	"	"	"	"	"	
Copper	**12**	1.0	"	"	"	"	"	"	
Lead	**4.6**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**10**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**30**	5.0	"	"	"	"	"	"	
Zinc	**48**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061118	06/11/19	06/12/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

B-18@5'

T191887-03 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061027	06/10/19	06/12/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*106 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061117	06/11/19	06/12/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**79**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**9.2**	2.0	"	"	"	"	"	"	
Cobalt	**3.6**	2.0	"	"	"	"	"	"	
Copper	**4.7**	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**5.7**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**22**	5.0	"	"	"	"	"	"	
Zinc	**21**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061118	06/11/19	06/12/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

B-17@3'

T191887-04 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061027	06/10/19	06/12/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*108 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061117	06/11/19	06/12/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	06/12/19	"	
Arsenic	ND	5.0	"	"	"	"	06/12/19	"	
Barium	**100**	1.0	"	"	"	"	06/12/19	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	06/12/19	"	
Chromium	**11**	2.0	"	"	"	"	06/12/19	"	
Cobalt	**5.3**	2.0	"	"	"	"	06/12/19	"	
Copper	**7.7**	1.0	"	"	"	"	06/12/19	"	
Lead	**3.8**	3.0	"	"	"	"	06/12/19	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**8.8**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**27**	5.0	"	"	"	"	06/12/19	"	
Zinc	**29**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061118	06/11/19	06/12/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061027 - EPA 3550B GC										
Blank (9061027-BLK1)				Prepared: 06/10/19 Analyzed: 06/11/19						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*113*		*"*	*100*		*113*	*65-135*			
LCS (9061027-BS1)				Prepared: 06/10/19 Analyzed: 06/11/19						
C13-C28 (DRO)	460	10	mg/kg	500		92.2	75-125			
Surrogate: p-Terphenyl	*110*		*"*	*100*		*110*	*65-135*			
LCS Dup (9061027-BSD1)				Prepared: 06/10/19 Analyzed: 06/11/19						
C13-C28 (DRO)	460	10	mg/kg	500		91.1	75-125	1.15	20	
Surrogate: p-Terphenyl	*109*		*"*	*100*		*109*	*65-135*			

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Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061117 - EPA 3050B										
Blank (9061117-BLK1)				Prepared: 06/11/19 Analyzed: 06/12/19						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (9061117-BS1)				Prepared: 06/11/19 Analyzed: 06/12/19						
Arsenic	83.7	5.0	mg/kg	100		83.7	75-125			
Barium	86.6	1.0	"	100		86.6	75-125			
Cadmium	86.8	2.0	"	100		86.8	75-125			
Chromium	87.3	2.0	"	100		87.3	75-125			
Lead	85.7	3.0	"	100		85.7	75-125			
Matrix Spike (9061117-MS1)	**Source: T191887-01**			Prepared: 06/11/19 Analyzed: 06/12/19						
Arsenic	55.0	5.0	mg/kg	97.1	2.70	53.9	75-125			QM-01
Barium	139	1.0	"	97.1	93.9	46.3	75-125			QM-01
Cadmium	53.3	2.0	"	97.1	0.592	54.3	75-125			QM-01
Chromium	66.7	2.0	"	97.1	12.4	55.9	75-125			QM-01
Lead	57.4	3.0	"	97.1	5.91	53.0	75-125			QM-01

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Mike Jaroudi, Project Manager

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PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061117 - EPA 3050B										
Matrix Spike Dup (9061117-MSD1)	**Source: T191887-01**			Prepared: 06/11/19 Analyzed: 06/12/19						
Arsenic	51.6	4.5	mg/kg	90.9	2.70	53.8	75-125	6.29	20	QM-01
Barium	138	0.91	"	90.9	93.9	48.3	75-125	0.776	20	QM-01
Cadmium	50.2	1.8	"	90.9	0.592	54.5	75-125	5.99	20	QM-01
Chromium	63.7	1.8	"	90.9	12.4	56.5	75-125	4.48	20	QM-01
Lead	53.8	2.7	"	90.9	5.91	52.6	75-125	6.51	20	QM-01

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061118 - EPA 7471A Soil										
Blank (9061118-BLK1)				Prepared: 06/11/19 Analyzed: 06/12/19						
Mercury	ND	0.10	mg/kg							
LCS (9061118-BS1)				Prepared: 06/11/19 Analyzed: 06/12/19						
Mercury	0.310	0.10	mg/kg	0.315		98.4	80-120			
Matrix Spike (9061118-MS1)	**Source: T191887-01**			Prepared: 06/11/19 Analyzed: 06/12/19						
Mercury	0.320	0.10	mg/kg	0.320	ND	100	75-125			
Matrix Spike Dup (9061118-MSD1)	**Source: T191887-01**			Prepared: 06/11/19 Analyzed: 06/12/19						
Mercury	0.316	0.10	mg/kg	0.310	ND	102	75-125	1.23	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/17/19 10:40

Notes and Definitions

QM-01	The % recovery is outside of established control limits due to matrix interference and/or sample dilution due to matrix effect. The batch was accepted based on acceptable LCS recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Mike Jaroudi, Project Manager

SunStar Laboratories

Chain of Custody Record

25712 Commercentre Drive, Lake Forest, CA 92630
949-297-5020

Client: Ninyo & Moore
Address: 475 Goddard, Suite 200, Irvine, CA
Phone: (949) 753-7070 Fax: (949) 753-7071
Project Manager: Franklin Ruiz

Date: 6/8/2019 Page: 1 Of 1
Project Name: UCI North Campus
Collector: Garrett Mottle (GM) Client Project #: 209570014
Batch #: T19 1887 EDF #:

Laboratory ID #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	EPA 8015B TPH				Comments/Preservative	Total # of containers
01	B-18 @ 5'	6/8/19	8:17 AM	SOIL	4oz Glass Jar									X		X				Ice	1
02	B-5 @ 5'	6/8/19	9:13 AM	SOIL	4oz Glass Jar									X		X				ICE	1
03	B-18 @ 5'	6/8/19	11:00 AM	SOIL	4oz Glass Jar									X		X				ICE	1
04	B-17 @ 3'	6/8/19	11:52 AM	SOIL	4oz Glass Jar									X		X				ICE	1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	6/10/19 11:03	Paul Dunn	6-10-19 11:03
Paul Dunn	6-10-19 11:30		6-10-19 11:30

Total # of containers	4
Chain of Custody seals Y/N/NA	Y
Seals intact? Y/N/NA	
Received good condition/cold	3.4

Turn around time:

Notes

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

COC 181361

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SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T19 1887

