University of California, Riverside
North District Phase 2
Project Number: 950586B

Addendum No. 1 to the Environmental Impact Report for the North District Development Plan

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Acronyms and Abbreviations

Acronym/Abbreviation	Description
AQMP	Air Quality Management Plan
BMP	Best Management Practice
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CH_4	Methane
City	City of Riverside
CO	Carbon monoxide
dB(A)	A-Weighted Decibel
DTSC	Department of Toxic Substances Control
EAP	Emergency Action Plan
EH&S	Environmental Health & Safety
EIR	Environmental Impact Report
GHG	Greenhouse Gas
GSF	Gross square feet
HVAC	Heating, Ventilation, and Air Conditioning
I-215	Interstate 215
IEPR	Integrated Energy Policy Report
IS	Initial Study
kWh	Kilowatt hours
Lbs/day	Pounds per day
LEED	Leadership in Energy and Environmental Design
LOS	Level of Service
LRDP	Long Range Development Plan
LSTs	Localized significance thresholds
MM	Mitigation Measures
MS4	Municipal Separate Storm Sewer System Permits
MSHCP	Multiple Species Habitat Conservation Plan
$MTCO_2e$	metric tons of carbon dioxide equivalent
NAHC	Native American Heritage Commission

Acronym/Abbreviation	Description
ND Ph1	North District Phase 1
ND Ph2	North District Phase 2
NDD	North District Development
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
PA	Production-Attraction
PD&C	Planning, Design & Construction
PPs	Programs and Practices
PSs	Planning Strategies
PM_{10}	Particulate Matter 10 Micrometers in Diameter or Less
$PM_{2.5}$	Fine Particulate Matter 2.5 Micrometers in Diameter or Less
PRC	Public Resources Code
RCCD	Riverside Community College District
REC	recognized environmental concern
Regents	University of California Board of Regents
RFD	City of Riverside Fire Department
RPD	City of Riverside Police Department
RPU	Riverside Public Utilities
RTA	Riverside Transit Agency
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCP	Riverside Water Quality Control Plant
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SO_x	Sulfur oxides
SR 60	State Route 60
State	State of California
SWPPP	Storm Water Pollution Prevention Plan
TAZ	Traffic Analysis Zone
TCR	Tribal Cultural Resources
TPA	Transit Priority Area
UC	University of California
UCRPD	University of California, Riverside Police Department
UCR	University of California, Riverside
UNET	University Neighborhood Enhancement Team

Acronym/Abbreviation	Description
VdB	Vibration Decibels
VHFHSZ	Very High Fire Hazard Severity Zone
VMT	Vehicle Miles Traveled
VOC	Volatile organic compounds
WQMP	Water Quality Management Plan

1 INTRODUCTION

1.1 PROJECT SUMMARY

The University of California, Riverside (UCR) North District Phase 2 (ND Ph2) project (proposed project) is evaluated in this Addendum for consistency with the North District Development (NDD) Plan and its associated Environmental Impact Report (EIR), certified in May 2019 (State Clearinghouse No. 2018061044).

Project name:	North District Phase 2 (ND Ph2)
Project location:	University of California, Riverside
Lead agency's name and address:	The Regents of the University of California 1111 Franklin Street Oakland, California 94607
Contact person:	Stephanie Tang, Assistant Director of Campus Planning University of California, Riverside Planning, Design & Construction
Project sponsor's name and address:	University of California, Riverside Planning, Design & Construction 1223 University Avenue, Suite 240 Riverside, California 92507
Location of administrative record:	See Project Sponsor
Previously Certified North District Development Plan EIR:	The NDD Plan proposes up to 5,200 student beds on an approximately 51-acre site located in the northeastern portion of the East Campus. The NDD Plan includes Phase 1, which involved the construction of 1,506 student beds and associated facilities. During preparation of the NDD Plan EIR, only project-level details were available for Phase 1[1] and future phases were analyzed on a programmatic level. The campus now proposes to move forward with Phase 2 of the NDD Plan (proposed ND Ph2 project or proposed project), which includes student housing beds and ancillary amenity spaces (e.g., retail, fitness space, laundry, group study space) in apartment-style units, a Central Park, surface parking, recreational fields, and associated landscape and hardscape improvements. This Addendum documents that none of the conditions described in California Environmental Quality Act (CEQA) Guidelines Section 15162, have occurred, and that the proposed project (ND Ph2) will not have any significant effects that were not already disclosed, analyzed and mitigated, as necessary, in the NDD Plan EIR. This Addendum utilizes the current (2023) CEQA thresholds

[1] ND Ph1 has been completed and in operation since Fall 2021.

contained in the CEQA Guidelines Appendix G Environmental Checklist Form, and therefore includes topics that were added since the NDD Plan EIR was certified (such as vehicle miles traveled, tribal cultural resources, and wildfire) and does not include topics that were removed from the Checklist Form (such as traffic level of service). The NDD Plan EIR, which includes the development program and land use diagram, is available at the following locations:

- University of California, Riverside Planning, Design & Construction Office located at 1223 University Avenue, Suite 240 Riverside, California 92507
- Online at: https://pdc.ucr.edu/environmental-planning-ceqa

1.2 BACKGROUND AND BASIS FOR ADDENDUM

The NDD Plan EIR provides a project-level analysis of ND Phase 1 (ND Ph1), and a program-level analysis of future development phases within the North District site. On May 16, 2019, the Regents certified the NDD Plan EIR and approved the ND Ph1 project. For purposes of this discussion in this Addendum, "NDD Plan" references the development program and diagram captured in the NDD Plan EIR.

The NDD Plan EIR analyzed the environmental impacts of full implementation of the uses and physical development proposed under the NDD Plan and identified programs, policies, and measures to mitigate the Plan's significant impacts. Information and technical analyses from the NDD Plan EIR are utilized or referenced throughout this Addendum. The NDD Plan EIR is available at the UCR Planning, Design & Construction (PD&C) office located at 1223 University Avenue Suite 240 Riverside, California 92507, and online at: https://pdc.ucr.edu/environmental-planning-ceqa.

The proposed ND Phase 2 (ND Ph2) project proposes approximately 1,600 student housing beds in apartment-style units and student housing support services (e.g., retail, fitness space, laundry, group study space). The proposed project would also include a Central Park, surface parking, recreational areas, and associated landscape and hardscape improvements. The proposed ND Ph2 project was analyzed in the NDD Plan EIR and is consistent with the land uses and intensities of development contemplated in the NDD Plan.

This Addendum uses a checklist format to document that project specific activities are covered by the NDD Plan EIR pursuant to CEQA Guidelines Section 15168(c), which states that subsequent activities in a program "must be examined in the light of the program EIR to determine whether an additional environmental document must be prepared." This addendum and supporting documents have been prepared to document that the proposed project is consistent with the NDD Plan and that its potential environmental impacts are within the scope of those addressed in the NDD Plan EIR, pursuant to CEQA Guidelines Section 15168. This Addendum also documents that none of the conditions described in Public Resources Code (PRC) Section 21166 or CEQA Guidelines Sections 15162 or 15163 calling for preparation of a subsequent or supplemental EIR have occurred.

Pursuant to PRC 21166 and CEQA Guidelines Section 15162, when an EIR has been certified for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, based on substantial evidence in light of the whole record, one or more of the following:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete, shows any of the following:

  a. The project will have one or more significant effects not discussed in the previous EIR;
  b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
  c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measures or alternatives; or
  d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Where none of the conditions specified in CEQA Guidelines Section 15162 are present, the lead agency must determine whether to prepare an addendum or whether no further CEQA documentation is required. An addendum to an EIR is appropriate where minor technical changes to additions to a previously certified EIR are necessary, but there are no new or substantially more severe environmental impacts (CEQA Guidelines Section 15164).

The organization of the environmental analysis in this Addendum follows the same overall format of the NDD Plan EIR; however, it avoids repetition of general background and setting information, the regulatory context, issues that were evaluated in the Initial Study (IS) prepared for the NDD Plan EIR that determined no further analysis was required, cumulative impacts and alternatives to the NDD Plan. This Addendum documents that the proposed project is within the activities evaluated in the NDD Plan EIR and that no subsequent EIR is required.

While the NDD Plan EIR is not tiered from the 2005 Long Range Development Plan (LRDP) EIR, as amended, it does consider the various applicable 2005 LRDP Planning Strategies (PS), Programs and Practices (PPs) and Mitigation Measures (MMs) (UCR 2005a, 2005b). The 2005 LRDP EIR is available at the UCR PD&C office located at 1223 University Avenue Suite 240 Riverside, California 92507, and online at https://pdc.ucr.edu/environmental-planning-ceqa.

In November 2021, the Regents approved the 2021 LRDP and certified the 2021 LRDP EIR. This Addendum tiers from the NDD Plan EIR and does not rely on analysis from the 2021 LRDP EIR. However, the 2021 LRDP and LRDP EIR did account for build out of the NDD Plan, including ND Ph2. Where applicable, 2021 LRDP development standards and associated EIR are referenced to in this Addendum (UCR 2021a, 2021b). The certified 2021 LRDP EIR is available at the UCR PD&C office located at 1223 University Avenue Suite 240 Riverside, California 92507, and online at https://pdc.ucr.edu/environmental-planning-ceqa.

1.3 CEQA DETERMINATION

UCR previously prepared the NDD Plan EIR, and on the basis of this evaluation and pursuant to the CEQA Guidelines:

☒ I find that the proposed project WOULD NOT have new significant effects on the environment that have not already been addressed by the NDD Plan EIR, no substantial changes have occurred with respect to the circumstances under which the proposed project will be undertaken, and no new information of substantial importance to the proposed project has been identified. However, minor technical changes or additions are necessary, and in accordance with CEQA Guidelines Section 15164, an ADDENDUM has been prepared.

☐ I find that although the proposed project WOULD have one or more new significant effects on the environment, there will not be a significant effect in this case because new project-specific mitigation measures have been identified that would reduce the effects to a less than significant level. In accordance with CEQA Guidelines Section 15162, a TIERED MITIGATED NEGATIVE DECLARATION has been prepared.

☐ I find that the proposed project MAY have a new significant effect on the environment that was not adequately addressed in the previous NDD Plan EIR or a significant effect previously examined will be substantially more severe than shown in the previous EIR, and there may not be feasible mitigation which would reduce the new significant effect to a less than significant level. In accordance with CEQA Guidelines Section 15162, a TIERED ENVIRONMENTAL IMPACT REPORT is required.

DocuSigned by:
Stephanie Tang
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Signature of Project Sponsor

September 5, 2023

Date

2 PROJECT DESCRIPTION

This section describes the project site setting, project needs, major project characteristics, and discretionary actions needed for approval.

2.1 PROJECT SETTING

2.1.1 Regional Location

The City of Riverside (City) is in Riverside County and lies in a larger geographic area commonly known as Inland Southern California, as shown in Figure 2-1, Regional Location. Inland Southern California includes western Riverside and southwestern San Bernardino counties as well as portions of the Pomona Valley in easternmost Los Angeles County. Jurupa Valley and the unincorporated community of Highgrove border the City to the north; Moreno Valley and Box Springs Mountain Reserve border the City to the east; the unincorporated community of Woodcrest borders the City to the south; and Norco and the unincorporated community of Home Gardens border the City to the west.

Regional access to the City is provided via the Interstate 215 (I-215)/State Route 60 (SR 60) freeway, which traverses northwest-southeast through the City, and State Route 91 (SR 91), which traverses northeast-southwest through the City. Local access to the City is provided by various arterial roadways that intersect the City, including Mission Inn Avenue, Magnolia Avenue/Market Street, Central Avenue, and Main Street, among others.

2.1.2 Campus Location and Setting

The University of California, Riverside (UCR) main campus (campus) is located at 900 University Avenue within the City, approximately three miles east of downtown Riverside, approximately two miles northwest of the City of Moreno Valley, and just west of the Box Springs Mountains. The UCR campus is generally bounded by University Avenue and Blaine Street to the north, Watkins Drive to the east, Le Conte Drive to the south, and Chicago Avenue to the west, as shown in Figure 2-2, UCR Campus. The campus is bisected diagonally by the I-215/SR 60 freeway, resulting in two areas referred to as East Campus and West Campus. The campus consists of approximately 1,108 acres[2] with approximately 604 acres east of the I-215/SR 60 freeway (East Campus) and approximately 504 acres west of the I-215/SR 60 freeway (West Campus). The East Campus contains most of the University's built space, including but not limited to academic, research and support facilities, student housing, recreation, and the UCR Botanic Gardens. The West Campus is largely used for agricultural research fields and teaching managed by the Agricultural Operations unit of the College of Natural and Agricultural Sciences. Several other University facilities are also located on West Campus: Parking Lot 30, Parking Lot 50, Parking Lot 51, a solar farm, University Extension, and International Village – a housing complex intended for visiting international students. The University Substation, jointly owned by the City and UCR, is at the northern edge of Parking Lot 30, and a California Department of Transportation (Caltrans) service yard is situated on an approximately 4.4-acre triangular parcel directly west of the I-215/SR 60 freeway, at the eastern terminus of Everton Place. The Gage Canal irrigation facility traverses the area north to south, with portions running underground (see Figure 2-2).

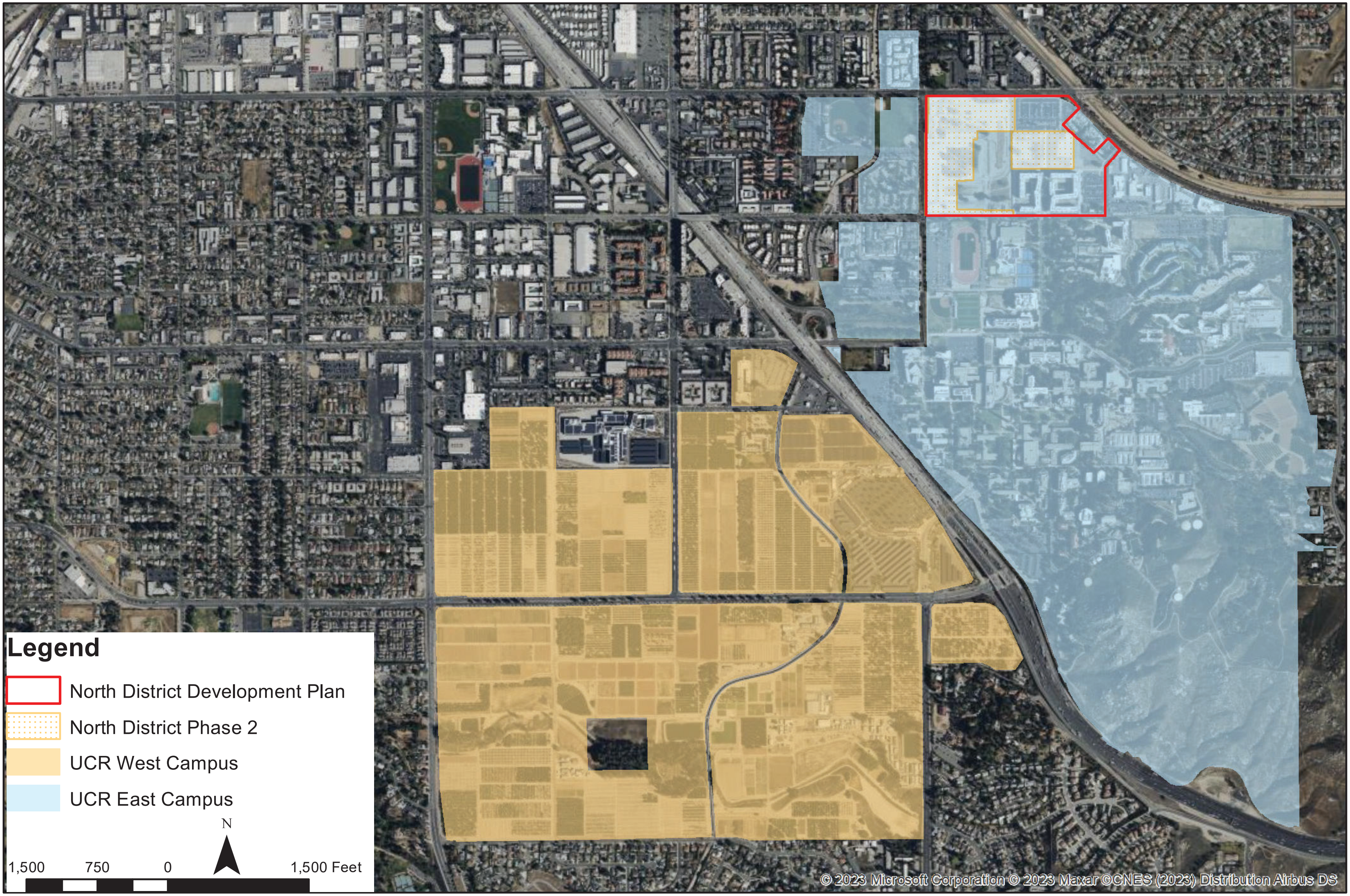
[2] The UCR Palm Desert Center, UCR Natural Reserves, all other Regents-owned properties, and all off-campus leased spaces are excluded.