Client Name: Ninyo & Moore Project: UCI North Campus

Delivered by: ☐ Client ☑ SunStar Courier ☐ GSO ☐ FedEx ☐ Other

If Courier, Received by: Paul Date/Time Courier Received: 6-10-19 11:03

Lab Received by: Travis Date/Time Lab Received: 6-10-19 11:30

Total number of coolers received: 0

Temperature:	Cooler #1	2.2 °C +/- the CF (1.2°C) =	3.4	°C	corrected temperature
Temperature:	Cooler #2	°C +/- the CF (1.2°C) =		°C	corrected temperature
Temperature:	Cooler #3	°C +/- the CF (1.2°C) =		°C	corrected temperature

Temperature criteria = ≤ 6°C (no frozen containers) — Within criteria? ☑ Yes ☐ No

If NO:

Samples received on ice? ☐ Yes ☐ No → **Complete Non-Conformance Sheet**

If on ice, samples received same day collected? ☐ Yes → Acceptable ☐ No → **Complete Non-Conformance Sheet**

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☑ N/A
Sample containers intact	☑ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☑ Yes	☐ No*	
Total number of containers received match COC	☑ Yes	☐ No*	
Proper containers received for analyses requested on COC	☑ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☑ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☑ Yes	☐ No*	

* Complete Non-Conformance Receiving Sheet if checked

Cooler/Sample Review - Initials and date: PB 6-10-19

Comments:

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WORK ORDER

T191887

Client: Ninyo & Moore
Project: UCI North Campus
Project Manager: Mike Jaroudi
Project Number: 209570014

Report To:
Ninyo & Moore
Franklin Ruiz
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 06/17/19 17:00 (5 day TAT)
Received By: Travis Berner
Logged In By: Travis Berner
Date Received: 06/10/19 11:30
Date Logged In: 06/10/19 11:32

Samples Received at: **3.4°C**
Custody Seals No
Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirı No

Analysis	Due	TAT	Expires	Comments
T191887-01 B-28@5' [Soil] Sampled 06/08/19 08:17 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/17/19 15:00	5	12/05/19 08:17	
8015 Carbon Chain	06/17/19 15:00	5	06/22/19 08:17	
T191887-02 B-8@5' [Soil] Sampled 06/08/19 09:13 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/17/19 15:00	5	12/05/19 09:13	
8015 Carbon Chain	06/17/19 15:00	5	06/22/19 09:13	
T191887-03 B-18@5' [Soil] Sampled 06/08/19 11:00 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/17/19 15:00	5	12/05/19 11:00	
8015 Carbon Chain	06/17/19 15:00	5	06/22/19 11:00	
T191887-04 B-17@3' [Soil] Sampled 06/08/19 11:52 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/17/19 15:00	5	12/05/19 11:52	
8015 Carbon Chain	06/17/19 15:00	5	06/22/19 11:52	

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By

Date

SunStar Laboratories, Inc.
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Lake Forest, California 92630
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949.297.5027 Fax

19 June 2019

Franklin Ruiz
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: UCI North Campus

Enclosed are the results of analyses for samples received by the laboratory on 06/11/19 17:35. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
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Lake Forest, California 92630
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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
T-9: 0-1.0	T191911-01	Soil	06/03/19 00:45	06/11/19 17:35
T-10: 2.0-2.5	T191911-02	Soil	06/03/19 01:20	06/11/19 17:35
T-11: 1.0-1.5	T191911-03	Soil	06/03/19 11:50	06/11/19 17:35
T-12: 7.0-7.5	T191911-04	Soil	06/03/19 10:50	06/11/19 17:35
T-13: 2.0-3.0	T191911-05	Soil	06/03/19 08:45	06/11/19 17:35
T-14: 2.5-3.0	T191911-06	Soil	06/03/19 09:07	06/11/19 17:35
T-15: 6.0-6.5	T191911-07	Soil	06/03/19 09:25	06/11/19 17:35
T-1: 0-0.5	T191911-08	Soil	06/04/19 10:45	06/11/19 17:35
T-2: 4.0-4.3	T191911-09	Soil	06/04/19 11:25	06/11/19 17:35
T-3: 1.0-1.5	T191911-10	Soil	06/04/19 11:45	06/11/19 17:35
T-4: 0-0.5	T191911-11	Soil	06/04/19 12:15	06/11/19 17:35
T-5: 2.5-3.0	T191911-12	Soil	06/04/19 09:55	06/11/19 17:35
T-6: 3.5-4.0	T191911-13	Soil	06/04/19 07:40	06/11/19 17:35
T-7: 2.5-3.0	T191911-14	Soil	06/04/19 09:35	06/11/19 17:35
T-8: 1.0-1.5	T191911-15	Soil	06/04/19 09:00	06/11/19 17:35

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

DETECTIONS SUMMARY

Sample ID: T-9: 0-1.0 **Laboratory ID:** T191911-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**120**	1.0	mg/kg	EPA 6010b	
Chromium	**13**	2.0	mg/kg	EPA 6010b	
Cobalt	**7.9**	2.0	mg/kg	EPA 6010b	
Copper	**13**	1.0	mg/kg	EPA 6010b	
Lead	**12**	3.0	mg/kg	EPA 6010b	
Nickel	**9.5**	2.0	mg/kg	EPA 6010b	
Vanadium	**32**	5.0	mg/kg	EPA 6010b	
Zinc	**50**	1.0	mg/kg	EPA 6010b	

Sample ID: T-10: 2.0-2.5 **Laboratory ID:** T191911-02

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**140**	1.0	mg/kg	EPA 6010b	
Chromium	**14**	2.0	mg/kg	EPA 6010b	
Cobalt	**8.3**	2.0	mg/kg	EPA 6010b	
Copper	**13**	1.0	mg/kg	EPA 6010b	
Lead	**6.6**	3.0	mg/kg	EPA 6010b	
Nickel	**9.8**	2.0	mg/kg	EPA 6010b	
Vanadium	**36**	5.0	mg/kg	EPA 6010b	
Zinc	**46**	1.0	mg/kg	EPA 6010b	

Sample ID: T-11: 1.0-1.5 **Laboratory ID:** T191911-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**150**	1.0	mg/kg	EPA 6010b	
Chromium	**16**	2.0	mg/kg	EPA 6010b	
Cobalt	**7.6**	2.0	mg/kg	EPA 6010b	
Copper	**13**	1.0	mg/kg	EPA 6010b	
Lead	**5.7**	3.0	mg/kg	EPA 6010b	
Nickel	**11**	2.0	mg/kg	EPA 6010b	
Vanadium	**33**	5.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

Sample ID: T-11: 1.0-1.5 **Laboratory ID:** T191911-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Zinc	**43**	1.0	mg/kg	EPA 6010b	

Sample ID: T-12: 7.0-7.5 **Laboratory ID:** T191911-04

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**24**	1.0	mg/kg	EPA 6010b	
Chromium	**7.4**	2.0	mg/kg	EPA 6010b	
Cobalt	**2.5**	2.0	mg/kg	EPA 6010b	
Copper	**7.0**	1.0	mg/kg	EPA 6010b	
Vanadium	**8.8**	5.0	mg/kg	EPA 6010b	
Zinc	**16**	1.0	mg/kg	EPA 6010b	

Sample ID: T-13: 2.0-3.0 **Laboratory ID:** T191911-05

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**10**	10	mg/kg	EPA 8015B	
Barium	**82**	1.0	mg/kg	EPA 6010b	
Chromium	**9.8**	2.0	mg/kg	EPA 6010b	
Cobalt	**5.6**	2.0	mg/kg	EPA 6010b	
Copper	**8.7**	1.0	mg/kg	EPA 6010b	
Lead	**6.2**	3.0	mg/kg	EPA 6010b	
Nickel	**5.7**	2.0	mg/kg	EPA 6010b	
Vanadium	**22**	5.0	mg/kg	EPA 6010b	
Zinc	**26**	1.0	mg/kg	EPA 6010b	

Sample ID: T-14: 2.5-3.0 **Laboratory ID:** T191911-06

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**97**	1.0	mg/kg	EPA 6010b	
Chromium	**11**	2.0	mg/kg	EPA 6010b	
Cobalt	**7.7**	2.0	mg/kg	EPA 6010b	
Copper	**8.6**	1.0	mg/kg	EPA 6010b	
Lead	**4.3**	3.0	mg/kg	EPA 6010b	
Nickel	**8.1**	2.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

Sample ID: T-14: 2.5-3.0 **Laboratory ID:** T191911-06

Analyte	Result	Reporting Limit	Units	Method	Notes
Vanadium	**29**	5.0	mg/kg	EPA 6010b	
Zinc	**31**	1.0	mg/kg	EPA 6010b	

Sample ID: T-15: 6.0-6.5 **Laboratory ID:** T191911-07

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**30**	1.0	mg/kg	EPA 6010b	
Chromium	**4.5**	2.0	mg/kg	EPA 6010b	
Cobalt	**2.2**	2.0	mg/kg	EPA 6010b	
Copper	**1.5**	1.0	mg/kg	EPA 6010b	
Vanadium	**9.6**	5.0	mg/kg	EPA 6010b	
Zinc	**12**	1.0	mg/kg	EPA 6010b	

Sample ID: T-1: 0-0.5 **Laboratory ID:** T191911-08

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**27**	10	mg/kg	EPA 8015B	
Barium	**130**	1.0	mg/kg	EPA 6010b	
Chromium	**14**	2.0	mg/kg	EPA 6010b	
Cobalt	**7.5**	2.0	mg/kg	EPA 6010b	
Copper	**15**	1.0	mg/kg	EPA 6010b	
Lead	**12**	3.0	mg/kg	EPA 6010b	
Nickel	**9.2**	2.0	mg/kg	EPA 6010b	
Vanadium	**36**	5.0	mg/kg	EPA 6010b	
Zinc	**54**	1.0	mg/kg	EPA 6010b	

Sample ID: T-2: 4.0-4.3 **Laboratory ID:** T191911-09

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**81**	10	mg/kg	EPA 8015B	
Barium	**96**	1.0	mg/kg	EPA 6010b	
Chromium	**11**	2.0	mg/kg	EPA 6010b	
Cobalt	**6.6**	2.0	mg/kg	EPA 6010b	
Copper	**11**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

Sample ID: T-2: 4.0-4.3 **Laboratory ID:** T191911-09

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**8.6**	3.0	mg/kg	EPA 6010b	
Nickel	**7.6**	2.0	mg/kg	EPA 6010b	
Vanadium	**29**	5.0	mg/kg	EPA 6010b	
Zinc	**39**	1.0	mg/kg	EPA 6010b	

Sample ID: T-3: 1.0-1.5 **Laboratory ID:** T191911-10

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**26**	10	mg/kg	EPA 8015B	
Barium	**130**	1.0	mg/kg	EPA 6010b	
Chromium	**14**	2.0	mg/kg	EPA 6010b	
Cobalt	**8.1**	2.0	mg/kg	EPA 6010b	
Copper	**14**	1.0	mg/kg	EPA 6010b	
Lead	**9.6**	3.0	mg/kg	EPA 6010b	
Nickel	**9.9**	2.0	mg/kg	EPA 6010b	
Vanadium	**38**	5.0	mg/kg	EPA 6010b	
Zinc	**48**	1.0	mg/kg	EPA 6010b	

Sample ID: T-4: 0-0.5 **Laboratory ID:** T191911-11

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**20**	10	mg/kg	EPA 8015B	
Barium	**120**	1.0	mg/kg	EPA 6010b	
Chromium	**13**	2.0	mg/kg	EPA 6010b	
Cobalt	**7.3**	2.0	mg/kg	EPA 6010b	
Copper	**12**	1.0	mg/kg	EPA 6010b	
Lead	**9.3**	3.0	mg/kg	EPA 6010b	
Nickel	**9.4**	2.0	mg/kg	EPA 6010b	
Vanadium	**34**	5.0	mg/kg	EPA 6010b	
Zinc	**41**	1.0	mg/kg	EPA 6010b	

Sample ID: T-5: 2.5-3.0 **Laboratory ID:** T191911-12

Analyte	Result	Reporting Limit	Units	Method	Notes

SunStar Laboratories, Inc.

Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

Sample ID: T-5: 2.5-3.0 **Laboratory ID:** T191911-12

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**63**	1.0	mg/kg	EPA 6010b	
Chromium	**15**	2.0	mg/kg	EPA 6010b	
Cobalt	**4.3**	2.0	mg/kg	EPA 6010b	
Copper	**8.6**	1.0	mg/kg	EPA 6010b	
Nickel	**6.9**	2.0	mg/kg	EPA 6010b	
Vanadium	**20**	5.0	mg/kg	EPA 6010b	
Zinc	**25**	1.0	mg/kg	EPA 6010b	

Sample ID: T-6: 3.5-4.0 **Laboratory ID:** T191911-13

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**120**	1.0	mg/kg	EPA 6010b	
Chromium	**13**	2.0	mg/kg	EPA 6010b	
Cobalt	**7.2**	2.0	mg/kg	EPA 6010b	
Copper	**13**	1.0	mg/kg	EPA 6010b	
Lead	**6.5**	3.0	mg/kg	EPA 6010b	
Nickel	**9.0**	2.0	mg/kg	EPA 6010b	
Vanadium	**33**	5.0	mg/kg	EPA 6010b	
Zinc	**44**	1.0	mg/kg	EPA 6010b	