UNIVERSITY OF CALIFORNIA, RIVERSIDE - NORTH DISTRICT PHASE 2

RVA

Regional Location

Figure 2-1



RVA

UNIVERSITY OF CALIFORNIA, RIVERSIDE - NORTH DISTRICT PHASE 2

UCR Campus

Figure 2-2

2.1.3 Project Location and Surrounding Uses

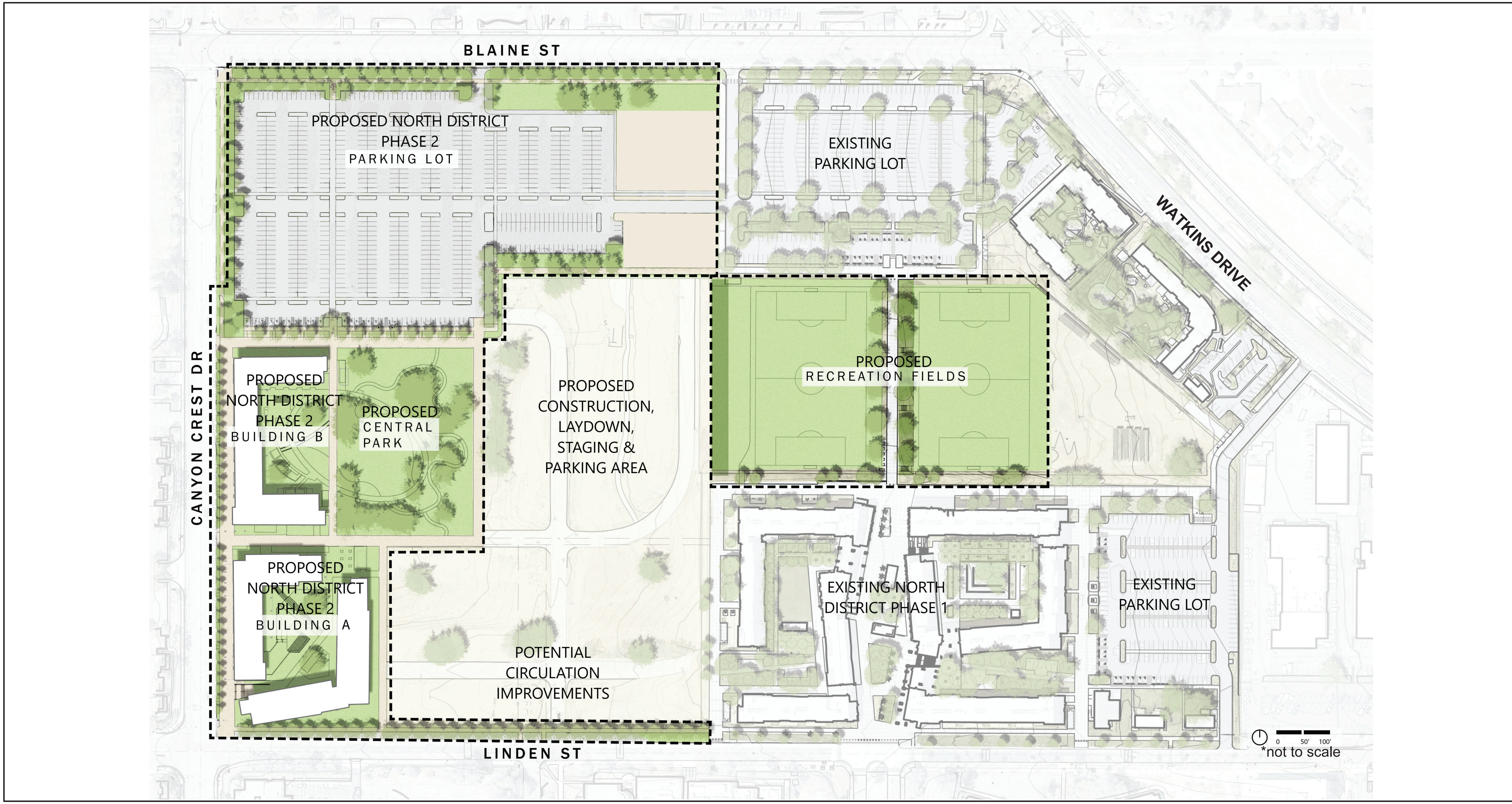
Project Site

The overall proposed ND Ph2 site is approximately 26 acres and is located within an urbanized area generally along the eastern portion of Canyon Crest Drive between Blaine Street and W. Linden Street on UCR's East Campus. The proposed student housing and student support services (Buildings A and B) are located at the northeast corner of Canyon Crest Drive and W. Linden Street; the proposed surface parking area is located at the southeast corner of Canyon Crest Drive and Blaine Street; the proposed Central Park is located directly east of the proposed Building B student housing, and the proposed recreation area is located between the existing ND Ph1 student housing site and the existing surface parking area south of Blaine Street (see Figure 2-3, Conceptual Project Site Plan).

An aerial image (Figure 2-4) shows the ND Ph2 site location within its neighborhood context. Existing surrounding uses north of the proposed ND Ph2 student housing, Central Park, and surface parking area include a mix of church, apartments, and commercial uses. Existing surrounding uses east of the ND Ph2 student housing, Central Park, and surface parking area include vacant, undeveloped portions of the future phases of the NDD site; vacant, undeveloped portions where the recreation area is proposed, the ND Ph1 student housing and associated student support services; and surface parking. Existing surrounding uses south of the ND Ph2 student housing, Central Park, and surface parking area include vacant, undeveloped portions of the future phases of the NDD site, the UCR Police Department (UCRPD), and UCR Track. Existing surrounding uses west of the ND Ph2 student housing, Central Park, and surface parking area include multi-family residential (Falkirk Apartments for student housing) and open recreational fields (two baseball diamonds)[3] and surface parking.

Existing surrounding uses to the proposed recreational area of the ND Ph2 site include surface parking and the UCR Child Development Center to the north; the ND Ph1 student housing and associated student support services to the south; surface parking, the UCR Child Development Center, and the UCR Child Care Center South to the east; and vacant, undeveloped portions of the future phases of the NDD Plan area followed by the vacant, undeveloped areas where the ND Ph2 student housing, Central Park, and surface parking is proposed.

[3] A planning and environmental review process is currently underway for a proposed Riverside Unified School District (RUSD) Science, Technology, Engineering, and Mathematics (STEM) Education Center which would include demolition of the recreational fields in order to construct the STEM Education Center. STEM Education Center's environmental review will consider the full NDD Plan buildout as part of its cumulative analysis.

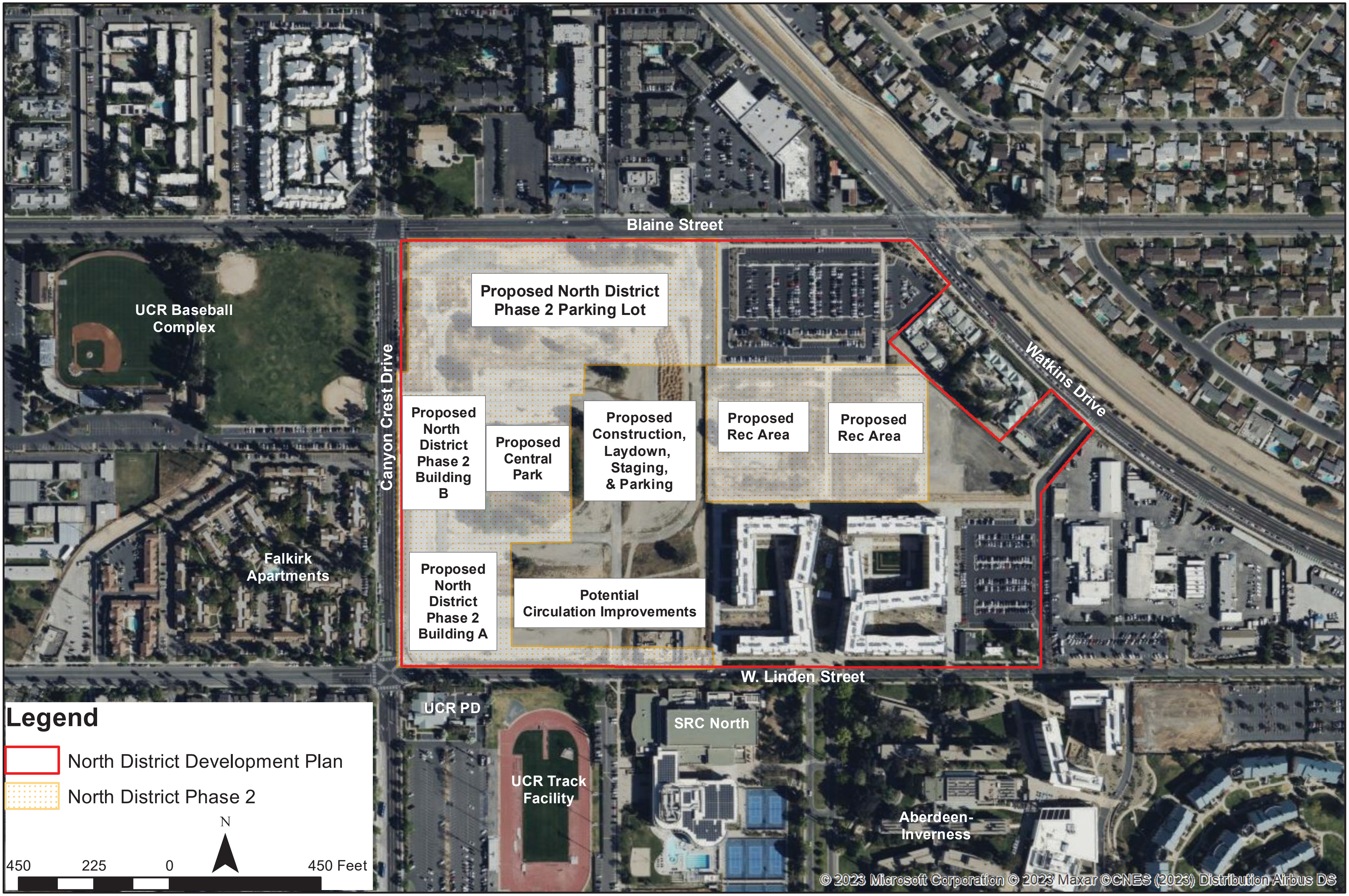


UNIVERSITY OF CALIFORNIA, RIVERSIDE - NORTH DISTRICT PHASE 2

RVA

Conceptual Project Site Plan

Figure 2-3



UNIVERSITY OF CALIFORNIA, RIVERSIDE - NORTH DISTRICT PHASE 2

Aerial Map

Figure 2-4

2.2 PROJECT NEEDS

The proposed ND Ph2 project would provide student housing in response to the high demand for on-campus housing. The proposed project is being proposed as a partnership with the Riverside Community College District (RCCD) as an intersegmental student housing project. The proposed project is a unique joint effort between a UC and RCCD with a focus on student success, including strengthening the transfer pipeline between RCCD and UCR.

UCR and RCCD students would be distributed throughout the ND Ph2 student housing to create integrated communities and represent a holistic, supportive approach to transferring to a UC campus. Both UCR and RCCD anticipate an increase in degree attainment in support of the workforce needs of the local community. This is particularly important because the Inland Southern California region faces unique challenges as the population with a bachelor's degree is well below the state of California (State) average[4].

2.3 PROJECT CHARACTERISTICS

The proposed ND Ph2 project would entail development of approximately 1,600 student housing beds in apartment-style units and student housing support services (e.g., retail, fitness space, laundry, group study space) for undergraduate and graduate students in two buildings, up to 7 stories in height, and totaling approximately 450,000 gross square feet. The proposed project would also include a Central Park, surface parking[5], recreational areas, and associated landscape and hardscape improvements.

The ND Ph2 site is currently vacant with some existing landscape and hardscape. There are 118 existing trees within the ND Ph2 project survey area, with approximately 70 to be retained and 48 to be replanted or removed but replaced at a 1:1 ratio per the UCR Tree Preservation and Replacement Guidelines (UCR 2022).

2.3.1 Proposed Site Plan

The proposed student housing and student support services would be located at the northeast corner of Canyon Crest Drive and W. Linden Street and would consist of two buildings (Buildings A and B) ranging from 5 to 7 stories. The western portion of the buildings, abutting Canyon Crest Drive, would be 7 stories, approximately 77 to 79 feet above grade, not including appurtenances such as mechanical penthouses, parapets, or elevator overruns, while the southern portion of Building A, abutting W. Linden Street, would step down to 5 stories, approximately 57-59 feet above grade (not including the same appurtenances noted above). The southeastern portion of Building B would also step down to 5 stories.

The proposed student housing buildings would activate Canyon Crest Drive by including a sidewalk with a covered loggia in front of the buildings to provide shaded pathways. Other pedestrian circulation improvements include extending the sidewalk along Blaine Street from the existing ND Ph1 surface parking to the proposed ND Ph2 surface parking area, extending the sidewalk along W. Linden Street from the existing ND Ph1 student housing west to Canyon Crest Drive, providing connectivity from Central Park along the eastern portion of the student housing buildings to the

[4] UC 2030 Capacity Plan. https://regents.universityofcalifornia.edu/regmeet/july22/b5attach2.pdf
[5] The proposed ND Ph2 surface parking would be interim parking until future funding is available for development of the future NDD phases.

South Recreation Mall south of W. Linden Street, and other path of travel between the proposed student housing buildings and proposed surface parking area to the student housing buildings.

The proposed Central Park would be located directly east of Building B and would be an open park with a central lawn and winding paths through native landscaping, with seating areas, shade canopies, and BBQs. The proposed recreational area (e.g., intramural fields) would be located between the existing ND Ph1 student housing site and the existing surface parking area, south of Blaine Street. The recreational area would include lighting available for use daily from dusk until 10 p.m. An existing sidewalk that connects the existing ND Ph1 student housing and the existing surface parking area to the north would either remain or be rerouted as part of this ND Ph2 project.

The proposed surface parking area would be located at the southeast corner of Canyon Crest Drive and Blaine Street and would include approximately 760 spaces. Improvements along Canyon Crest Drive and W. Linden Street would include reconstruction of the curb, sidewalk, and traffic and bicycle lanes. The undeveloped area between the proposed ND Ph2 improvements and the existing ND Ph1 buildings would be used as temporary construction laydown, equipment staging, and parking.

Figure 2-3 shows the proposed conceptual site plan, Figure 2-4 shows the aerial map, and Figure 2-5 shows the proposed building elevations.

Figure 2-5 Proposed Building Elevations

View of Building A from Canyon Crest Drive looking East

View of Building B from Canyon Crest Drive looking East

2.3.2 Open Space, Amenities, and Landscaping

Central Park

The proposed Central Park would be located directly east of student housing Building B and would be an open park with a central lawn and winding paths through low maintenance plantings/meadows, with seating areas, shade canopies, and BBQs. Approximately 32 existing trees within the Central Park area would be retained as part of the landscaping.

Recreational Fields

The proposed ND Ph2 project includes recreational fields located between the existing ND Ph1 student housing and ND Ph1 surface parking area. The proposed recreational fields would be natural grass. The recreational fields would include benches, pedestrian lighting, field lighting, fencing, netting to prevent balls from hitting the ND Ph1 housing buildings, and perimeter landscaping. A maintenance storage building would be in proximity to the recreational fields.

Street Frontage Improvements

The proposed ND Ph2 project would include improvements to portions of W. Linden Street, Canyon Crest Drive, and Blaine Street. The W. Linden Street frontage would extend from the ND Ph1 to Canyon Crest Drive. The proposed 8-foot-wide sidewalk would align with the offset established in ND Ph1, with a wider landscape buffer, new turn lane, and street lighting. Existing utilities would either be relocated or undergrounded.

Canyon Crest Drive would include street improvements from the existing roadway center line to the face of the new building loggias. A sidewalk is proposed with streetscape planters with groundcovers and trees. Existing utilities would either be relocated or undergrounded. Canyon Crest Drive would include access points as well, as discussed further in Section 2.3.3.

The Blaine Street frontage would extend from the ND Ph1 parking lot to Canyon Crest Drive with a proposed sidewalk including streetscape planters with groundcovers and trees and street lighting.

2.3.3 Parking and Site Access

The proposed project would include an approximately 760-space surface parking lot located at the southeast corner of Canyon Crest Drive and Blaine Street, which would include approximately 740 standard spaces and approximately 20 American with Disabilities Act (ADA) compliant spaces. The interim surface parking area would consist of asphalt paving, concrete curbs, concrete pedestrian pathways, and perimeter landscaping around the surface parking area, with one existing tree to be retained as part of the project landscaping, parking lot lighting, and pedestrian pathway lighting. Climate adaptive plants would be used, comprised of low growing native plants and native/adaptive ornamental shrubs and groundcovers. Stormwater plantings would be incorporated into the ND Ph2 project site to meet local standards for stormwater management.

One new ingress/egress for the surface parking area would be off Blaine Street. Additionally, the proposed ND Ph2 surface parking would be connected to the ND Ph1 surface parking area where vehicles would be able to enter/exit from the existing ingress/egress at the ND Ph1 surface parking area along Blaine Street. Drop off/pick up areas and short-term loading would be incorporated into the street improvements along Canyon Crest Drive, W. Linden Street, and/or the proposed ND Ph2 surface parking area.

Delivery, service, and emergency vehicles would have access around the student housing buildings off Canyon Crest Drive. The vehicles would enter between the proposed student housing buildings, go around the Central Park area and exit on the northern portion between the student housing Building B and surface parking area.

2.3.4 Utilities

Water and Wastewater

The campus has a combined fire and domestic water system that is sufficient to serve the proposed ND Ph2 project. Riverside Public Utilities (RPU) provides potable water to the campus, including the ND Ph2 site, which is used both in buildings and for landscape irrigation. An existing 12-inch RPU water line is located beneath Canyon Crest Drive, and a 14-inch RPU water line is located beneath W. Linden Street. In addition, UCR has a private on-campus water system that conveys potable, fire, and irrigation water supplies throughout the campus, as needed. The proposed ND Ph2 project anticipates providing additional fire hydrants on-site and/or along the street frontages of W. Linden Street and Canyon Crest Drive. The proposed ND Ph2 project would tie into the existing water system with upgrades determined appropriate in coordination with the City of Riverside. Any system upgrades would involve limited work within the public right-of-way.

RPU's Sewage Systems Services Program and Treatment Services Unit collects, treats, and disposes of all wastewater generated by the UCR campus, including the project site (UCR 2019). The proposed ND Ph2 project would tie into the existing sewer line in Canyon Crest Drive, which would be upsized from an 8-inch to a 15-inch pipe for approximately 1,400 feet between W. Linden Street and University Avenue to accommodate the proposed project's projected flows.

Solid Waste

UCR's landfill-bound waste is picked up and hauled by UCR trucks to the CR&R Environmental Services facility in Perris, California (approximately 17 miles south from UCR). Materials for recycling are sorted out of the landfill waste stream and the remainder is used for waste-to-energy (the process of generating and capturing energy in the form of electricity and/or heat from the primary treatment of waste). UCR's recyclable materials are hauled to the UCR transfer station, just north of Parking Lot 30 on the West Campus. Compost, food waste, and the commingled recycle streams are picked up from the UCR transfer station by the current contracted vendor to be recycled or composted. Green waste is currently blended back into the soil by UCR's Agricultural Operations Course. The proposed ND Ph2 project would continue to utilize these solid waste programs and facilities.

Energy

The proposed ND Ph2 project would require the use of electricity for lighting, appliances, heating, and cooling. No natural gas would be used for space or water heating pursuant to the University of California Office of the President's Policy on Sustainable Practices (2023). UCR purchases electricity for campus operations from RPU and through a power purchase agreement for on-site generation from the campus' solar infrastructure. The campus supply of natural gas is derived from Southern California Gas, which currently delivers natural gas to campus through high pressure distribution lines. UCR privately distributes medium pressure gas throughout East Campus and West Campus. The proposed ND Ph2 project's electricity demand would be served by RPU. Implementation of the proposed ND Ph2 project would connect to the electrical line located within the public right-of-way from Canyon Crest Drive or W. Linden Street.

Stormwater

The existing topography of the ND Ph2 site has a gradual 60-foot east to west drop across approximately 1,880 feet (averaging 3.2 percent slope) where stormwater sheet-flows down the existing network of streets and gutters and onto Canyon Crest Drive to the west and, to a more limited degree, onto W. Linden Street to the south. From there, these flows are conveyed by street gutters into underground drainage systems in W. Linden Street and Blaine Street.

The proposed ND Ph2 project would include installation of on-site stormwater improvements in accordance with the prepared Water Quality Management Plan and compliance with UCR's campus-wide stormwater permits. Any stormwater runoff from the ND Ph2 site would be routed to existing stormwater drainage facilities in W. Linden Street, Blaine Street and/or Canyon Crest Drive.

2.3.5 Off-Site Improvements

Grading within W. Linden Street would occur during site preparation and to widen the street. Drop off/pick up areas would be incorporated into the street improvements along Canyon Crest Drive, W. Linden Street, and/or the proposed ND Ph2 surface parking area. Improvements along Canyon Crest Drive and W. Linden Street would include reconstruction of the curb, sidewalk, and traffic and bicycle lanes. Grading within the public right-of-way along Blaine Street and Canyon Crest Drive would occur during site preparation and to install the proposed driveways and to implement the UCR Campus Master Plan Streetscape concept. The work within the public right-of-way would require an encroachment permit.

2.3.6 Construction

For purposes of this California Environmental Quality Act (CEQA) analysis, construction activities are anticipated to begin September 2023 and last for approximately 22 months. Construction activities would include:

- Demolition (approximately 30 days)
- Site Preparation (approximately 60 days)
- Grading (approximately 60 days)
- Building Construction (approximately 14 months)
- Architectural Coating (approximately 110 days)
- Paving (approximately 70 days)

Depending on the construction phase, implementation of the proposed ND Ph2 project would require common equipment, such as a excavators, dozers, tractor/loader/backhoes, concrete/industrial saws, cranes, forklifts, pavers, rollers, compressors, welders, and cement and mortar mixers. As required by the National Pollutant Discharge Elimination System (NPDES) Construction General Permit for projects disturbing more than one acre of land, soil erosion from the ND Ph2 site during construction would be controlled with best management practices (BMPs), including the use of sandbags as barriers. The construction site would be encircled by sandbags, and stabilized driveways would be provided at construction entrance and exit areas. Appropriate BMPs to minimize sediment entering the storm drain system would be provided.

Approximately 48 trees, as well as additional miscellaneous plant material and hardscape, would be removed during demolition and site preparation. Temporary construction staging, equipment laydown area, and worker parking would be within the undeveloped area of the NDD Plan area (see Figure 2-3). Approximately 230,000 square feet of hardscape (approximately 5.3 acres) would be removed, resulting in approximately 8,700 tons of demolition material. Approximately 1,135,000 square feet (approximately 26 acres) of the ND Ph2 project site would be graded. Approximately 44,000 cubic yards of soil would be excavated (cut) and approximately 20,000 cubic yards would be required for fill during grading activities. Approximately 24,000 cubic yards of soil export would be required. Approximately 470,000 square feet (approximately 10.8 acres) of the ND Ph2 project site would be surfaced with new asphalt and concrete. The maximum depth of ground disturbance during project construction would be approximately 10 feet.

2.3.7 Green Building Features

In compliance with the UC Policy on Sustainable Practices, the proposed ND Ph2 project's overall design would meet minimum Leadership in Energy and Environmental Design (LEED) Gold certification, which would be achieved by using less water and energy and reducing greenhouse gas (GHG) emissions compared to a non-certified LEED commercial building. A building can earn credits toward LEED certification through performance in five key areas including sustainable sites, water savings, energy and atmosphere, materials and resources, and indoor environmental quality.

2.4 REQUIRED APPROVALS

The Regents is the Lead Agency for the proposed project. As Lead Agency, the Regents or its delegate has the ultimate authority to approve or deny the project. The Addendum for this project would be considered by the Regents or their delegate, and the project may be approved at the Regents' (or their delegate's) discretion, and only if the Regents (or their delegate) determine that such approval complies with current CEQA Guidelines. Anticipated approvals required by the Regents (or their delegate) to implement the ND Ph2 project include, but are not limited to the following:

- Consideration of Addendum No. 1 to the NDD Plan EIR
- Make a condition of approval for project to implement the applicable mitigation measures as amended in the Mitigation Monitoring and Reporting Program adopted in connection with the NDD Plan EIR
- Adoption of the CEQA Findings
- Approval of the Design of the ND Ph2 project
- Approval of the project budget
- Approval of financing

In addition, the proposed ND Ph 2 project would require the following actions by the City of Riverside, including but not limited to:

- Construction Permit for the proposed work within City rights-of-way by the Public Works Department
- Issuance of encroachment permits, as needed, e.g., sidewalk improvements, roadway improvements, curb and gutter, fire hydrants, utility boxes, drainage, driveway entrances, etc.

The proposed project may require permits/approval from other responsible agencies, including but not limited to:

- Division of State Architect (DSA). Construction plans to be approved by DSA (accessibility compliance).
- State of California Fire Marshal (fire/life safety).

3 CONSISTENCY WITH THE NDD PLAN

To determine whether the proposed ND Ph2 project is consistent with NDD Plan and NDD Plan EIR, the following questions must be answered:

- Are the objectives of the proposed project consistent with the objectives adopted for the NDD Plan?
- Are the changes to campus population associated with the proposed project included within the scope of the NDD Plan population projections?
- Is the proposed location of the proposed project in an area designated for this type of use in the NDD Plan?
- Is the proposed project included in the amount of the development projected in the NDD Plan?
- Are the proposed project activities within the scope of the environmental analysis in the NDD Plan EIR?
- Have the conditions described in CEQA Guidelines Section 15162 calling for the preparation of a subsequent EIR occurred?

Sections 3.1 through 3.4 document the proposed project's consistency with the objectives, population projections, land use designations, and development projections contained in the NDD Plan.

Section 4 contains a detailed examination of environmental topics with the potential for significant impacts that had been addressed in the NDD Plan EIR, and includes analyses and discussions for whether the proposed project is consistent with, and within the scope of, the environmental impact analysis included in the NDD Plan EIR.

3.1 NDD PLAN OBJECTIVES

The NDD Plan identified key objectives to accommodate UCR's projected growth in both academic and non-academic programs. The objectives of the NDD Plan are to:

- Support the Campus goal to house up to 50 percent of the enrolled students on-campus and to guarantee on-campus housing to all freshmen and transfer students;
- Enhance the student experience by integrating the principles of residential and academic life;
- Promote environmental and sustainability goals by reducing vehicular trips to and from the campus;
- Provide affordable on-campus student housing;
- Develop and operate approximately 4,000 to 5,200 beds of student housing for first year, second year, transfer, upper division undergraduate students and graduate students, along with adequate support spaces, multi-functional spaces, amenities and associated infrastructure while maximizing the building height and density of the entire project site;
- Provide an approximately 600-seat dining facility by delivery of a future phase of the project;
- Complete and open the Athletics Event Center as soon as feasible;
- Establish a new iconic gateway to the Campus on the northwest corner of the project site;
- Provide adequate parking to support all phases of development through delivery of the future phase(s).

The ND Ph2 project would support the NDD Plan objectives listed above since it would develop approximately 1,600 affordable[6], on-campus student housing beds, contributing towards providing housing for eligible students; develop and operate student housing support services (e.g., retail, fitness space, laundry, group study space); activate and enliven East Campus, specifically within the Canyon Crest Gateway and Student Neighborhood area and provide on-campus amenities, such as a Central Park, winding paths, seating areas, BBQs, and recreational fields, for UCR and RCCD students thereby enhancing the student experience; and provide adequate parking for resident students. By providing additional on-campus housing, support services, and amenities, the proposed ND Ph2 project would also promote environmental and sustainability goals by reducing vehicular trips to and from the campus.

3.2 NDD PLAN POPULATION

The primary objective of the NDD Plan is to provide affordable on-campus housing for existing, eligible students. The NDD Plan provides for up to 5,200 student beds on an approximately 51-acre site located in the northeastern portion of East Campus. The ND Ph1 project was the first project developed under the NDD Plan and involved the construction of 1,506 student beds and associated facilities. ND Ph1 was completed and in operation as of Fall 2021.

The NDD Plan does not increase enrollment at UCR, but rather provides for additional on-campus housing options to already eligible students. At buildout, the NDD Plan includes up to 4,000 beds in apartment-style units with the ability to accommodate one student per bed (i.e., 4,000 students). In addition, the NDD Plan accommodates up to 1,200 beds in residence halls, providing housing to an additional 1,200 students, for a total assumed student population of 5,200 residing in the NDD Plan area.

ND Ph1 constructed 1,506 beds in apartment-style units to accommodate 1,506 students. Implementation of ND Ph2 would provide approximately 1,600 beds in apartment-style housing to accommodate 1,600 students, of which approximately 326 would be for RCCD students.[7] There would be up to approximately 894 apartment-style beds and approximately 1,200 residence halls beds, to accommodate up to another 2,094 students, remaining for future phases to achieve buildout of the housing assumed for the NDD Plan. Therefore, the anticipated 1,600 student beds, and student population, associated with the proposed ND Ph2 project is within the total anticipated buildout number of beds and corresponding population assumptions analyzed in the NDD Plan EIR. Please refer to Table 3-1, North District Development Plan Resident Population Projections.

[6] Affordable on-campus housing would be below rental market rates as compared to private housing in the areas surrounding campus.
[7] The ND Ph2 project is a unique joint effort between UCR and RCCD with a focus on student success, including strengthening the transfer pipeline between RCCD and UCR.

Table 3-1 North District Development Plan Resident Population Projections

NDD Plan Land Use	NDD Plan at Buildout	Phase 1	Phase 2	Remaining Space for Future Phase(s)
Apartments	4,000 beds	1,506 beds	1,600 beds	894 beds
	1,390,000 gross square feet (gsf)	541,500 gsf	450,000 gsf	398,500 gsf
Residence Halls	1,200 beds	0 beds	0 beds	1,200 beds
	245,000 gsf	0 gsf	0 gsf	245,000 gsf

The NDD Plan includes the potential for 70 employees. The ND Ph1 includes 20 employees. Implementation of the proposed ND Ph2 project is anticipated to include 21 employees. Therefore, the presumed total of 41 employees from ND Ph1 and the proposed ND Ph2 project would be within the 70 employees analyzed in the NDD Plan EIR.

3.3 NDD PLAN LAND USE DESIGNATIONS

The NDD Plan Land Use Designations include Housing and Support (within 5 Districts), Open Space, Athletics, and Parking as shown below in Figure 3-1, North District Development Plan (Conceptual). This conceptual land use diagram is to guide the development of future phase(s). The NDD Plan provides for the phased development of apartments, mixed-use residential, resident-life amenity spaces, living and learning spaces, resident-life support spaces, dining facilities, athletics facilities, and parking areas.

The NDD Plan includes a large open space area in the eastern portion of the Plan area, which is designed with hardscape and softscape materials derived from the existing campus aesthetic. Key intersections and open spaces, such as the primary plaza, main building entries, and courtyard patios, are to include specialty paving that highlights the importance of those spaces. Planting materials consist of native and drought tolerant species that reflect the native landscape of the region and highlight UCR’s commitment to sustainability and water use reduction. Incorporation of trees throughout the site to provide shade and respite from the heat creates pleasant places to rest and relax through the Plan area.

Vehicular access is to be provided from W. Linden Street, Blaine Street, and Watkins Drive. Multi-modal routes are to be provided to encourage walking and riding to and from campus with the intent of creating a pedestrian friendly experience for students, staff, and visitors to the North District. Pedestrian walks are to be sized and designed to allow for service access along the main multi-modal pathways throughout the NDD Plan area. The NDD Plan is also designed to allow for direct emergency access to all buildings.

Figure 3-1 North District Development Plan (Conceptual)

SOURCE: Solomon Cordwell Buenz, 2018

IMPACT SCIENCES — Proposed Land Use Designations

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Table 3-2, North District Development Plan Proposed Land Use Designations and Districts, presents the acres assigned to each land use designation/district and the types and intensity of land uses planned for each land use district.

Table 3-2 North District Development Plan Proposed Land Use Designations and Districts

Land Use	Acres
Student Residential and Mixed Uses District 1	4.25
Student Residential and Mixed Uses District 2	6.15
Student Residential and Mixed Uses District 3	5.45
Student Residential and Mixed Uses District 4	8.40
Student Residential and Mixed Uses District 5	3.40
Athletics Event Center	5.70
Parking 1	2.15
Parking 2	4.05
Open Space	11.6
Total Acres	51.15

Table 3-3, North District Development Plan Program, provides a summary of NDD Plan buildout assumptions by conceptual land use, along with development to date, proposed development under ND Ph2, and remaining development potential.

Table 3-3 North District Development Plan Program

NDD Plan Land Use	NDD Plan at Buildout	Phase 1 Actual number of beds, square footage, and parking spaces	Phase 2 Approximate beds, square footage, acreage and/or parking spaces	Remaining for Future(s)
Student Housing and Support Services[1]	5,200 beds 1,845,400 gross square feet (gsf)	1,506 beds 541,500 gsf	1,600 beds 450,000 gsf	2,094 beds 853,900 gsf
Recreational Facilities[2]	5.7 acres	N/A	5.7 acres	0 acres
Parking Spaces[3]	2,400	697 spaces (surface parking)	760 spaces (surface parking)	943 spaces

[1] Student housing and support services include the number of student housing beds, square footage of the housing including circulation, mechanical, and structure; support and maintenance; amenity/support spaces; living, learning, community, and administration; seminar rooms; café and food area; and field house.

[2] Recreational facilities acreage would include field house, Athletics Center, competition field, or open recreational fields.

[3] Parking spaces include surface parking and/or parking structures.

The NDD Plan generally establishes building heights, noting that heights will range from 1- to 2-stories for mixed-use buildings, 2-stories for the dining facility, 5- to 6-stories for the apartment buildings, 5- to 6-stories for the residence halls, and 7-stories for the parking structures.