Sample ID: T-7: 2.5-3.0 **Laboratory ID:** T191911-14

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**31**	10	mg/kg	EPA 8015B	
Barium	**51**	1.0	mg/kg	EPA 6010b	
Chromium	**5.0**	2.0	mg/kg	EPA 6010b	
Cobalt	**3.2**	2.0	mg/kg	EPA 6010b	
Copper	**3.6**	1.0	mg/kg	EPA 6010b	
Lead	**7.8**	3.0	mg/kg	EPA 6010b	
Vanadium	**17**	5.0	mg/kg	EPA 6010b	
Zinc	**25**	1.0	mg/kg	EPA 6010b	

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475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

Sample ID: T-8: 1.0-1.5 **Laboratory ID:** T191911-15

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**29**	10	mg/kg	EPA 8015B	
Barium	**130**	1.0	mg/kg	EPA 6010b	
Chromium	**14**	2.0	mg/kg	EPA 6010b	
Cobalt	**7.7**	2.0	mg/kg	EPA 6010b	
Copper	**13**	1.0	mg/kg	EPA 6010b	
Lead	**7.7**	3.0	mg/kg	EPA 6010b	
Nickel	**9.2**	2.0	mg/kg	EPA 6010b	
Vanadium	**36**	5.0	mg/kg	EPA 6010b	
Zinc	**46**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
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Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

T-9: 0-1.0

T191911-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*99.3 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	06/14/19	"	
Arsenic	ND	5.0	"	"	"	"	06/14/19	"	
Barium	**120**	1.0	"	"	"	"	06/14/19	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	06/14/19	"	
Chromium	**13**	2.0	"	"	"	"	06/14/19	"	
Cobalt	**7.9**	2.0	"	"	"	"	06/14/19	"	
Copper	**13**	1.0	"	"	"	"	06/14/19	"	
Lead	**12**	3.0	"	"	"	"	06/14/19	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**9.5**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**32**	5.0	"	"	"	"	06/14/19	"	
Zinc	**50**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
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T-10: 2.0-2.5

T191911-02 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*107 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**140**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/14/19	"	
Cadmium	ND	2.0	"	"	"	"	06/14/19	"	
Chromium	**14**	2.0	"	"	"	"	"	"	
Cobalt	**8.3**	2.0	"	"	"	"	"	"	
Copper	**13**	1.0	"	"	"	"	"	"	
Lead	**6.6**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**9.8**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**36**	5.0	"	"	"	"	"	"	
Zinc	**46**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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T-11: 1.0-1.5

T191911-03 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*105 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**150**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**16**	2.0	"	"	"	"	"	"	
Cobalt	**7.6**	2.0	"	"	"	"	"	"	
Copper	**13**	1.0	"	"	"	"	"	"	
Lead	**5.7**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**11**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**33**	5.0	"	"	"	"	"	"	
Zinc	**43**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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T-12: 7.0-7.5

T191911-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*112 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**24**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/14/19	"	
Cadmium	ND	2.0	"	"	"	"	06/14/19	"	
Chromium	**7.4**	2.0	"	"	"	"	"	"	
Cobalt	**2.5**	2.0	"	"	"	"	"	"	
Copper	**7.0**	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	ND	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**8.8**	5.0	"	"	"	"	"	"	
Zinc	**16**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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T-13: 2.0-3.0

T191911-05 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**10**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*104 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**82**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**9.8**	2.0	"	"	"	"	"	"	
Cobalt	**5.6**	2.0	"	"	"	"	"	"	
Copper	**8.7**	1.0	"	"	"	"	"	"	
Lead	**6.2**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**5.7**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**22**	5.0	"	"	"	"	"	"	
Zinc	**26**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

T-14: 2.5-3.0

T191911-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*105 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**97**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/14/19	"	
Cadmium	ND	2.0	"	"	"	"	06/14/19	"	
Chromium	**11**	2.0	"	"	"	"	"	"	
Cobalt	**7.7**	2.0	"	"	"	"	"	"	
Copper	**8.6**	1.0	"	"	"	"	"	"	
Lead	**4.3**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**8.1**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**29**	5.0	"	"	"	"	"	"	
Zinc	**31**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

T-15: 6.0-6.5

T191911-07 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*109 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**30**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**4.5**	2.0	"	"	"	"	"	"	
Cobalt	**2.2**	2.0	"	"	"	"	"	"	
Copper	**1.5**	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	ND	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**9.6**	5.0	"	"	"	"	"	"	
Zinc	**12**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

T-1: 0-0.5

T191911-08 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**27**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*97.4 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	06/14/19	"	
Arsenic	ND	5.0	"	"	"	"	06/14/19	"	
Barium	**130**	1.0	"	"	"	"	06/14/19	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	06/14/19	"	
Chromium	**14**	2.0	"	"	"	"	06/14/19	"	
Cobalt	**7.5**	2.0	"	"	"	"	06/14/19	"	
Copper	**15**	1.0	"	"	"	"	06/14/19	"	
Lead	**12**	3.0	"	"	"	"	06/14/19	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**9.2**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**36**	5.0	"	"	"	"	06/14/19	"	
Zinc	**54**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

T-2: 4.0-4.3

T191911-09 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**81**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*109 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**96**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**11**	2.0	"	"	"	"	"	"	
Cobalt	**6.6**	2.0	"	"	"	"	"	"	
Copper	**11**	1.0	"	"	"	"	"	"	
Lead	**8.6**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**7.6**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**29**	5.0	"	"	"	"	"	"	
Zinc	**39**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

T-3: 1.0-1.5

T191911-10 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**26**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*106 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**130**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**14**	2.0	"	"	"	"	"	"	
Cobalt	**8.1**	2.0	"	"	"	"	"	"	
Copper	**14**	1.0	"	"	"	"	"	"	
Lead	**9.6**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**9.9**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**38**	5.0	"	"	"	"	"	"	
Zinc	**48**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

T-4: 0-0.5

T191911-11 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**20**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*107 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**120**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**13**	2.0	"	"	"	"	"	"	
Cobalt	**7.3**	2.0	"	"	"	"	"	"	
Copper	**12**	1.0	"	"	"	"	"	"	
Lead	**9.3**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**9.4**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**34**	5.0	"	"	"	"	"	"	
Zinc	**41**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

T-5: 2.5-3.0

T191911-12 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*111 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	06/14/19	"	
Arsenic	ND	5.0	"	"	"	"	06/14/19	"	
Barium	**63**	1.0	"	"	"	"	06/14/19	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	06/14/19	"	
Chromium	**15**	2.0	"	"	"	"	06/14/19	"	
Cobalt	**4.3**	2.0	"	"	"	"	06/14/19	"	
Copper	**8.6**	1.0	"	"	"	"	06/14/19	"	
Lead	ND	3.0	"	"	"	"	06/14/19	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**6.9**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**20**	5.0	"	"	"	"	06/14/19	"	
Zinc	**25**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