The NDD Plan provides for the construction of an athletic facility, dedicating approximately 5.7 acres for the construction and operation of an Athletics Event Center with a capacity of between 3,000 and 5,000 seats.

The proposed ND Ph2 project includes development of approximately 1,600 student housing beds in apartment-style units and student housing support services (e.g., retail, fitness space, laundry, group study space) in two buildings, up to 7-stories in height, and totaling approximately 450,000 gross square feet. Since the NDD Plan considered parking structure(s) up to 7-stories, the proposed apartment buildings under ND Ph2 would be consistent with general height and massing assumptions made for the NDD Plan and analyzed in the NDD Plan EIR. The proposed ND Ph2 project includes development of approximately 4.48 acres for student apartments and amenities within the Athletics Event Center area and within Student Residential and Mixed-Use District 3 of the NDD Plan.

The proposed project would also include a Central Park, recreational area, surface parking, and associated landscape and hardscape improvements. The proposed approximately 2.4-acre Central Park would be located partially within the Athletics Event Center area and within Student Residential and Mixed-Use District 3 of the NDD Plan. The proposed recreational fields are approximately 5.7 acres, partially within the Open Space area and within Student Residential and Mixed-Use District 5, of the NDD Plan. The proposed ND Ph2 project does not include construction of an Athletics Event Center. The proposed ND Ph2 project includes development of approximately 6.8 acres of temporary surface parking, partially within the Student Residential and Mixed-Use Districts 3 and 4 of the NDD Plan.

Although the proposed ND Ph2 project involves a rearrangement of the location of residential housing and support, open space, and athletics land uses within the NDD Plan, they are consistent with the proposed land use types, and fall within the overall acreages of each, considered in the NDD Plan as identified in Table 3-2. Therefore, the proposed ND Ph2 project would be consistent with the land use categories and the associated acreages in the NDD Plan.

3.4 CONCLUSION

The NDD Plan identified key objectives to accommodate UCR's projected growth in both academic and non-academic programs. The ND Ph2 project would support the NDD Plan objectives listed above since it would develop approximately 1,600 affordable, on-campus student housing beds and support services; activate and enliven East Campus, specifically within the Canyon Crest Gateway and Student Neighborhood area, and provide on-campus amenities thereby enhancing the student experience; and provide adequate parking for resident students. By providing additional on-campus housing, support services, and amenities, the proposed ND Ph2 project would also promote environmental and sustainability goals by reducing vehicular trips to and from the campus.

The NDD Plan provides for up to 5,200 student beds. ND Ph1 constructed 1,506 beds in apartment-style units to accommodate 1,506 students. Implementation of ND Ph2 would provide approximately 1,600 beds in apartment-style housing to accommodate 1,600 students, for a combined total of 3,106 beds/students. The proposed ND Ph2 project fits within the overall projected NDD Plan beds and students, with a remaining 2,094 beds/students in future phases for full buildout of the NDD Plan.

The proposed ND Ph2 project would be consistent with the land use categories in the NDD Plan. Although the proposed ND Ph2 project involves a rearrangement of the location of residential housing and support, open space, and athletics land uses within the NDD Plan, they are consistent with the proposed land use types, and fall within the overall acreages of each, considered in the NDD Plan as identified in Table 3-2.

The proposed ND Ph2 project would not make substantial changes in the amount of area or square footage currently designated to each land use but would rather readjust the land use areas within the project site to allow more efficient use of the site for the uses contemplated in the NDD Plan. Since the proposed ND Ph2 project would not exceed the building space projections contemplated in the NDD Plan, the proposed ND Ph2 project would be consistent with the development projected in the NDD Plan. Therefore, the proposed ND Ph2 project would be consistent with the land use categories and the associated acreages and square footage contemplated within the overall NDD Plan.

4 ENVIRONMENTAL ANALYSIS

This Addendum documents that the proposed project would not result in any new significant effects or an increase in the severity of significant impacts previously identified and studied in the NDD Plan EIR. However, minor technical changes or additions are necessary, and in accordance with CEQA Guidelines Section 15164, an addendum is the appropriate level of CEQA review for the proposed project. The sections below provide an evaluation of the environmental impacts of the proposed project, and are organized to correspond with the environmental topics set forth in Appendix G of the CEQA Guidelines.

4.1 PROJECT ENVIRONMENTAL IMPACTS

Checklist Explanation

UCR has defined the following column headings in this Addendum:

NDD Plan EIR Significance Conclusion. This column indicates the level of impact identified in the NDD Plan EIR and associated Initial Study (IS).

Do Proposed Changes Require Major Revisions to the NDD Plan EIR? This column indicates whether the proposed ND Ph2 project includes changes that require major revisions to the analysis or conclusions in the NDD Plan EIR.

Do New Circumstances Require Major Revisions to the NDD Plan EIR? This column indicates whether there are new circumstances (such as changes to the existing conditions at the project site or surrounding areas) that require major revisions to the analysis or conclusions in the NDD Plan EIR.

Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts? This column indicates whether there is new information that would result in a new or substantially more severe significant impact than what was analyzed in the NDD Plan EIR.

Applicable NDD Plan EIR MMs, PPs, and/or PSs to Address Project-Specific Impacts. This column indicates whether mitigation measures (MMs), Programs and Practices (PPs), and/or Planning Strategies (PSs) that were included in the NDD Plan EIR would resolve ND Ph2 project-specific impacts. Where applicable, MMs, PPs, and/or PSs identified in the NDD Plan EIR are incorporated into the proposed project as noted in Section 5 of this Addendum.

Minor Technical Changes to MMs, PPs, and/or PSs

Minor modifications have been made in underline or ~~strikethrough~~ text to address minor technical changes/clarifications based on updated document labeling, regulations and/or standards. The Lead Agency has determined that these modifications are appropriately addressed as part of this Addendum and none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred.

Environmental Topics Addressed

This Addendum utilizes the current (2023) CEQA thresholds contained in the CEQA Guidelines Appendix G Environmental Checklist Form, and therefore includes topics that were added since the NDD Plan EIR was certified (such as vehicle miles traveled, tribal cultural resources, and wildfire) and does not include topics that were removed from the Checklist Form (such as traffic level of service). The following environmental resources, if checked below, would be potentially affected by the proposed ND Ph2 project, and would involve at least one significant impact that substantially exceeds or is otherwise outside the scope of activities evaluated for potential environmental effects in the NDD Plan EIR, as discussed below in Sections 4.1.1 through 4.1.20 of this Addendum.

If “None” is checked below, this proposed project would not require major revisions of the NDD Plan EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects for any of the thresholds contained in the CEQA Guidelines Appendix G Environmental Checklist.

☐ Aesthetics	☐ Agriculture & Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology & Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☐ Hydrology & Water Quality	☐ Land Use & Planning	☐ Mineral Resources
☐ Noise	☐ Population & Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities & Service Systems	☐ Wildfire	☒ None

4.1.1 Aesthetics

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is There Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Have a substantial adverse effect on a scenic vista?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	No Impact	No	No	No	No MMs, PSs, or PPs required
c)	Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable regulations governing scenic quality?	Less than Significant with PS and PPs Incorporated	No	No	No	PS Campus & Cmty. 1 PP 4.1-1 PP 4.1-2(a)
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Less than Significant with PPs and MMs Incorporated	No	No	No	MM 4.1-3(a) MM 4.1-3(b) MM 4.1-3(c) PP 4.1-1 PP 4.1-2(a)

a) A scenic vista is generally defined as an expansive view of highly valued landscape as observable from a publicly accessible vantage point. The NDD Plan EIR notes that the panoramic views of the Box Springs Mountains are considered a scenic vista. The NDD Plan provides for phased development of apartments, mixed-use residential, resident life amenity spaces, living and learning spaces, resident life support spaces, dining facilities, athletics facilities and parking areas. The NDD Plan generally establishes building heights, noting that heights will range from 1- to 2-stories for mixed-use buildings, 2-stories for the dining facility, 5- to 6-stories for the apartment buildings, 5- to 6-stories for the residence halls, and 7-stories for the parking structures. The NDD Plan EIR notes that although views of the Box Springs Mountains would be partially or entirely blocked from areas close to the proposed buildings, views of the Box Springs Mountains would continue to be widely available from publicly accessible areas around the NDD Plan area.

The proposed ND Ph2 student housing buildings would range from 5 to 7 stories. Portions of Buildings A and B that would be 7 stories high would not substantially change the views from publicly accessible areas around the NDD Plan area, as compared to residential apartment buildings up to 6 stories, and would be consistent with the assumed heights of parking structures. As demonstrated in the renderings below, views of the Box Springs Mountains would still be available from publicly accessible vantage points, as concluded in the NDD Plan EIR.

Rendering 1: View looking north from the intersection of Canyon Crest Drive and W. Linden Street, with proposed Buildings A and B on the right with the Box Springs Mountains in the background.

Rendering 2: View looking east from the intersection of Canyon Crest Drive and W. Linden Street, with proposed Building A on the left with the Box Springs Mountains in the background.

Rendering 3: View looking southeast from Canyon Crest Drive at Cherry Street, with proposed Building B on the right-hand side with the Box Springs Mountains in the background.

Consistent with the discussion in the NDD Plan EIR, views of the Box Springs Mountains would be partially or entirely blocked from areas close to the proposed ND Ph2 buildings, and views of the Box Springs Mountains would continue to be accessible from public areas around the NDD Plan area. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to scenic vistas.

b) Approximately 70 of the 118 existing trees within the proposed ND Ph2 project area are to be retained, while approximately 48 trees would be replanted or removed and replaced at 1:1 ratio per the UCR Tree Preservation and Replacement Guidelines (UCR 2022). The NDD Plan area is not located on or near a State Scenic Highway. The proposed ND Ph2 project would be located within the NDD Plan area and, therefore, the analysis and determination of No Impact from the NDD Plan IS would apply to the proposed ND Ph2 project. The proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to scenic resources within a State Scenic Highway.

c) The NDD Plan conceptually considered an Athletic Events Center with up to 5,000 seats at the corner of Canyon Crest Drive and W. Linden Street, student housing up to 6 stories in height along the rest of Canyon Crest Drive and Blaine Street, parking structure(s) up to 7 stories in height along Blaine Street and W. Linden Street, and passive recreation and student housing north of the ND Ph1 site. The proposed ND Ph2 project proposes two student housing buildings, up to 7 stories in height, with associated student life amenities at the corner of Canyon Crest Drive and W. Linden Street, surface parking and service/delivery/emergency vehicle access along Canyon Crest Drive, surface parking along Blaine Street, and recreational areas north of the ND Ph1 site.

The proposed ND Ph2 project is a rearrangement of the uses considered in the NDD Plan with surface parking proposed as interim parking until future funding is available for development of the future NDD phases and an increase in one additional story for the student housing buildings, comparable to the anticipated 7-story parking structures. Buildings A and B would not substantially change the views from publicly accessible areas around the NDD Plan area, as compared to residential apartment buildings up to 6 stories. As demonstrated in the Rendering 4-1 through Rendering 4-3, views of the Box Springs Mountains would still be available from publicly accessible vantage points.

The rearrangement of the facilities of the proposed ND Ph2 project would still be considered infill development within the NDD Plan area and East Campus generally surrounded by on- and off-campus multi-story campus buildings and would not substantially alter the visual quality of the site beyond those proposed under the NDD Plan.

The proposed ND Ph2 project would continue to comply with PS Campus & Community 1 by improving W. Linden Street, Canyon Crest Drive, and Blaine Street including installing new landscaping. The proposed structures and facilities would be designed and constructed in compliance with the Campus Construction and Design Standards (formerly called Campus Design Guidelines), consistent with PP 4.1-1 and PP 4.1-2(a).

Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of previously identified significant impact to visual character and quality.

4.1.1(c) Applicable MMs, PSs and/or PPs

PS Campus & Community 1: Provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.

PP 4.1-1 (modified in 2023): The Campus shall provide design professionals with the ~~2007 Campus Design Guidelines~~ Campus Construction and Design Standards and instructions to implement the ~~guidelines~~ Standards, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design.

PP 4.1-2(a) (modified in 2023): The Campus shall continue to provide design professionals with the ~~2007 Campus Design Guidelines~~ Campus Construction and Design Standards and instructions to develop project-specific landscape plans that are consistent with the ~~Guidelines~~ Standards with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible.

d) Prior to redevelopment, the NDD Plan area formerly included lighting from existing buildings and parking lots/driveways. Development of the ND Ph1 resulted in similar sources of light from the surface parking lot, security lighting, and from building exterior and interior lighting. Other nearby sources of light include pole lighting for the adjacent recreational area to the south; building exterior and interior lighting as well as street lighting along Canyon Crest Drive, W. Linden Street, Blaine Street and Watkins Drive; and interior and exterior lighting at the nearby campus residential buildings.

The proposed ND Ph2 project would include similar light sources from those discussed in the NDD Plan EIR, such as building interior and exterior lighting proposed for student housing, recreational field lighting, and parking lot lighting. The proposed structures and facilities would be designed and constructed in compliance with the Campus Construction and Design Standards (formerly called Campus Design Guidelines), consistent with PP 4.1-1, PP 4.1-2(a), and MM 4.1-3(b).

Additionally, the building materials would be made of non-reflective materials, building and pole lighting would be directed to the intended illumination site or shielded to reduce spill onto adjacent areas, and parking lots drive aisles and landscaping would be designed to minimize the night-time glare of vehicle headlights, all consistent with MM 4.1-3(a) through MM 4.1-3(c). Proposed lighting would also be designed to minimize light pollution by using the International Dark Sky Association's Model Lighting Ordinance light fixture selection criteria. Therefore, the proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to light and glare.

4.1.1(d) Applicable MMs, PSs and/or PPs:

Refer to **PP 4.1-1 and PP 4.1-2(a)** above.

MM 4.1-3(a): Building materials shall be reviewed and approved as part of project-specific design and through approval of construction documents. Mirrored, reflective glass is prohibited on campus.

MM 4.1-3(b): All outdoor lighting on campus resulting from new development shall be directed to the specific location intended for illumination (e.g., roads, walkways, or recreation fields) to prevent stray light spillover onto adjacent residential areas. In addition, all fixtures on elevated light standards in parking lots, parking structures, and athletic fields shall be shielded to reduce glare. Lighting plans shall be reviewed and approved prior to project-specific design and construction document approval.

MM 4.1-3(c): Ingress and egress from new parking areas shall be designed and situated so as to minimize the impact of vehicular headlights on adjacent uses. Walls, landscaping, or other light barriers will be provided. Site plans shall be reviewed and approved as part of project-specific design and construction document approval.

4.1.2 Agriculture and Forestry Resources

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	No Impact	No	No	No	No MMs, PSs, or PPs required
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No Impact	No	No	No	No MMs, PSs, or PPs required
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	No Impact	No	No	No	No MMs, PSs, or PPs required
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	No Impact	No	No	No	No MMs, PSs, or PPs required
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	No Impact	No	No	No	No MMs, PSs, or PPs required

a) The NDD Plan area, which includes the ND Ph2 site, is not in an area designated as Farmland. Implementation of the NDD Plan would not result in the loss of Farmland and there would be no impact. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to Farmland.

b) The NDD Plan area, which includes the ND Ph2 site, is not in an area zoned for agricultural use or under a Williamson Act contract. Implementation of the NDD Plan would not conflict with existing zoning for agricultural use or a Williamson Act contract. The NDD site is designated for Family, Apartments, and Residence Hall Student Housing and Related Support, and Athletics and Recreation in the 2005 LRDP. As such, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to conflicts with existing zoning for agricultural use or a Williamson Act Contract.

c) The NDD Plan area, which includes the ND Ph2 site, is not an area zoned for, nor does it contain forest lands or timberland. The NDD Plan Land Use Designations include Housing and Support, Open Space, Athletics, and Parking. Therefore, the proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan IS and would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to forest land, timberland, or timberland production.

d) The NDD Plan area, which includes the ND Ph2 site, does not contain forest lands. The ND Ph2 project site is currently vacant with remnant landscape and hardscaped areas. Therefore, the proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan IS and would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to forest lands or the conversion of forest land to non-forest use.

e) No lands within or surrounding the NDD Plan area, which includes the ND Ph2 site, are zoned for agricultural use. The NDD Plan Land Use Designations include Housing and Support, Open Space, Athletics, and Parking. The NDD Plan would not construct any uses sensitive to agricultural activities or construct any use that would conflict with agricultural practices. Therefore, the proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan IS and would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to the conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

4.1.3 Air Quality

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Conflict with or obstruct implementation of the applicable air quality plan?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
b)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard?	Less than Significant Impact with MM Incorporated (Construction); Significant and Unavoidable (Operation)	No	No	No	No MMs, PSs, or PPs required
c)	Expose sensitive receptors to substantial pollutant concentrations?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required

a) The NDD Plan does not increase enrollment at UCR, but rather provides additional on-campus housing and associated amenities, student support services, and recreational opportunities for the existing and projected campus population. At buildout, the NDD Plan includes up to 4,000 beds in apartment-style units with the ability to accommodate one student per bed (i.e., 4,000 students). In addition, the NDD Plan accommodates up to 1,200 beds in residence halls, providing housing to an additional 1,200 students, for a total assumed student population of 5,200 residing in the NDD Plan area. ND Ph1 constructed 1,506 beds in apartment-style units to accommodate 1,506 students. Implementation of the proposed ND Ph2 project would provide approximately 1,600 beds in apartment-style, on-campus housing for approximately 1,600 eligible students.

There would be up to approximately 2,094 additional beds, to accommodate up to another 2,094 students, remaining for future phases to achieve buildout of the student housing assumed for the NDD Plan. Therefore, the anticipated 1,600 student beds, and student population, associated with the proposed ND Ph2 project is within the total anticipated buildout number of beds and corresponding population assumptions analyzed in the NDD Plan EIR.

The NDD Plan EIR determined that the NDD Plan would neither conflict with the South Coast Air Quality Management District's (SCAQMD's) 2016 Air Quality Management Plan (AQMP) nor jeopardize the region's attainment of air quality standards. For reference, the 2021 LRDP EIR also used the SCAQMD's 2016 AQMP for its Air Quality analysis. Since certification of the NDD

Plan Final EIR, an updated AQMP has been adopted by the SCAQMD. The 2022 AQMP is the current applicable air quality plan for the SCAQMD region, including the UCR campus. The 2022 AQMP incorporates local city general plans and Southern California Association of Governments' (SCAG's) 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) socioeconomic forecast projections of regional population, housing, and employment growth, including the campus population. Since the 2022 AQMP is the most recent AQMP adopted by SCAQMD, it is used for this impact analysis in this Addendum.

In its 2020-2045 RTP/SCS, SCAG forecasts the region's population will increase to 395,800 persons by 2045 (SCAG 2020). The NDD Plan EIR states that the housing provided by the NDD Plan accommodates growth anticipated by campus under the 2005 LRDP and is not expected to increase enrollment not planned for by the campus, the City General Plan, or the SCAQMD AQMP. For reference, the 2021 LRDP EIR determined the proposed 2021 LRDP, which accounted for the buildout of the NDD Plan, would incrementally accommodate an additional 7,419 undergraduate students and 3,659 graduate students plus 2,806 faculty and staff, resulting in a net increase to the campus population of approximately 13,884 people by the 2035 horizon year (UCR 2021b). The net increase of 13,884 people by academic year 2035/2036 was found to be within the total regional population projections for 2035 of 356,839 net increase in regional population, and like the discussion herein, would continue to be within the total regional population projections for 2045.

Because the proposed ND Ph2 project would be within the existing student housing demand and population from the NDD Plan, the proposed ND Ph2 project would not induce population growth in the project vicinity, beyond SCAG projections. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to conflicts with the AQMP.

b) Construction activities for the proposed ND Ph2 project are anticipated to begin in September 2023 and last for approximately 22 months. Operation of the ND Ph2 is anticipated in 2025.

Construction

The discussion in the NDD Plan EIR indicated that although the initial analysis for remaining future phases of the NDD Plan were not expected to exceed SCAQMD regional or localized thresholds during subsequent phases of construction of the NDD Plan, emissions could be higher or lower, depending on the various construction factors that affect emissions, such as construction schedule, time and phasing, type and number of equipment, etc. The NDD Plan EIR concluded that with implementation of MM 4.3-1b (construction emissions control plan) and MM 4.3-1c (volatile organic compounds [VOC] control measures) from the 2005 LRDP EIR, future construction emissions from development of the NDD Plan would not exceed SCAQMD thresholds and would be less than significant.

Construction of the proposed ND Ph2 project would result in the temporary generation of air pollutants from operation of heavy construction equipment and generation of fugitive dust in the construction area. The proposed ND Ph2 project would be required to implement dust control measures consistent with the SCAQMD Rule 403 (fugitive dust) during the construction phases. The construction emissions of the proposed ND Ph2 project were estimated using the newer version of the California Emissions Estimator Model (CalEEMod) since certification of the NDD Final EIR – CalEEMod version 2022.1. CalEEMod uses project-specific information, including the project's land uses, square footages for different uses (e.g., student housing, recreation, surface parking, etc.), and location to model a project's emissions. Construction emissions modeled include emissions generated by construction equipment, such as worker and vendor trips. CalEEMod estimates construction emissions by multiplying the amount of time equipment is in operation by emissions factors. Construction was analyzed based on defaults contained in CalEEMod, and from project-specific inputs for the proposed project. It is assumed that all construction equipment used would be diesel-powered. The CalEEMod default inputs, project-specific inputs, and model results are provided in Appendix A to this Addendum.

Maximum daily emission levels associated with construction of the proposed ND Ph2 project, are shown in Table 4.1.3-1, as well as localized impacts at the nearest receptor location. As shown in Table 4.1.3-1, construction emissions would be below regulatory thresholds for all criteria pollutants. For the localized significance thresholds (LSTs), the emissions associated with peak site preparation were considered as this phase represents the maximized local emissions that would occur between the various phases of construction. Therefore, the proposed ND Ph2 project would not exceed SCAQMD regional or localized thresholds and would not result in a cumulatively considerable increase of any criteria pollutants and would be less than significant.

Table 4.1.3-1 Regional and Localized Construction Emissions Summary

	Maximum Emissions (lbs/day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer						
Construction Year 2023	3.01	33.40	26.28	0.07	9.03	2.56
Construction Year 2024	3.68	38.48	41.02	0.08	5.39	2.71
Construction Year 2025	31.55	22.89	56.64	0.05	6.36	2.10
Winter						
Construction Year 2023	4.04	40.00	36.72	0.07	9.03	4.41
Construction Year 2024	3.73	38.68	34.55	0.08	7.53	4.22
Construction Year 2025	31.44	23.13	49.17	0.05	6.36	2.10
Maximum Daily Emissions	**31.55**	**40.00**	**56.64**	**0.08**	**9.03**	**4.41**
SCAQMD Regional Thresholds	75	100	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**
Localized Construction Impact from Site Preparation		39.74	35.47		7.47	4.35
SCAQMD Localized Significance Thresholds (LSTs)		220	1,230		21	7
Threshold Exceeded?	**N/A**	**No**	**No**	**N/A**	**No**	**No**

Notes: See Appendix A for modeling results. Some numbers may not add up precisely due to rounding considerations.

VOC = volatile organic compounds; NO_x = nitrogen oxides; CO = carbon monoxide; SO_x = Sulfur oxides; PM_{10} = Particulate matter 10 micrometers in diameter or less; $PM_{2.5}$ = Fine particulate matter 2.5 micrometers in diameter or less; lbs/day = pounds per day

Operation

The discussion in the NDD Plan EIR indicated that full build out of the NDD Plan would result in significant regional emissions of VOC, NOx, CO and PM_{10}. NOx, CO and PM_{10} emissions are primarily associated with off-site motor vehicle emissions. However, this is a conservative finding as the NDD Plan, including the proposed ND Ph2 project, includes design features to reduce vehicle emissions, such as electric vehicle charging, bicycle parking, and is a mixed-use design. Furthermore, a primary objective of the NDD Plan is to provide on-campus student housing, transitioning students from commuter to resident status, thereby reducing the need to use vehicles and reducing vehicle emissions. In addition, the mixed-use amenities offered in the NDD Plan as well as elsewhere on campus will provide local retail and dining options for students, further reducing the need to travel off campus for these amenities. The proposed ND Ph2 project is consistent with the NDD Plan and consists of 1,600 student housing beds in apartment-style units and student housing support services (e.g., retail, fitness space, laundry, group study space). As the proposed ND Ph2 project is student housing with supportive services within or near UCR's main campus, for students already attending UCR, this would result in shifts in modes of transportation (i.e., walking or bicycling) and would discourage vehicle travel to the main campus for educational purposes and the surrounding community for supportive services, thus reducing vehicle emissions.

Operation of the proposed ND Ph2 project would result in the emissions of CO, VOCs, NOx, SOx, PM_{10}, and $PM_{2.5}$. Operational emissions are expected from the following primary sources: mobile source (vehicular trips and vehicle miles traveled associated with the project's land use types)[8] and area sources (consumer products, architectural coatings, and landscape maintenance equipment). The operational emissions of the proposed ND Ph2 project were estimated using CalEEMod version 2022.1. CalEEMod uses project-specific information, including the project's land uses, square footage for different uses (e.g., student housing, recreation, surface parking, etc.), and location to model a project's emissions. The CalEEMod default inputs, project-specific inputs, and model results are provided in Appendix A to this Addendum.

The proposed ND Ph2 project would result in emissions of criteria pollutants during operation from area sources (consumer products, landscape maintenance, and architectural coatings) and mobile sources (vehicle trips). There are no energy source emissions as natural gas will not be used. Table 4.1.3-2 shows the operation emissions by emission source generated by the proposed ND Ph2 project do not exceed the applicable SCAQMD regional thresholds for emissions of any criteria pollutants.

[8] A primary objective of the NDD Plan, including the proposed ND Ph2 project, is to provide on-campus student housing, transitioning students from commuter to resident status, thereby reducing the need to use vehicles and reducing vehicle emissions. In addition, the mixed-use amenities offered in the proposed ND Ph2 project as well as elsewhere on campus will provide local retail and dining options for students, further reducing the need to travel off campus for these amenities. As such, the assumed trip length in CalEEMod has been updated for the "Apartment Mid-Rise" land use type to reflect the more realistic travel behavior (vehicle miles traveled per day) for students who live in on-campus student housing versus people who live in apartments, consistent with the trip length and trip purposes from the LRDP EIR.

Table 4.1.3-2 Regional Operational Emissions

Emission Source	Maximum Daily Emissions (lbs/day)					
	VOC	NO_X	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer						
Mobile Source	27.54	25.69	234.08	0.56	48.42	12.58
Area Source	13.19	6.81	27.81	0.04	0.54	0.54
Winter						
Mobile Source	25.62	27.54	196.85	0.53	48.42	12.58
Area Source	10.93	6.57	2.80	0.04	0.53	0.53
Total Maximum Daily Emissions	**40.73**	**34.11**	**261.90**	**0.61**	**48.97**	**13.12**
SCAQMD Regional Thresholds	55	55	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: See Appendix A for modeling results. Some numbers may not add up precisely due to rounding considerations.

VOC – volatile organic compounds; NO_x = nitrogen oxide; CO = carbon monoxide; SO_x = Sulfur oxides; PM_{10} = Particulate matter 10 micrometers in diameter or less; $PM_{2.5}$ = Fine particulate matter 2.5 micrometers in diameter or less; lbs/day = pounds per day

As shown in Table 4.1.3-2, operational emissions from the proposed ND Ph2 project would be well below applicable SCAQMD regional thresholds, would not result in a cumulatively considerable increase of any criteria pollutants, and would be less than significant. The proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from construction and operational emissions.

c) Consistent with the discussion in the NDD Plan EIR, a project that would produce net emissions that exceed the SCAQMD's thresholds of significance for NOx, CO, PM_{10} or $PM_{2.5}$ expose sensitive receptors to substantial concentrations of these local pollutants and would be considered significant. Table 4.1.3-3 identifies localized impacts of the proposed ND Ph2 project at the nearest receptor location in the vicinity. For the purposes of this analysis, emissions associated with peak demolition, site preparation, and grading activities are considered for the purposes of LST since these phases represent the maximum localized emissions that would occur during construction. Other construction phases of development that overlap would result in fewer emissions and consequently lesser impacts.

Table 4.1.3-3 Localized Construction Emissions

	Maximum Emissions (lbs/day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Demolition Maximum Daily Emissions	27.34	23.49	7.41	2.04
SCAQMD Localized Significance Thresholds (LSTs)	118	602	8	4
Threshold Exceeded?	**No**	**No**	**No**	**No**
Site Preparation Maximum Daily Emissions	39.74	35.47	7.47	4.35
SCAQMD Localized Significance Thresholds (LSTs)	220	1,230	21	7
Threshold Exceeded?	**No**	**No**	**No**	**No**
Grading Maximum Daily Emissions	34.29	30.17	4.12	2.31
SCAQMD Localized Significance Thresholds (LSTs)	237	1,346	23	8
Threshold Exceeded?	**No**	**No**	**No**	**No**
Building Construction Maximum Daily Emissions	12.17	14.23	0.54	0.49
SCAQMD Localized Significance Thresholds (LSTs)	118	602	8	4
Threshold Exceeded?	**No**	**No**	**No**	**No**
Paving Maximum Daily Emissions	7.45	9.98	0.35	0.32
SCAQMD Localized Significance Thresholds (LSTs)	118	602	8	4
Threshold Exceeded?	**No**	**No**	**No**	**No**
Architectural Coating Maximum Daily Emissions	1.18	1.52	0.04	0.03
SCAQMD Localized Significance Thresholds (LSTs)	118	602	8	4
Threshold Exceeded?	**No**	**No**	**No**	**No**

Notes: See Appendix A for modeling results. Some numbers may not add up precisely due to rounding considerations. Maximum on-site emissions are the highest emissions that would occur on the project site from on-site sources, such as heavy construction equipment and architectural coatings, and excludes off-site emissions from sources such as construction worker vehicle trips and haul truck trips.

NO_x = nitrogen oxide; CO = carbon monoxide; PM_{10} = Particulate matter 10 micrometers in diameter or less; $PM_{2.5}$ = Fine particulate matter 2.5 micrometers in diameter or less; lbs/day = pounds per day

As shown in Table 4.1.3-3, emissions from construction of the proposed ND Ph2 project would not exceed the SCAQMD thresholds and would have a less than significant impact for localized project-related construction-source emissions. Consistent with the NDD Plan EIR discussion, the proposed ND Ph2 project would not include typical sources of acutely and chronically hazardous Toxic Air Contaminants (TACs) such as industrial manufacturing processes and automotive repair facilities, or substantial sources of diesel particulate emissions (e.g., truck stops warehouse distribution facilities). Long-term operation of the NDD Plan, including the proposed ND Ph2 project, would not have any significant impacts on pollutant concentrations at nearby receptors.

Therefore, the proposed ND Ph2 project would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant. The proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from exposing sensitive receptors to substantial pollutant concentrations.

d) The IS prepared for the NDD Plan states that construction of projects within the NDD Plan area would require the use of diesel-fueled equipment and architectural coatings, both of which have an associated odor but these would be short-term and temporary and would not be pervasive enough to affect a substantial number of people nor would they be objectionable. The land use and operational activities for the proposed ND Ph2 project would be consistent with those identified in the NDD Plan and analyzed in the NDD Plan IS. Odor sources generated by the proposed ND Ph2 are anticipated to be similar to those identified in the NDD Plan IS (e.g., cooking activities, maintenance products); these odors would be temporary and limited in area and are not pervasive enough to cause objectionable odors affecting a substantial number of people. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to odors.

4.1.4 Biological Resources

Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the Certified EIR?	Do New Circumstances Require Major Revisions to the Certified EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?	No Impact	No	No	No	No MMs, PSs, or PPs required
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	No Impact	No	No	No	No MMs, PSs, or PPs required
c) Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	No Impact	No	No	No	No MMs, PSs, or PPs required
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	Less than Significant with MMs Incorporated	No	No	No	MM BIO-1 MM BIO-2
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	No Impact	No	No	No	No MMs, PSs, or PPs required
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	No Impact	No	No	No	No MMs, PSs, or PPs required

a) Prior to redevelopment, the NDD Plan area was developed with the Canyon Crest Family Student Housing Complex. The NDD Plan area, which includes the ND Ph2 site, does not contain sensitive biological resources and thus would not impact special-status species. The proposed

ND Ph2 project would be constructed on a previously disturbed and currently vacant portion of the NDD Plan area. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service.

b) The NDD Plan area is not located within a riparian zone or within gnatcatcher critical habitat and thus would not impact a sensitive natural community. Therefore, the proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan IS and would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to riparian habitat or other sensitive natural community.

c) The NDD Plan area does not contain State or federally protected seasonal wetlands or jurisdictional waters of the United States. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to wetlands.

d) The NDD Plan area includes previously disturbed land and is surrounded by urban land uses and does not serve as a wildlife corridor or a regional connection to or between open space areas. As outlined in the ND Ph2 Tree Inventory Report (provided in Appendix B to this Addendum), the ND Ph2 project survey area contains a total of 118 trees. Development of the proposed ND Ph2 project would replant or remove approximately 48 trees while retaining approximately 70 trees. The approximately 48 trees that will be removed (if not replanted) are not considered trees of value and will be replaced at 1:1 ratio per the UCR Tree Preservation and Replacement Guidelines (UCR 2022). As determined in the NDD Plan EIR, removal of trees while implementing the NDD Plan could potentially impact nesting birds. MM BIO-1 and MM BIO-2 would be required during the implementation of ND Ph2 to reduce any potential impact on nesting bird species to a less than significant level.

Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to wildlife movement or impact wildlife corridors or linkages.

4.1.4(d) Applicable MMs, PSs and/or PPs:

MM BIO-1 (modified in 2023): Prior to the onset of construction activities that would result in the removal of mature trees and would occur between mid-February and end of August ~~March and mid-August~~, surveys for nesting special-status avian species and raptors shall be conducted following the California Department of Fish and Wildlife (CDFW) guidelines. If no active avian nests are identified on or within 250 feet of the construction site, no further mitigation is necessary.