T-6: 3.5-4.0

T191911-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*108 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**120**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/14/19	"	
Cadmium	ND	2.0	"	"	"	"	06/14/19	"	
Chromium	**13**	2.0	"	"	"	"	"	"	
Cobalt	**7.2**	2.0	"	"	"	"	"	"	
Copper	**13**	1.0	"	"	"	"	"	"	
Lead	**6.5**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**9.0**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**33**	5.0	"	"	"	"	"	"	
Zinc	**44**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

T-7: 2.5-3.0

T191911-14 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**31**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*108 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**51**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**5.0**	2.0	"	"	"	"	"	"	
Cobalt	**3.2**	2.0	"	"	"	"	"	"	
Copper	**3.6**	1.0	"	"	"	"	"	"	
Lead	**7.8**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	ND	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**17**	5.0	"	"	"	"	"	"	
Zinc	**25**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

T-8: 1.0-1.5

T191911-15 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061225	06/12/19	06/14/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**29**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*109 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061307	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	06/14/19	"	
Arsenic	ND	5.0	"	"	"	"	06/14/19	"	
Barium	**130**	1.0	"	"	"	"	06/14/19	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	06/14/19	"	
Chromium	**14**	2.0	"	"	"	"	06/14/19	"	
Cobalt	**7.7**	2.0	"	"	"	"	06/14/19	"	
Copper	**13**	1.0	"	"	"	"	06/14/19	"	
Lead	**7.7**	3.0	"	"	"	"	06/14/19	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**9.2**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**36**	5.0	"	"	"	"	06/14/19	"	
Zinc	**46**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061225 - EPA 3550B GC										
Blank (9061225-BLK1)				Prepared: 06/12/19 Analyzed: 06/13/19						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*105*		*"*	*99.0*		*106*	*65-135*			
LCS (9061225-BS1)				Prepared: 06/12/19 Analyzed: 06/13/19						
C13-C28 (DRO)	490	10	mg/kg	495		98.9	75-125			
Surrogate: p-Terphenyl	*112*		*"*	*99.0*		*113*	*65-135*			
Matrix Spike (9061225-MS1)	**Source: T191891-21**			Prepared: 06/12/19 Analyzed: 06/13/19						
C13-C28 (DRO)	470	10	mg/kg	490	ND	96.5	75-125			
Surrogate: p-Terphenyl	*105*		*"*	*98.0*		*107*	*65-135*			
Matrix Spike Dup (9061225-MSD1)	**Source: T191891-21**			Prepared: 06/12/19 Analyzed: 06/13/19						
C13-C28 (DRO)	470	10	mg/kg	490	ND	95.6	75-125	0.869	20	
Surrogate: p-Terphenyl	*102*		*"*	*98.0*		*104*	*65-135*			

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061307 - EPA 3050B										
Blank (9061307-BLK1)				Prepared: 06/13/19 Analyzed: 06/14/19						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (9061307-BS1)				Prepared: 06/13/19 Analyzed: 06/14/19						
Arsenic	90.9	5.0	mg/kg	100		90.9	75-125			
Barium	92.5	1.0	"	100		92.5	75-125			
Cadmium	93.5	2.0	"	100		93.5	75-125			
Chromium	92.7	2.0	"	100		92.7	75-125			
Lead	92.6	3.0	"	100		92.6	75-125			
Matrix Spike (9061307-MS1)	**Source: T191911-01**			Prepared: 06/13/19 Analyzed: 06/14/19						
Arsenic	59.2	4.5	mg/kg	90.9	4.11	60.6	75-125			QM-05
Barium	169	0.91	"	90.9	118	56.3	75-125			QM-05
Cadmium	56.7	1.8	"	90.9	0.615	61.7	75-125			QM-05
Chromium	70.1	1.8	"	90.9	13.0	62.8	75-125			QM-05
Lead	65.0	2.7	"	90.9	12.2	58.1	75-125			QM-05

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061307 - EPA 3050B										
Matrix Spike Dup (9061307-MSD1)	**Source: T191911-01**			Prepared: 06/13/19 Analyzed: 06/14/19						
Arsenic	59.0	4.5	mg/kg	90.9	4.11	60.4	75-125	0.230	20	QM-05
Barium	161	0.91	"	90.9	118	47.9	75-125	4.62	20	QM-05
Cadmium	54.8	1.8	"	90.9	0.615	59.6	75-125	3.35	20	QM-05
Chromium	67.9	1.8	"	90.9	13.0	60.4	75-125	3.26	20	QM-05
Lead	63.8	2.7	"	90.9	12.2	56.8	75-125	1.85	20	QM-05

SunStar Laboratories, Inc.

Mike Jaroudi, Project Manager

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PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061309 - EPA 7471A Soil										
Blank (9061309-BLK1)				Prepared: 06/13/19 Analyzed: 06/14/19						
Mercury	ND	0.10	mg/kg							
LCS (9061309-BS1)				Prepared: 06/13/19 Analyzed: 06/14/19						
Mercury	0.286	0.10	mg/kg	0.300		95.4	80-120			
Matrix Spike (9061309-MS1)	**Source: T191911-01**			Prepared: 06/13/19 Analyzed: 06/14/19						
Mercury	0.301	0.10	mg/kg	0.300	ND	100	75-125			
Matrix Spike Dup (9061309-MSD1)	**Source: T191911-01**			Prepared: 06/13/19 Analyzed: 06/14/19						
Mercury	0.316	0.10	mg/kg	0.320	ND	98.8	75-125	4.65	20	

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Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 209570014	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:11

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS was within acceptance criteria. The data is acceptable as no negative impact on data is expected.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Mike Jaroudi, Project Manager

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Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: Ninyo & Moore
Address: 475 Goddard, Ste 200, Irvine, CA 92618
Phone: 949-753-7070 Fax: 949-753-7071
Project Manager: Franklin Ruiz (fruiz@ninyoandmoore.com)

Date: 6/3/2019 Page: 1 Of 1
Project Name: UCINorth Campus
Collector: V. MacKinnon Client Project #: 209570
Batch #: T19911 EDF #:

Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	8015 & TPH				Laboratory ID #	Comments/Preservative	Total # of containers
T-9: 0-1.0'	6/3/2019	0:45	soil	4 oz Jar									X	X				01		
T-10: 2.0-2.5'		1:20	soil	4 oz Jar									X	X				02		
T-11: 1.0-1.5'		11:50	soil	4 oz Jar									X	X				03		
T-12: 7.0-7.5		10:50	soil	4 oz Jar									X	X				04		
T-13: 2.0-3.0'		8:45	soil	4 oz Jar									X	X				05		
T-14: 2.5-3.0'		9:07	soil	4 oz Jar									X	X				06		
T-15: 6.0-6.5'		9:25	soil	4 oz Jar									X	X				07		
T-1: 0-0.5'	6/4/2019	10:45	soil	4 oz Jar									X	X				08		
T-2: 4.0-4.3		11:25	soil	4 oz Jar									X	X				09		
T-3: 1.0-1.5'		11:45	soil	4 oz Jar									X	X				10		
T-4: 0-0.5'		12:15	soil	4 oz Jar									X	X				11		
T-5: 2.5-3.0'		9:55	soil	4 oz Jar									X	X				12		
T-6: 3.5-4.0		7:40	soil	4 oz Jar									X	X				13		
T-7: 2.5-3.0'		9:35	soil	4 oz Jar									X	X				14		
T-8: 1.0-1.5		9:00	soil	4 oz Jar									X	X				15		

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	6/11/19 1320		6-11-19 13:20
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	6-11-19 1735		6-11-19 17:35
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers	
Chain of Custody seals Y/N/NA	N
Seals intact? Y/N/NA	NA
Received good condition/cold	4.9

Turn around time:

Notes

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

SunStar Laboratories — Celebrating 20 Years!

SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: TR1911

Client Name: Nimyo & Moore

Project: UCI North Campus

Delivered by: ☐ Client ☒ SunStar Courier ☐ GSO ☐ FedEx ☐ Other

If Courier, Received by: Travis

Date/Time Courier Received: 6.11.19 / 13:20

Lab Received by: Sunny

Date/Time Lab Received: 6.11.19 / 17:35

Total number of coolers received: 0

Temperature: Cooler #1 8.7	°C +/- the CF (1.2°C) = 9.9	°C corrected temperature	
Temperature: Cooler #2	°C +/- the CF (1.2°C) =	°C corrected temperature	
Temperature: Cooler #3	°C +/- the CF (1.2°C) =	°C corrected temperature	
Temperature criteria = ≤ 6°C (no frozen containers)	Within criteria?	☒ **Yes**	☐ **No**
If NO:			
Samples received on ice?	☐ Yes	☐ **No → Complete Non-Conformance Sheet**	
If on ice, samples received same day collected?	☐ Yes → Acceptable	☐ **No → Complete Non-Conformance Sheet**	

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☒ N/A
Sample containers intact	☒ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☒ Yes	☐ No*	
Total number of containers received match COC	☒ Yes	☐ No*	
Proper containers received for analyses requested on COC	☒ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☒ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☒ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked

Cooler/Sample Review - Initials and date: SL 6.12.19

Comments:

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T191911

Client: **Ninyo & Moore** **Project Manager:** **Mike Jaroudi**
Project: **UCI North Campus** **Project Number:** **209570014**

Report To:
Ninyo & Moore
Franklin Ruiz
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 06/19/19 17:00 (5 day TAT)
Received By: Sunny Lounethone Date Received: 06/11/19 17:35
Logged In By: Sunny Lounethone Date Logged In: 06/12/19 09:21

Samples Received at: **4.9°C**
Custody Seals No Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirı No

Analysis	Due	TAT	Expires	Comments
T191911-01 T-9: 0-1.0 [Soil] Sampled 06/03/19 00:45 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	11/30/19 00:45	
8015 Carbon Chain	06/19/19 15:00	5	06/17/19 00:45	
T191911-02 T-10: 2.0-2.5 [Soil] Sampled 06/03/19 01:20 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	11/30/19 01:20	
8015 Carbon Chain	06/19/19 15:00	5	06/17/19 01:20	
T191911-03 T-11: 1.0-1.5 [Soil] Sampled 06/03/19 11:50 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	11/30/19 11:50	
8015 Carbon Chain	06/19/19 15:00	5	06/17/19 11:50	
T191911-04 T-12: 7.0-7.5 [Soil] Sampled 06/03/19 10:50 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	11/30/19 10:50	
8015 Carbon Chain	06/19/19 15:00	5	06/17/19 10:50	
T191911-05 T-13: 2.0-3.0 [Soil] Sampled 06/03/19 08:45 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	11/30/19 08:45	
8015 Carbon Chain	06/19/19 15:00	5	06/17/19 08:45	

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T191911

Client: Ninyo & Moore
Project: UCI North Campus
Project Manager: Mike Jaroudi
Project Number: 209570014

Analysis	Due	TAT	Expires	Comments
T191911-06 T-14: 2.5-3.0 [Soil] Sampled 06/03/19 09:07 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	11/30/19 09:07	
8015 Carbon Chain	06/19/19 15:00	5	06/17/19 09:07	
T191911-07 T-15: 6.0-6.5 [Soil] Sampled 06/03/19 09:25 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	11/30/19 09:25	
8015 Carbon Chain	06/19/19 15:00	5	06/17/19 09:25	
T191911-08 T-1: 0-0.5 [Soil] Sampled 06/04/19 10:45 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/01/19 10:45	
8015 Carbon Chain	06/19/19 15:00	5	06/18/19 10:45	
T191911-09 T-2: 4.0-4.3 [Soil] Sampled 06/04/19 11:25 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/01/19 11:25	
8015 Carbon Chain	06/19/19 15:00	5	06/18/19 11:25	
T191911-10 T-3: 1.0-1.5 [Soil] Sampled 06/04/19 11:45 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/01/19 11:45	
8015 Carbon Chain	06/19/19 15:00	5	06/18/19 11:45	
T191911-11 T-4: 0-0.5 [Soil] Sampled 06/04/19 12:15 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/01/19 12:15	
8015 Carbon Chain	06/19/19 15:00	5	06/18/19 12:15	
T191911-12 T-5: 2.5-3.0 [Soil] Sampled 06/04/19 09:55 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/01/19 09:55	
8015 Carbon Chain	06/19/19 15:00	5	06/18/19 09:55	
T191911-13 T-6: 3.5-4.0 [Soil] Sampled 06/04/19 07:40 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/01/19 07:40	
8015 Carbon Chain	06/19/19 15:00	5	06/18/19 07:40	

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T191911

Client: Ninyo & Moore
Project: UCI North Campus
Project Manager: Mike Jaroudi
Project Number: 209570014

Analysis	Due	TAT	Expires	Comments
T191911-14 T-7: 2.5-3.0 [Soil] Sampled 06/04/19 09:35 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/01/19 09:35	
8015 Carbon Chain	06/19/19 15:00	5	06/18/19 09:35	
T191911-15 T-8: 1.0-1.5 [Soil] Sampled 06/04/19 09:00 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/01/19 09:00	
8015 Carbon Chain	06/19/19 15:00	5	06/18/19 09:00	

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By

Date

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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19 June 2019

Franklin Ruiz
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: UCI North Campus

Enclosed are the results of analyses for samples received by the laboratory on 06/12/19 10:47. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Lake Forest, California 92630
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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-16 @ 3'	T191918-01	Soil	06/11/19 07:55	06/12/19 10:47
B-15 @ 5'	T191918-02	Soil	06/11/19 11:08	06/12/19 10:47
B-14 @ 5'	T191918-03	Soil	06/11/19 12:40	06/12/19 10:47
B-13 @ 5'	T191918-04	Soil	06/11/19 12:40	06/12/19 10:47

SunStar Laboratories, Inc.

Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

DETECTIONS SUMMARY

Sample ID: B-16 @ 3' **Laboratory ID:** T191918-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**81**	1.0	mg/kg	EPA 6010b	
Chromium	**10**	2.0	mg/kg	EPA 6010b	
Cobalt	**5.7**	2.0	mg/kg	EPA 6010b	
Copper	**14**	1.0	mg/kg	EPA 6010b	
Lead	**3.7**	3.0	mg/kg	EPA 6010b	
Nickel	**7.0**	2.0	mg/kg	EPA 6010b	
Vanadium	**20**	5.0	mg/kg	EPA 6010b	
Zinc	**38**	1.0	mg/kg	EPA 6010b	

Sample ID: B-15 @ 5' **Laboratory ID:** T191918-02

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**79**	1.0	mg/kg	EPA 6010b	
Chromium	**12**	2.0	mg/kg	EPA 6010b	
Cobalt	**5.9**	2.0	mg/kg	EPA 6010b	
Copper	**14**	1.0	mg/kg	EPA 6010b	
Lead	**4.2**	3.0	mg/kg	EPA 6010b	
Nickel	**7.5**	2.0	mg/kg	EPA 6010b	
Vanadium	**23**	5.0	mg/kg	EPA 6010b	
Zinc	**40**	1.0	mg/kg	EPA 6010b	

Sample ID: B-14 @ 5' **Laboratory ID:** T191918-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**29**	1.0	mg/kg	EPA 6010b	
Chromium	**13**	2.0	mg/kg	EPA 6010b	
Cobalt	**7.0**	2.0	mg/kg	EPA 6010b	
Copper	**11**	1.0	mg/kg	EPA 6010b	
Lead	**3.5**	3.0	mg/kg	EPA 6010b	
Nickel	**7.6**	2.0	mg/kg	EPA 6010b	
Vanadium	**25**	5.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

Sample ID: B-14 @ 5' **Laboratory ID:** T191918-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Zinc	**56**	1.0	mg/kg	EPA 6010b	

Sample ID: B-13 @ 5' **Laboratory ID:** T191918-04

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**62**	1.0	mg/kg	EPA 6010b	
Chromium	**14**	2.0	mg/kg	EPA 6010b	
Cobalt	**7.9**	2.0	mg/kg	EPA 6010b	
Copper	**14**	1.0	mg/kg	EPA 6010b	
Lead	**5.8**	3.0	mg/kg	EPA 6010b	
Nickel	**9.5**	2.0	mg/kg	EPA 6010b	
Vanadium	**37**	5.0	mg/kg	EPA 6010b	
Zinc	**47**	1.0	mg/kg	EPA 6010b	

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Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

B-16 @ 3'

T191918-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061314	06/13/19	06/13/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*103 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061308	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**81**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/14/19	"	
Cadmium	ND	2.0	"	"	"	"	06/14/19	"	
Chromium	**10**	2.0	"	"	"	"	"	"	
Cobalt	**5.7**	2.0	"	"	"	"	"	"	
Copper	**14**	1.0	"	"	"	"	"	"	
Lead	**3.7**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**7.0**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**20**	5.0	"	"	"	"	"	"	
Zinc	**38**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

SunStar Laboratories, Inc.

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Mike Jaroudi, Project Manager

SunStar Laboratories, Inc.
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949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

B-15 @ 5'

T191918-02 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061314	06/13/19	06/13/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*105 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061308	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**79**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**12**	2.0	"	"	"	"	"	"	
Cobalt	**5.9**	2.0	"	"	"	"	"	"	
Copper	**14**	1.0	"	"	"	"	"	"	
Lead	**4.2**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**7.5**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**23**	5.0	"	"	"	"	"	"	
Zinc	**40**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

SunStar Laboratories, Inc.

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Mike Jaroudi, Project Manager

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

B-14 @ 5'

T191918-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061314	06/13/19	06/13/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*108 %*	*65-135*		*"*	*"*	*"*	*"*	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061308	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**29**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**13**	2.0	"	"	"	"	"	"	
Cobalt	**7.0**	2.0	"	"	"	"	"	"	
Copper	**11**	1.0	"	"	"	"	"	"	
Lead	**3.5**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**7.6**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**25**	5.0	"	"	"	"	"	"	
Zinc	**56**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

SunStar Laboratories, Inc.

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Mike Jaroudi, Project Manager

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PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

B-13 @ 5'

T191918-04 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	9061314	06/13/19	06/13/19	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*95.2 %*		*65-135*	"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	9061308	06/13/19	06/14/19	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**62**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	06/14/19	"	
Cadmium	ND	2.0	"	"	"	"	06/14/19	"	
Chromium	**14**	2.0	"	"	"	"	"	"	
Cobalt	**7.9**	2.0	"	"	"	"	"	"	
Copper	**14**	1.0	"	"	"	"	"	"	
Lead	**5.8**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**9.5**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**37**	5.0	"	"	"	"	"	"	
Zinc	**47**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	9061309	06/13/19	06/14/19	EPA 7471A Soil	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061314 - EPA 3550B GC										
Blank (9061314-BLK1)				Prepared & Analyzed: 06/13/19						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*98.9*		*"*	*99.0*		*99.9*	*65-135*			
LCS (9061314-BS1)				Prepared & Analyzed: 06/13/19						
C13-C28 (DRO)	490	10	mg/kg	495		98.0	75-125			
Surrogate: p-Terphenyl	*120*		*"*	*99.0*		*121*	*65-135*			
Matrix Spike (9061314-MS1)	**Source: T191918-01**			Prepared & Analyzed: 06/13/19						
C13-C28 (DRO)	490	10	mg/kg	495	2.5	97.6	75-125			
Surrogate: p-Terphenyl	*112*		*"*	*99.0*		*113*	*65-135*			
Matrix Spike Dup (9061314-MSD1)	**Source: T191918-01**			Prepared & Analyzed: 06/13/19						
C13-C28 (DRO)	460	10	mg/kg	500	2.5	92.2	75-125	4.69	20	
Surrogate: p-Terphenyl	*109*		*"*	*100*		*109*	*65-135*			