MM BIO-2: If active nests of special-status avian species or raptors are found within the construction footprint or within 250 feet of the construction site, exterior construction activities shall be delayed until the young have fledged or appropriate mitigation measures responding to the specific situation have been developed and implemented in consultation with CDFW.

e) The NDD Plan would not conflict with any policies for the protection of biological resources. The UCR Tree Preservation and Replacement Guidelines (UCR 2022) include applicable tree replacement ratios for the removal of specific trees. Development under the proposed ND Ph2 project would remove approximately 48 trees while retaining approximately 70 trees. The approximately 48 trees that will be removed (if not replanted) are not considered trees of value and will be replaced at 1:1 ratio per the UCR Tree Preservation and Replacement Guidelines (UCR 2022). Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS, that the NDD Plan would not conflict with any policies for the protection of biological resources, and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to conflict with the UCR Tree Preservation and Replacement Guidelines.

f) The NDD Plan area, which includes the ND Ph2 site, is not within the portion of the campus that is included in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Criteria Cell and therefore is not subject to any Conservation efforts. As outlined above, the NDD Plan area, which includes the ND Ph2 site, includes previously disturbed land and is surrounded by urban land uses and does not serve as a wildlife corridor or a regional connection to or between open space areas. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to conflict with the Western Riverside MSHCP.

4.1.5 Cultural Resources

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Cause a substantial adverse change in the significance of a historical resource as pursuant to Section 15064.5?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	Less than Significant with MM Incorporated	No	No	No	MM CUL-1
c)	Disturb any human remains, including those interred outside of dedicated cemeteries?	Less than Significant with PP Incorporated	No	No	No	PP 4.5-5

a) The NDD Plan IS analyzed the Canyon Crest Family Student Housing complex which concluded it was not eligible for listing in the National Register of Historic Places or California Register of Historical Resources. Demolition of the Canyon Crest Family Student Housing complex occurred as part of the demolition activities for the ND Ph1. The proposed ND Ph2 project site is currently vacant with only remnant landscape and hardscaped areas; no historical resources exist within the ND Ph2 project site. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to historical resources.

b) The Eastern Information Center (EIC) conducted a cultural resources records search and literature review for the NDD Plan area, which includes the ND Ph2 site, as part of the NDD Plan IS. It was determined that while no evidence of prehistoric activity has been previously identified in the NDD Plan area, and the field survey did not result in discovery of any unknown surface archaeological resources, the NDD Plan area is situated in an area that was traversed by Native American groups, as evidenced by sites located a short distance to the southwest. Therefore, consistent with the NDD Plan IS, the proposed ND Ph2 project would be subject to MM CUL-1 in the unlikely event unknown archaeological resources are encountered during earth-disturbing activities. Therefore, the proposed project would be consistent with the requirements of the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to archaeological resources.

4.1.5(b) Applicable MMs, PSs and/or PPs:

MM CUL-1: If an archaeological resource is discovered during construction, all soil-disturbing work within 100 feet of the find shall cease and the University Representative shall contact a qualified archaeologist meeting the Secretary of Interior standards within 24 hours of discovery to inspect the site. If a resource within the project area of potential effect is determined to qualify as a unique archaeological resource (as defined by CEQA), the University shall devote adequate time and funding to determine if it is feasible, through project design measures to preserve the find intact. If it cannot be preserved, the University shall retain a qualified non-University archaeologist to design and implement a treatment plan, prepare a report, and salvage the material, as appropriate. Any important artifacts recovered during monitoring shall be cleaned, catalogued, and analyzed, with the results presented in a report of finding that meets professional standards.

a. If significant Native American cultural resources are discovered, as determined by the consulting archaeologist for which a Treatment Plan must be prepared, the developer, or his archaeologist shall immediately contact the University Representative. The University Representative shall contact the appropriate Tribal representatives.
b. If requested by Tribal representatives, the University, the developer, or faith, consult on the discovery and its disposition (e.g., avoidance, preservation, return of artifacts to tribe).

c) California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The procedures for the treatment of Native American human remains are contained in California Health and Safety Code Sections 7050.5 and 7052 and California PRC Section 5097. If human remains are discovered during any construction activities, potentially damaging ground-disturbing activities around the remains and a 100-foot-buffer area shall be halted immediately, and UCR shall notify the Riverside County Coroner and the Native American Heritage Commission (NAHC) immediately, according to PRC Section 5097.98 and Section 7050.5 of California's Health and Safety Code. If the remains are determined by the NAHC to be Native American, the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. Following the Coroner's findings, UCR and the NAHC-designated most likely descendant shall recommend the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in California PRC Section 5097.94. Compliance with California Health and Safety Code Sections 7050.5 and 7052 and California PRC Section 5097 would provide an opportunity to avoid or minimize the disturbance of human remains, and to appropriately treat any remains that are discovered.

No formal cemeteries are known to have occurred on the campus, including the entire NDD Plan area; therefore, the likelihood of encountering human remains is considered low. Ground-disturbing construction activities, however, could uncover previously unknown human remains. Consistent with the requirements of the NDD Plan IS, the proposed ND Ph2 project would incorporate PP 4.5-5 to reduce potential impacts to human remains to a less than significant level.

4.1.5(c) Applicable MMs, PSs and/or PPs:

PP 4.5-5: In the event of the discovery of a burial, human bone, or suspected human bone, all excavation or grading in the vicinity of the find shall halt immediately and the area of the find shall be protected and the University immediately shall notify the Riverside County Coroner of the find and comply with the provisions of PRC Section 5097 with respect to Native American involvement, burial treatment, and re-burial, if necessary.

4.1.6 Energy

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
b)	Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required

These specific thresholds related to energy were not explicitly addressed in the certified NDD Plan EIR because this topic was not included in the CEQA Guidelines in effect at the time. However, Section 4.3, Greenhouse Gas Emissions, and Section 4.11, Utilities, did include an analysis of energy consumption for the NDD Plan. This Addendum provides an analysis of project's potential effects related to energy, using the analysis from Section 4.3 and Section 4.11 of the NDD Plan EIR and current CEQA Guidelines thresholds related to project energy impacts.

a) The UCR campus energy needs are met by utilizing electricity and natural gas. UCR purchases electricity for campus operations from RPU and through a power purchase agreement for on-site generation from the campus' solar infrastructure. The campus supply of natural gas is derived from Southern California Gas, which currently delivers natural gas to campus through high pressure distribution lines. UCR privately distributes medium pressure gas throughout East Campus and West Campus. The proposed ND Ph2 project would require the use of electricity for lighting, appliances, heating, and cooling. No natural gas would be used for space or water heating pursuant to the UC Policy on Sustainable Practices. The proposed ND Ph2 project's electricity demand would be served by RPU. Implementation of the proposed ND Ph2 project would connect to the electrical line located within the public rights-of-way along Canyon Crest Drive or W. Linden Street.

The proposed ND Ph2 project construction activities would result in a temporary increase in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. The proposed ND Ph2 project would also consume energy for building heating and cooling, refrigeration, lighting, electricity, and commercial equipment when occupied and in use. However, the proposed ND Ph2 project would be required to comply with the energy conservation strategies expressed in the UC Policy on Sustainable Practices and its overall design would meet minimum Leadership in Energy and Environmental Design (LEED) Gold certification. New visitor and employee vehicle trips and fleet vehicle trips associated with ND Ph2 operations would also be a source of energy consumption.

The construction and operational energy demand of the proposed ND Ph2 project were estimated using CalEEMod version 2022.1. Direct and indirect energy consumption associated with construction and operations were quantified based on estimates from CalEEMod as well as supplemental data sources from California Air Resources Board (CARB) related to fuel demand for construction equipment and vehicular activity. The CalEEMod default inputs, project-specific inputs, and model results are provided in Appendix A to this Addendum.

Construction

The total electricity usage from on-site ND Ph2 project construction-related activities is estimated to be approximately 160,208 kilowatt hours (kWh). The proposed ND Ph2 construction activities would also consume an estimated 60,593 gallons of diesel fuel for construction equipment use, 79,652 gallons of fuel for construction worker trips, and 11,086 gallons of fuel for construction vendor/haul trips, which represent a “single-event” diesel fuel and fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose. Use of fuel during construction would not be atypical for the type of construction proposed because there are no unusual or energy-intensive aspects of the project’s construction process and construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies. Regarding construction worker trips, the 2022 Integrated Energy Policy Report (IEPR) released by the California Energy Commission (CEC) has shown that fuel efficiencies are getting better within on- and off-road vehicle engines due to more stringent government requirements (CEC 2022). Therefore, energy consumption for construction activities would not be considered inefficient, wasteful, or otherwise unnecessary.

Operation

Energy would also be consumed by the proposed ND Ph2 project-generated traffic as a function of total vehicle miles traveled (VMT) and estimated vehicle fuel economies of vehicles accessing the project site. The proposed ND Ph2 project would result in an estimated 24,726,500 annual VMT and associated annual fuel consumption of 1,024,346 gallons of fuel. A VMT Screening Evaluation was prepared for the proposed ND Ph2 project (further discussed in Section 4.1.17 of this Addendum) following the Governor’s Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA. The proposed ND Ph2 project meets the Technical Advisory’s Low Area VMT for Residential and Office Projects screening criteria, the Transit Availability Screening criteria, and partially meets the Locally Serving Uses Screening criteria, and the proposed project is presumed to have a less than significant impact on VMT consistent with the findings of the NDD Plan EIR.

The proposed ND Ph2 project proposes conventional residential uses reflecting contemporary energy efficient/energy conserving designs and operational programs. The proposed ND Ph2 project operational energy demands are estimated to result in a 3,347,356 kWh/year of electricity. The ND Ph2 project does not propose uses that are inherently energy intensive and the energy demands in total would be comparable to other residential land use project of similar scale and configuration, that would also be required at a minimum to comply with applicable Title 24 standards. The proposed ND Ph2 project is anticipated to have reduced energy demands compared to other residential land use projects because it would also be required to comply with energy conservation strategies expressed in the UC Policy on Sustainable Practices and its overall design would meet minimum LEED Gold certification. Therefore, the proposed ND Ph2 project would not result in wasteful, inefficient, or unnecessary use of energy during construction or operation or associated potentially significant environmental impacts. The proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from energy consumption.

b) The proposed ND Ph2 project would be required to comply with all building design standards set in California Building Code (CBC) Title 24 which mandates implementation of energy efficient building design; abide by Senate Bill (SB) 100 standards as the proposed project would be powered by an existing State electricity grid; and comply with UC Policy on Sustainable Practices and other UC requirements related to energy reduction and carbon-free energy use.

2022 Integrated Energy Policy Report (IEPR)

As indicated above in Threshold 4.1.6 a), energy usage on the ND Ph2 project site during construction would be temporary in nature. In addition, energy usage associated with operation of the proposed ND Ph2 project would be relatively small in comparison to the State's available energy sources and energy impacts would be negligible at the regional level. Because California's energy conservation planning actions are conducted at a regional level and because the proposed ND Ph2 project's total impacts to regional energy supplies would be minor, the proposed ND Ph2 project would not conflict with California's energy conservation plans as described in the CEC's 2022 IEPR (CEC 2022). In addition, the proposed ND Ph2 project would comply with applicable 2022 Title 24 and California Green Building Standards Code, which would ensure the proposed ND Ph2 project would not otherwise interfere with, nor obstruct implementation of the goals presented in the 2022 IEPR.

2018 Riverside Public Utilities Integrated Resource Plan (IRP)

Electricity would be provided by RPU. RPU's 2018 IRP builds on existing State programs and policies (RPU 2018). As such, the proposed ND Ph2 Project is consistent with, and would not otherwise interfere with, nor obstruct implementation of the goals presented in the 2018 IRP. Additionally, the proposed ND Ph2 project will comply with the applicable Title 24 standards which would ensure that energy demands would not be inefficient, wasteful, or otherwise unnecessary. As such, development of the proposed ND Ph2 project would support the goals presented in the 2018 IRP.

The proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from conflicting with or obstructing a State or local plan for renewable energy or energy efficiency.

4.1.7 Geology and Soils

Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:					
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	Less than Significant with PSs and PPs Incorporated	No	No	No	PS Open Space 4 PS Conserv. 2 PS Conserv. 3 PP 4.6-1(a) PP 4.6-1(b) PP 4.6-1(c) PP 4.6-2(a) PP 4.6-2(b)
ii) Strong seismic ground shaking?	Less than Significant with PSs and PPs Incorporated	No	No	No	PS Open Space 4 PS Conserv. 2 PS Conserv. 3 PP 4.6-1(a) PP 4.6-1(b) PP 4.6-1(c) PP 4.6-2(a) PP 4.6-2(b)
iii) Seismic-related ground failure, including liquefaction?	No Impact	No	No	No	No MMs, PSs, or PPs required
iv) Landslides?	No Impact	No	No	No	No MMs, PSs, or PPs required
b) Result in substantial soil erosion or the loss of topsoil?	Less than Significant with PSs and PPs Incorporated	No	No	No	PS Open Space 4 PS Conserv. 2 PS Conserv. 3 PP 4.6-2(a) PP 4.6-2(b)

c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	Less than Significant with PPs Incorporated	No	No	No	PP 4.6-1(a) PP 4.6-1(b) PP 4.6-1(c)
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	Less than Significant with PPs Incorporated	No	No	No	PP 4.6-1(a) PP 4.6-1(b) PP 4.6-1(c)
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	No Impact	No	No	No	No MMs, PSs, or PPs required
f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Less than Significant with PP Incorporated	No	No	No	PP 4.5-4

a) i – ii) The campus is located approximately 5 miles southwest of the San Jacinto Fault Zone, 13.5 miles southwest of the San Andreas Fault Zone, 15 miles northeast of the Elsinore Fault Zone, and 20 miles southeast of the Cucamonga Fault Zone (California Department of Conservation, Geologic Hazards Interactive Web Maps, Earthquake Zone App., 2022). As such, there are no faults that cross the NDD Plan area, which includes the ND Ph2 site, and there is a low risk of surface fault rupture. The proposed ND Ph2 project still has the potential to be subject to ground shaking generated from seismic events that originate from the above-mentioned fault zones.

Similar to the NDD Plan IS discussion, the proposed ND Ph2 project would implement PP 4.6-1(a), PP 4.6-1(b), and PP 4.6-1(c) to ensure that the new buildings would be designed to be consistent with current seismic and geotechnical engineering practice to provide adequate safety levels, as defined in the California Code of Regulations (CCR) and the University Policy on Seismic Safety. In addition, a Geotechnical Investigation Report was prepared for the ND Ph2 project (provided in Appendix C to this Addendum) which included performing borings and geotechnical laboratory testing of soil samples to develop conclusions and recommendations for grading and earthwork, foundation, and concrete and asphalt design criteria and design recommendations, which will be incorporated into the ND Ph2 design and construction plans and specs.

The NDD Plan area, including the ND Ph2 site, would be implemented on East Campus where soil erosion hazard mostly ranges from slight to moderate. Similar to the NDD Plan IS discussion, the proposed ND Ph2 project would implement PS Open Space 4, PS Conservation 2, PS Conservation 3, PP 4.6-2(a), and PP 4.6-2(b), which would reduce the impacts from substantial soil erosion or the loss of topsoil to less than significant levels. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from seismic hazards and ground shaking.

4.1.7(a)(i) and (ii) Applicable MMs, PSs, and/or PPs:

PS Open Space 4: Provide landscaped buffers and setbacks along campus edges, such as Valencia Hill Drive and its extension south of Big Springs Road, Martin Luther King Boulevard, and the I-215/SR-60 freeway.

PS Conservation 2: Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce storm water runoff, and maintain existing landscapes, including healthy mature trees whenever possible.

PS Conservation 3: Continue with the increase in building densities on campus, particularly in academic zones, in order to preserve open space and conserve limited land resources and the agricultural fields.

PP 4.6-1(a): During project-specific building design, a site-specific geotechnical study shall be conducted under the direct supervision of a California Registered Engineering Geologist or licensed geotechnical engineer to assess seismic, geological, soil, and groundwater conditions at each construction site and develop recommendations to prevent or abate any identified hazards. The study shall follow applicable recommendations of CDMG Special Publication 117 and shall include, but not necessarily be limited to:

- Determination of the locations of any suspected fault traces and anticipated ground acceleration at the building site
- Potential for displacement caused by seismically induced shaking, fault/ground surface rupture, liquefaction, differential soil settlement, expansive and compressible soils, landsliding, or other earth movements or soil constraints
- Evaluation of depth to groundwater

The structural engineer shall incorporate the recommendations made by the geotechnical report when designing building foundations.

PP 4.6-1(b): The Campus shall continue to implement its current seismic upgrade program.

PP 4.6-1(c): The Campus will continue to fully comply with the University of California's Policy for Seismic Safety, as amended. The intent of this policy is to ensure that the design and construction of new buildings and other facilities shall, as a minimum, comply with seismic provisions of CCR, Title 24, California Administrative Code, the California State Building Code, or local seismic requirements, whichever requirements are most stringent.

PP 4.6-2(a): The Campus shall continue to implement dust control measures consistent with SCAQMD Rule 403—Fugitive Dust during the construction phases of new project development. The following actions are currently recommended to implement Rule 403 and have been quantified by the SCAQMD as being able to reduce dust generation between 30 and 85 percent depending on the source of the dust generation. The Campus shall implement these measures as necessary to reduce fugitive dust. Individual measures shall be specified in construction documents and require implementation by construction contractor:

i. Apply water and/or approved nontoxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas that have been inactive for 10 or more days)

ii. Replace ground cover in disturbed areas as quickly as possible

iii. Enclose, cover, water twice daily, or apply approved chemical soil binders to exposed piles with 5 percent or greater silt content

iv. Water active grading sites at least twice daily

v. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour over a 30-minute period

vi. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code

vii. Sweep streets at the end of the day if visible soil material is carried over to adjacent roads

viii. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip

ix. Apply water three times daily or chemical soil stabilizers according to manufacturers' specifications to all unpaved parking or staging areas or unpaved road surfaces

x. Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads

PP 4.6-2(b): In compliance with National Pollution Discharge Elimination System (NPDES), the Campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003):

i. Public education and outreach on stormwater impacts

ii. Public involvement/participation

iii. Illicit discharge detection and elimination

iv. Pollution prevention/good housekeeping for facilities

v. Construction site stormwater runoff control

vi. Post-construction stormwater management in new development and redevelopment

a) iii – iv) The Geotechnical Investigation Report prepared for the proposed ND Ph2 project, determined that given the deep groundwater conditions at the site, the potential for liquefaction and liquefaction-related secondary effects following a seismic event is negligible. The NDD Plan area, which includes the ND Ph2 project site, is characterized by relatively flat topography and would not be subject to landsides and no impact would occur. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from liquefaction or landslides.

b) The NDD Plan area, which includes the ND Ph2 site, is located in the East Campus area where erosion hazards ranges from slight to moderate and with implementation of PS Open Space 4, PS Conservation 2, PS Conservation 3, PP 4.6-2(a), and PP 4.6-2(b), the potential impact from substantial soil erosion or the loss of topsoil would be reduced to a less than significant level. Similar to the NDD Plan, the proposed ND Ph2 project would implement these PSs and PPs. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to soil erosion and loss of topsoil.

4.1.7(b) Applicable MMs, PSs, and/or PPs:

Refer to **PS Open Space 4, PS Conservation 2, PS Conservation 3, PP 4.6-2(a), and PP 4.6-2(b)** above.

c-d) The proposed ND Ph2 project would implement PP 4.6-1(a), PP 4.6-1(b), and PP 4.6-1(c) to ensure that the new buildings would be designed to be consistent with current seismic and geotechnical engineering practice to provide adequate safety levels, as defined in the CCR and the University Policy on Seismic Safety. This is consistent with the requirements of the NDD Plan IS. In addition, the Geotechnical Investigation Report prepared for the proposed ND Ph2 project indicated that the near-surface soils across the ND Ph2 project site are predominantly granular containing low to negligible volumes of clay particles which have a low expansion and collapse potential. The report concluded the foundation movement associated with expansive near-surface soil would be negligible. Therefore, the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from an unstable geologic unit or soil.

4.1.7(c) and (d) Applicable MMs, PSs, and/or PPs:

Refer to **PP 4.6-1(a), PP 5.6-1(b), and PP 4.6-1(c)** above.

e) There are no septic tanks or alternative wastewater disposal systems in the NDD Plan area, including the ND Ph2 project site. Development under ND Ph2 would be served by the existing municipal sewer system. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to having soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.

f) As outlined in the NDD Plan IS, a paleontological records search was conducted at the Natural History Museum of Los Angeles in 2017 and indicated the NDD Plan area, including the ND Ph2 project site, was not sensitive for fossils at depths of less than ten feet. The maximum depth of excavation for the proposed ND Ph2 project would be approximately 10 feet, but since there is the potential to impact previously unknown paleontological resources during earth-disturbing activities, implementation of PP 4.5-4 would be implemented for the ND Ph2 project, consistent with the requirements under the NDD Plan EIR. PP 4.5-4 would reduce potential impacts to unknown paleontological resources to a less than significant impact. Therefore, the proposed project would be consistent with the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to paleontological resources.

4.1.7(f) Applicable MMs, PSs, and/or PPs:

PP 4.5-4: Construction specifications shall require that if a paleontological resource is uncovered during construction activities:

i. A qualified paleontologist shall determine the significance of the find.

ii. The Campus shall make an effort to preserve the find intact through feasible project design measures.

iii. If it cannot be preserved intact, then the University shall retain a qualified non-University paleontologist to design and implement a treatment plan to document and evaluate the data and/or preserve appropriate scientific samples.

iv. The paleontologist shall prepare a report of the results of the study, following accepted professional practice.

v. Copies of the report shall be submitted to the University and the Riverside County Museum.

4.1.8 Greenhouse Gas Emissions

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less than Significant with MMs Incorporated	No	No	No	MM GHG-1
b)	Conflict with an applicable plan, policy, or regulation adopted for the purpose or reducing the emissions of greenhouse gases?	Less than Significant with MMs Incorporated	No	No	No	No MMs, PSs, or PPs required

Since the certified NDD Plan EIR, the UC Policy on Sustainable Practices has been updated periodically with the most recent update in July 2023. The UC Policy on Sustainable Practices include strategies for reducing GHG emissions, meeting climate neutrality from Scope 1 and Scope 2 emissions by 2025, and meeting climate neutrality from specific Scope 3 sources by 2050 or sooner. For purposes of determining the significance of project-related GHG emissions, this Addendum provides an analysis of the proposed ND Ph2 project's compliance with the most current UC Policy on Sustainable Practices and concludes that the project would be consistent and therefore would not result in new significant effects or substantially more severe significant effects than what was disclosed in the NDD Plan EIR.

a) As described in the NDD Plan EIR, construction and operation from buildout of the NDD Plan would generate GHG emissions that would exceed the SCAQMD thresholds of significance for individual projects. Construction and operation of the NDD Plan, including the proposed ND Ph2 project, would generate direct emissions from the use of electricity, increasing existing campus-wide emissions.

The construction and operation GHG emissions of the proposed ND Ph2 project were estimated using CalEEMod version 2022.1. The CalEEMod default inputs, project-specific inputs, and model results are provided in Appendix A to this Addendum.

Construction

As discussed in the NDD Plan EIR, the construction activities required to facilitate buildout of the NDD Plan would include the use of heavy-duty construction equipment. Most of the construction equipment (e.g., backhoes, cranes, rubber-tired loaders, scrapers, and haul trucks) relies on fossil fuels, primarily diesel, as an energy source. The combustion of fossil fuels in construction equipment results in GHG emissions of CO_2 and much smaller amounts of methane (CH_4) and nitrous oxide (N_2O). Emissions of GHG would also result from the combustion of fossil fuels from haul trucks and vendor trucks delivering materials, and construction worker vehicles commuting to and from the project site. The combustion of gasoline in motor vehicles results in GHG emissions of CO_2 and smaller amounts of CH_4 and N_2O. The combustion of diesel in heavy-duty trucks results in GHG emissions of CO_2 and much smaller amounts of CH_4 and N_2O. The ND

Ph1 project resulted in 2,241 metric tons of carbon dioxide equivalent ($MTCO_2e$) and the total NDD Plan construction emissions would result in 7,280 $MTCO_2e$.

Construction GHG emissions would be short-term and would cease after the proposed project has been built out. The other primary GHGs (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) are typically associated with specific industrial sources and are not expected to be emitted during construction. The construction-related emissions of GHG associated with construction equipment and activities were estimated using the CalEEMod model. Construction activity was modeled based on the construction schedule, equipment types which are similar to those noted in the NDD Plan EIR, and activity levels described above for the air quality analysis.

The proposed ND Ph2 project would result in approximately 1,771.2 $MTCO_2e$, which, when combined with the ND Ph1 project emissions, would result in approximately 4,012 $MTCO_2e$, and is within the estimated total NDD Plan construction emissions of 7,280 $MTCO_2e$. Therefore, the proposed project would be consistent with the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to GHG construction emissions.

SCAQMD recommends that construction emissions be amortized over a 30-year project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies. This is reflected in Table 4.1.8-1 below.

Operation

As discussed in the NDD Plan EIR, both the ND Ph1 project and the total NDD Plan were anticipated to generate GHG emissions that would exceed the SCAQMD thresholds of significance. The remaining phases of the NDD Plan (excluding ND Ph1) are anticipated to result a Project-Level threshold of 6.9 $MTCO_2e$ per year per service population where the SCAQMD 2035 threshold is 4.1 $MTCO_2e$ per year per service population. The NDD Plan EIR noted that while the NDD Plan would exceed SCAQMD threshold of significance for individual projects, the campus as a whole would comply with the UC Policy on Sustainable Practices and therefore achieve or exceed emissions reductions necessary to meet State targets.

Similar to the NDD Plan EIR, operational activities associated with the proposed ND Ph2 project will result in emissions of CO_2, CH_4, N_20, and refrigerants (R) from the following primary sources:

- Area Source Emissions – associated with landscape maintenance equipment from fuel combustion and evaporation of unburned fuel.
- Energy Source Emissions – energy sources used for buildings such as electricity and natural gas (annual electricity usage is estimated at 3,347,356 kWh and natural gas will not be used).
- Mobile Source Emissions – from vehicle trips generated by the proposed project.[9]
- Water Supply, Treatment, and Distribution – from the production of electricity used to convey, treat, and distribute water and wastewater (annual water usage is estimated at approximately 29,500,000 gallons).

[9] A primary objective of the NDD Plan, including the proposed ND Ph2 project, is to provide on-campus student housing, transitioning students from commuter to resident status, thereby reducing the need to use vehicles and reducing vehicle emissions. In addition, the mixed-use amenities offered in the proposed ND Ph2 project as well as elsewhere on campus will provide local retail and dining options for students, further reducing the need to travel off campus for these amenities. As such, the assumed trips lengths in CalEEMod has been updated for the "Apartment Mid-Rise" land use type to reflect the more realistic travel behavior (vehicle miles traveled per day) for students who live in on-campus student housing versus people who live in apartments, consistent with the trip length and trip purposes from the LRDP EIR.

- Solid Waste – generation and disposal of solid waste which results in emissions as materials breakdown in landfills (annual waste generated is estimated at 395.31 tons).
- Refrigerants – air conditioning (A/C) equipment associated with buildings.

As shown in Table 4.1.8-1, construction and operation GHG emissions generated by the proposed project would result in a total of approximately 10,484.60 MTCO2e/year.

Table 4.1.8-1 ND Ph2 Construction and Operational GHG Emissions

	Maximum Emissions (lbs/day)				
Source	**CO_2**	**CH_4**	**N_2O**	**R**	**Total CO_2e**
Annual Construction-Related Emissions Amortized Over 30 Years	58.17	2.29E-03	2.54E-03	4.92E-02	59.04
Mobile	9,052.67	0.40	0.44	15.56	9,209.87
Area	102.17	0.00	0.00	0.00	102.30
Energy	910.73	0.05	0.01	0.00	913.79
Water	56.02	0.60	0.01	0.00	75.49
Solid Waste	35.27	3.53	0.00	0.00	123.40
Refrigerants	0.00	0.00	0.00	0.71	0.71
Total CO_2e (All Sources)	**10,484.60**				
Emissions Per Service Population[1]	6.55 MT CO_2e				
SCAQMD 2035 Project-Level Threshold[2]	4.1 MT CO_2e				
SCAQMD 2035 Project-Level Threshold Exceeded?	**Yes**				
Remaining NDD Plan Project-Level Threshold	6.9 MT CO_2e				
Remaining NDD Plan Project-Level Threshold Exceeded?	**No**				

[1]Service population is generally defined as the sum of residential and employment population of a project. The emissions per service population are a per capita value that is based on the total emissions divided by the service population.

[2]SCAQMD Project-Level Threshold for 2035: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf

Similar to the NDD Plan EIR, as shown in Table 4.1.8-1, construction and operation GHG emissions generated by the proposed ND Ph2 project would generate GHG emissions that would exceed the SCAQMD threshold of significance for individual projects but would not exceed the remaining NDD Plan Project-Level threshold. While the proposed ND Ph2 project would exceed SCAQMD recommended threshold of significance for individual projects, the campus as a whole would comply with the UC Policy on Sustainable Practices. Similar to the NDD Plan EIR discussion, the campus would be required to meet climate neutrality from Scope 1 and Scope 2 emissions by 2025 and meet climate neutrality from specific Scope 3 sources by 2050 or sooner including implementation of MM GHG-1. As such, the Campus would achieve emissions reductions necessary to meet State targets with compliance with the UC Policy on Sustainable Practices. Therefore, the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to GHG emissions.

4.1.8(a) Applicable MMs, PSs, and/or PPs:

MM GHG-1: By May 1, 2026, UC Riverside shall purchase carbon offsets and/or renewable energy certificates to achieve campus-side carbon neutrality in Scope 1 and 2 emissions by 2025, consistent with UC Policy on Sustainable Practices.

b) As discussed in the NDD Plan EIR, the NDD Plan is consistent with the State's Executive Orders S-3-05 and B-30-15, which are orders from the State's Executive Brand for the purpose of reducing GHG emissions. These strategies call for developing more efficient land-use patterns to match population increases, workforce, and socioeconomic needs for the full spectrum of the population. The NDD Plan EIR noted that the UC Policy on Sustainable Practices and specifically the Carbon Neutrality Initiative would ensure consistency with EO B-55-18. The proposed ND Ph2 project is within the development assumptions of the NDD Plan and would comply with the UC Policy on Sustainable Practices and therefore would also be consistent with the State's Executive Orders noted above.

As outlined in the NDD Plan EIR, CARB's 2017 Climate Change Scoping Plan detailed measures designed to meet the goals set by SB 32[10]. The NDD Plan was anticipated to meet or exceed the goals set by SB 32. Further, the UCR GHG reduction measures identified in Table 4.3-6 (*GHG Reduction Measures in Current Practice*) and Table 4.3-7 (*GHG Reduction Measures for Future Implementation*) of the NDD Plan EIR were anticipated to further lower emissions resulting from operation of the NDD Plan and provide design measures that will reduce GHG emissions and provide consistency with CARB's 2017 Climate Change Scoping Plan. The NDD Plan's post-2020 emissions trajectory was expected to follow a declining trend, consistent with the 2030 and 2050 targets and Executive Orders (EO) S-3-05 and B-30-15.

The UC Policy on Sustainable Practices commits UC campuses, including UCR, to achieving carbon neutrality in terms of Scopes 1 and 2 emissions by 2025 and carbon neutrality in terms of all scopes by 2050 or sooner. The UC Policy on Sustainable Practices requires each campus to develop strategies for meeting the University's goals in twelve areas of sustainable practices. These goals apply to UCR as a whole, and UC Policy does not require each new project to necessarily meet the goals individually. Nonetheless, the NDD Plan, including the proposed ND Ph2 project, would not conflict with the goals set forth in the Policy. The University requires all UC projects to achieve a minimum of LEED Gold Certification. The proposed ND Ph2 project's overall design would meet minimum LEED Gold certification. The proposed ND Ph2 project would include the following sustainable features that would provide greater energy, water and wastewater efficiencies than factored into the calculation of the reported GHG emissions:

- All buildings would be designed and constructed to be energy efficient. The exterior envelope would be optimized to improve thermal isolation. The exterior walls and roofs would have enhanced insulating qualities. High-performance glass would be used to promote daylighting and passive solar heat gain in the winter without excessive use of glazing. Some horizontal sunshades and vertical fins would be installed to reduce solar heat gains during the summer and allow passive solar heating during winter months.
- The general lighting in the buildings would be accomplished through a combination of daylighting and general artificial lighting. In areas of special function, specialty lighting would be utilized. Light fixtures and lighting system would be selected based on performance and aesthetics.
- The student housing units and common areas would be provided with heating, cooling, and ventilation from split system fan coil units. The units would also be provided with operable windows to provide natural ventilating and passive cooling whenever conditions are appropriate. Corridors will be provided ventilation air from dedicated outside air rooftop

[10] The CARB 2017 Scoping Plan outlines a pathway to achieving the reduction targets set under Senate Bill (SB 32), which are considered interim targets toward meeting the long-term 2045 carbon neutrality goal established by EO B-55-18.

package units. Cooling would also be provided at certain mechanical spaces such as main electrical rooms.

- High efficiency electrical and water fixtures and appliances would be included in the proposed housing.
- The proposed ND Ph2 project would include adequate facilities to encourage recycling and composting, and minimization of solid waste that would need landfill disposal.
- A minimal amount of vehicle parking would be provided to discourage use of personal vehicles by the residents.
- Bicycle parking would be provided throughout the ND Ph2 site to encourage bicycle use.
- The street network will be designed to encourage multi-model circulation.
- Climate-appropriate plant materials that require less irrigation will be used in all landscaped areas, except the recreational fields.
- Low-flow water fixtures, energy star appliances, high-efficiency irrigation systems, high-performance exterior building envelopes, insulated glazing, LED lighting, and natural ventilation will also be utilized.

As such, the proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from conflicting with an applicable plan, policy, or regulation adopted for the purpose or reducing the emissions of GHGs.