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061308 - EPA 3050B										
Blank (9061308-BLK1)				Prepared: 06/13/19 Analyzed: 06/14/19						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (9061308-BS1)				Prepared: 06/13/19 Analyzed: 06/14/19						
Arsenic	99.2	5.0	mg/kg	100		99.2	75-125			
Barium	101	1.0	"	100		101	75-125			
Cadmium	101	2.0	"	100		101	75-125			
Chromium	102	2.0	"	100		102	75-125			
Lead	101	3.0	"	100		101	75-125			
Matrix Spike (9061308-MS1)	**Source: T191891-21**			Prepared: 06/13/19 Analyzed: 06/14/19						
Arsenic	70.4	5.0	mg/kg	97.1	0.590	71.9	75-125			QM-05
Barium	182	1.0	"	97.1	173	8.57	75-125			QM-05
Cadmium	71.2	2.0	"	97.1	0.303	73.0	75-125			QM-05
Chromium	104	2.0	"	97.1	24.9	81.3	75-125			
Lead	74.6	3.0	"	97.1	4.37	72.4	75-125			QM-05

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061308 - EPA 3050B										
Matrix Spike Dup (9061308-MSD1)	**Source: T191891-21**			Prepared: 06/13/19 Analyzed: 06/14/19						
Arsenic	66.0	5.0	mg/kg	92.6	0.590	70.7	75-125	6.43	20	QM-05
Barium	204	1.0	"	92.6	173	33.0	75-125	11.6	20	QM-05
Cadmium	66.4	2.0	"	92.6	0.303	71.4	75-125	6.97	20	QM-05
Chromium	98.9	2.0	"	92.6	24.9	79.8	75-125	4.95	20	
Lead	68.6	3.0	"	92.6	4.37	69.3	75-125	8.43	20	QM-05

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061309 - EPA 7471A Soil										
Blank (9061309-BLK1)				Prepared: 06/13/19 Analyzed: 06/14/19						
Mercury	ND	0.10	mg/kg							
LCS (9061309-BS1)				Prepared: 06/13/19 Analyzed: 06/14/19						
Mercury	0.286	0.10	mg/kg	0.300		95.4	80-120			
Matrix Spike (9061309-MS1)	**Source: T191911-01**			Prepared: 06/13/19 Analyzed: 06/14/19						
Mercury	0.301	0.10	mg/kg	0.300	ND	100	75-125			
Matrix Spike Dup (9061309-MSD1)	**Source: T191911-01**			Prepared: 06/13/19 Analyzed: 06/14/19						
Mercury	0.316	0.10	mg/kg	0.320	ND	98.8	75-125	4.65	20	

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Ninyo & Moore	Project: UCI North Campus	
475 Goddard, Ste. 200	Project Number: 208394007	**Reported:**
Irvine CA, 92618	Project Manager: Franklin Ruiz	06/19/19 09:32

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS was within acceptance criteria. The data is acceptable as no negative impact on data is expected.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Mike Jaroudi, Project Manager

SunStar Laboratories, Inc.
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Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: Ninyo & Moore
Address: 475 Goddard, Suite 200
Phone: (949) 753-7070 Fax: (949) 753-7071
Project Manager: [redacted] Franklin Ruiz

Date: 6/11/2019 Page: 1 Of 1
Project Name: [redacted] UCI North Campus
Collector: GM Client Project #: 208394007
Batch #: T191918 EDF #:

Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	EPA 8015B TPH			Laboratory ID #	Comments/Preservative	Total # of containers
B-16 @ 3'	6/11/19	7:55AM	SOIL	4oz Glass Jar									X	X			01	ICE	1
B-15 @ 5'	6/11/19	11:05AM	SOIL	4oz Glass Jar									X	X			02	ICE	1
B-14 @ 5'	6/11/19	12:40PM	SOIL	4oz Glass Jar									X	X			03	ICE	1
B-13 @ 5'	6/11/19	2:54PM	SOIL	4oz Glass Jar									X	X			04	ICE	1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
			6-12-19 1030
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	6-12-19 1047	Paul	6-12-19 10:47
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers	4
Chain of Custody seals Y/N/NA	Y
Seals intact? Y/N/NA	Y
Received good condition/cold	4.0

Turn around time: Standard

Notes

Sample disposal Instructions: Disposal @ $2.00 each ___ Return to client ___ Pickup ___

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SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #:	T191918		
Client Name:	Ninyo & Moore	Project:	UCI North Campus
Delivered by:	☐ Client ☒ SunStar Courier ☐ GSO ☐ FedEx ☐ Other		
If Courier, Received by:	Dan	Date/Time Courier Received:	6-12-19 10:30
Lab Received by:	Paul	Date/Time Lab Received:	6-12-19 10:47

Total number of coolers received: 0

Temperature:	Cooler #1	2.8	°C +/- the CF (1.2°C) =	4.0	°C corrected temperature
Temperature:	Cooler #2		°C +/- the CF (1.2°C) =		°C corrected temperature
Temperature:	Cooler #3		°C +/- the CF (1.2°C) =		°C corrected temperature

Temperature criteria = ≤ 6°C (no frozen containers) — Within criteria? ☒ **Yes** ☐ **No**

If NO:

Samples received on ice? ☐ Yes ☐ **No → Complete Non-Conformance Sheet**

If on ice, samples received same day collected? ☐ Yes → Acceptable ☐ **No → Complete Non-Conformance Sheet**

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☒ N/A
Sample containers intact	☒ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☒ Yes	☐ No*	
Total number of containers received match COC	☒ Yes	☐ No*	
Proper containers received for analyses requested on COC	☒ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☒ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☒ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked

Cooler/Sample Review - Initials and date: DM 6-12-19

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T191918

Client: Ninyo & Moore
Project: UCI North Campus
Project Manager: Mike Jaroudi
Project Number: 208394007

Report To:
Ninyo & Moore
Franklin Ruiz
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 06/19/19 17:00 (5 day TAT)
Received By: Paul Berner
Date Received: 06/12/19 10:47
Logged In By: Dan Marteski
Date Logged In: 06/12/19 11:15

Samples Received at: **4°C**
Custody Seals No
Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirı No

Analysis	Due	TAT	Expires	Comments
T191918-01 B-16 @ 3' [Soil] Sampled 06/11/19 07:55 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/08/19 07:55	
8015 Carbon Chain	06/19/19 15:00	5	06/25/19 07:55	
T191918-02 B-15 @ 5' [Soil] Sampled 06/11/19 11:08 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/08/19 11:08	
8015 Carbon Chain	06/19/19 15:00	5	06/25/19 11:08	
T191918-03 B-14 @ 5' [Soil] Sampled 06/11/19 12:40 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/08/19 12:40	
8015 Carbon Chain	06/19/19 15:00	5	06/25/19 12:40	
T191918-04 B-13 @ 5' [Soil] Sampled 06/11/19 12:40 (GMT-08:00) Pacific Time (US &				
6010 Title 22	06/19/19 15:00	5	12/08/19 12:40	
8015 Carbon Chain	06/19/19 15:00	5	06/25/19 12:40	

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By

Date

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

475 Goddard, Suite 200 | Irvine, California 92618 | p. 949.753.7070

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www.ninyoandmoore.com