4.1.9 Hazards and Hazardous Materials

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less than Significant with PP Incorporated	No	No	No	PP 4.7-1
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	Less than Significant with PPs Incorporated	No	No	No	PP 4.7-2 PP 4.7-3
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	Less than Significant with PP Incorporated	No	No	No	PP 4.7-1
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?	No Impact	No	No	No	No MMs, PSs, or PPs required
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Less than Significant with PPs Incorporated	No	No	No	PP 4.7-7(a) PP 4.7-7(b)
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	No Impact	No	No	No	No MMs, PSs, or PPs required

a) Consistent with the NDD Plan EIR discussion, the primary sources of hazardous material use and disposal within the NDD Plan area would generally be typical household cleaning products and minor industrial related chemicals from housing and support land uses and would not involve the use, transport, or disposal of significant amounts of hazardous materials, including hazardous chemical, radioactive, and biohazardous materials. All phases of NDD Plan construction, including the ND Ph2 project, may involve small quantities of hazardous materials. However, compliance with local, State, and federal regulations would minimize risks associated with the routine transport, use, or disposal of hazardous materials during both construction and operation. As with all campus development, demolition and construction of the proposed ND Ph2 project would also be guided by existing Campus Environmental Health & Safety (EH&S) protocols for handling hazardous materials and PP 4.7-1. Compliance with such rules and regulations would minimize potential impacts from the routine transport, use, or disposal of hazardous materials during construction and operation of ND Ph2, to a less than significant level. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from the routine transport, use, or disposal of hazardous materials.

4.1.9(a) Applicable MMs, PSs, and/or PPs:

PP 4.7-1: The Campus shall continue to implement the current (or equivalent) health and safety plans, programs, and practices related to the use, storage, disposal, or transportation of hazardous materials, including, but not necessarily limited to, the Business Plan, the Broadscope Radioactive Materials License, and the following programs: Biosafety, Emergency Management, Environmental Health, Hazardous Materials, Industrial Hygiene and Safety, Laboratory/Research Safety, Radiation Safety, and Integrated Waste Management. These programs may be subject to modification as more stringent standards are developed or if the programs are replaced by other programs that incorporate similar health and safety protection measures.

b) A Phase I Environmental Site Assessment was conducted in 2018 for the NDD Plan EIR which identified two areas of recognized environmental concern (REC): the presence of lead in the soil above the California Department of Toxic Substances Control's (DTSC) modified screening level for residential land use (likely used historically on structures at the site) and the presence of organochlorine pesticides in the soil, probably resulting from termiticides used historically at the site. Further investigation of these RECs found that sample soil concentrations were below DTSC screening levels for future on-site student residents. No controlled or historical RECs were identified in connection with the NDD Plan area. In addition, the NDD Plan is guided by existing Campus EH&S protocols for handling hazardous materials and PP 4.7-2 and PP 4.7-3. Implementation of the NDD Plan, including the proposed ND Ph2 project, would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from the release of hazardous materials.

4.1.9(b) Applicable MMs, PSs, and/or PPs:

PP 4.7-2: The Campus shall perform hazardous materials surveys on buildings and soils, if applicable, prior to demolition. When remediation is deemed necessary, surveys shall identify all potential hazardous materials within the structure to be demolished, and identify handling and disposal practices. The Campus shall follow the practices during building demolition to ensure construction worker and public safety.

PP 4.7-3: The Campus will inform employees and students of hazardous materials minimization strategies applicable to research, maintenance, and instructional activities, and require the implementation of these strategies where feasible. Strategies include but are not limited to the following:

i. Maintenance of online database by EH&S of available surplus chemicals retrieved from laboratories to minimize ordering or new chemicals.

ii. Shifting from chemical usage to micro techniques as standard practice for instruction and research, as better technology becomes available.

c) The UCR Child Development Center, which includes a preschool, kindergarten, and childcare facility, is located immediately east and adjacent to the NDD Plan area boundary. The proposed STEM Education Center, located at the southwest corner of Blaine Street and Canyon Crest Drive, would be located immediately west of the NDD Plan area boundary. All NDD Plan developments, including the proposed ND Ph2 project, would handle hazardous materials and waste, as described above, and operations would comply with federal, State and local regulations, including PP 4.7-1 pertaining to hazardous waste. Adherence to these regulations and policy, which require proper handling techniques, disposal practices, and/or clean-up procedures, would ensure that risks associated with hazardous emissions or materials to the UCR Child Development Center and potential future proposed STEM Education Center[11] would be reduced to a less than significant level. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from emitting hazardous emissions or handling hazardous materials near a school.

4.1.9(c) Applicable MMs, PSs, and/or PPs:

Refer to **PP 4.7-1** above.

d) The NDD Plan area is not located on properties associated with a hazardous site listed under Government Code Section 65962.5, also known as the Cortese List or DTSC's Envirostor (in 2018 and 2023). As a result, development under the NDD Plan, including the proposed ND Ph2 project, would not create a significant hazard to the public or the environment and no impact would occur. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from being located on a hazardous materials site list.

[11] The proposed STEM Education Center is currently undergoing its planning and environmental process.

e) The UCR campus is not located within two miles of a public airport or public use airport and is not located in an airport land use plan. The closest airports to the UCR campus are Flabob Airport, which is located approximately four miles to the west, and March Air Reserve Base, which is located approximately six miles to the southeast. Therefore, development under the NDD Plan, including the proposed ND Ph2 project, would not be located in an airport land use plan and no impact would occur. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from being located within an airport land use plan.

f) UCR maintains an Emergency Action Plan (EAP) to guide campus personnel in case of an emergency. The proposed ND Ph2 project site is not located within an area currently identified as an emergency assembly area. None of the roads bordering the ND Ph2 project site are identified as critical access routes and is not anticipated to substantially interfere with the operation of traffic on Blaine Street, Canyon Crest Drive, W. Linden Street, or Watkins Drive. Most demolition and construction impacts would be restricted to the ND Ph2 project site, though implementation of the proposed project may result in temporary lane or roadway closures in coordination with PD&C, UCRPD, EH&S, and the RFD. Development of the proposed ND Ph2 project would adhere to emergency protocols laid out in the EAP as well as PP 4.7-7(a) and PP 4.7-7(b). Adherence with these policies would reduce the impact to a less than significant impact and no further mitigation is required. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from an adopted emergency response plan or emergency evacuation plan.

4.1.9(f) Applicable MMs, PSs, and/or PPs:

PP 4.7-7(a): To the extent feasible, the campus shall maintain at least one unobstructed lane in both directions on campus roadways. At any time only a single lane is available, the campus shall provide a temporary traffic signal, signal carriers (i.e., flag persons), or other appropriate traffic controls to allow travel in both directions. If construction activities require the complete closure of a roadway segment, the campus shall provide appropriate signage indicating alternative routes.

PP 4.7-7(b): To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, PD&C shall consult with the UCRPD, EH&S, and the RFD to disclose roadway closures and identify alternative travel routes.

g) The Box Springs Mountain hillsides southeast of Campus are classified as a Very High Fire Hazard Severity Zone and susceptible to wildland fires. The NDD Plan area, including the ND Ph2 project site, is not located adjacent to the southeast hills that pose a high risk for wildland fires. Therefore, the proposed ND Ph2 project would not place people or structures at risk from wildland fires and there would be no impact. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact from wildland fires.

4.1.10 Hydrology and Water Quality

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality?	Less than Significant with PSs and PPs Incorporated	No	No	No	PS Conserv. 2 PP 4.8-1
b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	Less than Significant with PSs and PPs Incorporated	No	No	No	PS Conserv. 5 PP 4.8-2(a) PP 4.8-2(b) PP 4.8-2(c)
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) Result in substantial erosion or siltation on- or off-site? (ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; (iii) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or (iv) Impede or redirect flood flows?	Less than Significant with PSs and PPs Incorporated	No	No	No	PS Conserv. 3 PP 4.8-3(c) PP 4.8-3(d) PP 4.8-3(e)
d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required

a) Development under the NDD Plan, including the proposed ND Ph2 project, would comply with the NPDES requirements which would ensure that campus stormwater quality is not substantially degraded. Additionally, PS Conservation 2 and PP 4.8-1 would be implemented to reduce potential impacts to water quality. Therefore, development of the proposed ND Ph2 project would have a less than significant impact. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to water quality.

4.1.10(a) Applicable MMs, PSs, and/or PPs:

PS Conservation 2: Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce storm water runoff, and maintain existing landscapes, including healthy mature trees whenever possible.

PP 4.8-1: The Campus will continue to comply with all applicable water quality requirements established by the SARWQCB.

b) Development of the NDD Plan, including the proposed ND Ph2 project, would modestly decrease impervious areas in relation to the Canyon Crest Family Student Housing complex that previously occupied the site and would, therefore, not interfere with groundwater recharge. In addition, PS Conservation 5 would be implemented which requires compliance with Title 24 requirements, which includes the California Plumbing Code and its water conservation measures. The increase in occupied building space would increase the demand for potable water that could indirectly increase demand for groundwater, as the campus is supplied domestic water by the City, which utilizes groundwater wells for potable water. However, development of ND Ph2 would implement PP 4.8-2(a) through PP 4.8-2(c) to promote conservation measures that would reduce demand for potable water, consistent with the NDD Plan EIR. Consequently, implementation of the proposed ND Ph2 project, would not substantially deplete groundwater supplies, and would have a less than significant impact to groundwater supplies and groundwater recharge. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to groundwater recharge and groundwater supplies.

4.1.10(b) Applicable MMs, PSs, and/or PPs:

PS Conservation 5: Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.

PP 4.8-2(a): To further reduce the campus' impact on domestic water resources, to the extent feasible, UCR will:

i. Install hot water recirculation devices (to reduce water waste)

ii. Continue to require all new construction to comply with applicable State laws requiring water-efficient plumbing fixtures, including but not limited to the Health and Safety Code and Title 24, California Code of Regulations, Part 5 (California Plumbing Code)

iii. Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time

iv. Install recovery systems for losses attributable to existing and proposed steam and chilled-water systems

v. Prohibit using water as a means of cleaning impervious surfaces

vi. Install water-efficient irrigation equipment to maximize water savings for landscaping and retrofit existing systems over time

PP 4.8-2(b): The Campus shall promptly detect and repair leaks in water and irrigation pipes.

PP 4.8-2(c): The Campus shall avoid serving water at food service facilities except upon request.

c) i – iv) Soil erosion hazards in the majority of the East Campus range from slight to moderate. Construction activities under the NDD Plan, including the proposed ND Ph2 project, could result in erosion but the impact would be temporary. The NPDES permits require that projects within the NDD Plan, including the proposed ND Ph2 project, develop and implement a Storm Water Pollution Prevention Plan (SWPPP) that includes control measures called BMPs for controlling erosion and release of sediment and other pollutants during construction.

UCR is not subject to the NPDES Phase I Municipal Separate Stormwater Sewer System (MS4) permit that the County of Riverside and incorporated cities of Riverside County within the Santa Ana Region are; rather, it is designated a non-traditional permittee under the Phase II Small MS4 General Permit. UCR was approved for coverage under the Phase II MS4 permit program (NPDES No. CAS000004) and is required to comply with the requirements of the MS4 permit, including implementation of a stormwater quality management program with the goal of accomplishing the requirements of the permit and reducing the amount of pollutants discharged in stormwater and urban runoff.

A Water Quality Management Plan (WQMP) is required for the proposed ND Ph2 project and will include BMPs to address any increased stormwater runoff and expected pollutants from the project during operation. As the WQMP will include BMPs to offset any increased stormwater runoff, the proposed ND Ph2 project would not increase the rate or amount of runoff that would result in flooding either on site or off site and would not exceed the capacity of the storm drain system. The NDD Plan area, including the ND Ph2 project site, is not located within a 100-year flood hazard area and the project would not re-direct flood flows. With compliance with the NPDES requirements, including implementation of a SWPPP during construction and the WQMP during operations, the proposed ND Ph2 project would have less than significant impacts related to stormwater runoff, flooding, erosion and polluted runoff. Furthermore, PS Conservation 3 and PP 4.8-3(c) through PP 4.8-3(e) would be implemented as part of the development under the NDD Plan and the proposed ND Ph2 project. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to stormwater runoff, flooding, erosion and polluted runoff.

4.1.10(c)(i) through (iv) Applicable MMs, PSs, and/or PPs:

PS Conservation 3: Continue with the increase in building densities on campus, particularly in academic zones, in order to preserve open space and conserve limited land resources and the agricultural fields.

PP 4.8-3(c): The Campus shall continue to implement dust control measures consistent with SCAQMD Rule 403—Fugitive Dust during the construction phases of new project development. The following actions are currently recommended to implement Rule 403 and have been quantified by the SCAQMD as being able to reduce dust generation between 30 and 85 percent depending on the source of the dust generation. The Campus shall implement these measures as necessary to reduce fugitive dust. Individual measures shall be specified in construction documents and require implementation by construction contractor:

i. Apply water and/or approved nontoxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas that have been inactive for 10 or more days)

ii. Replace ground cover in disturbed areas as quickly as possible

iii. Enclose, cover, water twice daily, or apply approved chemical soil binders to exposed piles with 5 percent or greater silt content

iv. Water active grading sites at least twice daily

v. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour over a 30-minute period

vi. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code

vii. Sweep streets at the end of the day if visible soil material is carried over to adjacent roads

viii. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip

ix. Apply water three times daily or chemical soil stabilizers according to manufacturers' specifications to all unpaved parking or staging areas or unpaved road surfaces

x. Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads

PP 4.8-3(d): In compliance with NPDES, the Campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003):

i. Public education and outreach on stormwater impacts

ii. Public involvement/participation

iii. Illicit discharge detection and elimination

iv. Pollution prevention/good housekeeping for facilities

v. Construction site stormwater runoff control

vi. Post-construction stormwater management in new development and redevelopment

PP 4.8-3(e): Prior to the time of design approval, the Campus will evaluate each specific project to determine if the project runoff would exceed the capacity of the existing storm drain system. If it is found that the capacity would be exceeded, one or more of the following components of the storm drain system would be implemented to minimize the occurrence of local flooding:

i. Multi-project stormwater detention basins

ii. Single-project detention basins

iii. Surface detention design

iv. Expansion or modification of the existing storm drain system

v. Installation of necessary outlet control facilities

d) The Prado Dam is the nearest dam to the campus (approximately 17 miles southwest of the campus) and it is located on the Santa Ana River, downstream of the campus. The nearest upstream dam is the Seven Oaks Dam (approximately 16 miles northeast of the campus) and the potential for catastrophic failure of that dam is considered remote. Therefore, development under the NDD Plan, including the proposed ND Ph2 project, is unlikely to experience inundation from dam failure. The campus is not located within a tsunami hazard area and is therefore not subject to inundation by tsunami. The UCR campus is also not in proximity to a standing body of water that could experience a seiche, or large wave activity associated with a seismic event, and therefore is not subject to inundation by seiche. Impacts were determined to be less than significant. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to tsunami, seiche, or other inundation.

e) The campus is within the Water Quality Control Plan Santa Ana River Basin (8) (Basin Plan) (California Water Boards, Region 8, 2019). The Basin Plan, as developed and implemented by the Santa Ana Regional Water Quality Control Board in accordance with the federal Clean Water Act, designates beneficial uses for surface waters in the Santa Ana Region and associated water quality objectives to fulfill such uses. As outlined in Threshold 4.1.10 c) above, projects within the NDD Plan, including the proposed ND Ph2 project, are required to develop and implement a SWPPP that include BMPs for controlling erosion and release of sediment and other pollutants during construction and a WQMP which would include BMPs to address any increased stormwater runoff and expected pollutants from the project during operation. With implementation of a SWPPP and WQMP, the proposed ND Ph2 project would not impair existing or potential beneficial uses of nearby or downstream waterbodies and would not conflict with or obstruct implementation of the Basin Plan. As outlined in Threshold 4.1.10 b) above, implementation of the NDD Plan, including the proposed ND Ph2 project, would not substantially deplete groundwater supplies, and would have a less than significant impact on groundwater supplies. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to conflicting with or obstructing implementation of the Basin Plan or to groundwater supplies.

4.1.11 Land Use and Planning

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Physically divide an established community?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	Less than Significant with PSs and PPs Incorporated	No	No	No	PS Land Use 4 PS Land Use 7 PS Open Space 4 PS Campus & Cmty. 1 PS Trans. 6 PS Dev. Strategy 1 PP 4.9-1(a) PP 4.9-1(b)

a) The NDD Plan area, including the ND Ph2 project site, is located on East Campus in an area surrounded by existing student housing, dining facilities, athletic facilities, and parking lots. The ND Ph2 project site is currently vacant. Implementation of the NDD Plan, including the proposed ND Ph2 project would not physically divide an established community. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to dividing an established community.

b) UCR is part of the University of California, a constitutionally created State entity, and therefore, it is not subject to municipal regulations of surrounding local governments, such as general plans and land use ordinances of the City and Riverside County for uses on property owned and controlled by the University. Although the University is not subject to the local plans of cities and counties, such plans and policies are of interest or concern because the campus and local development are coincident. It is University policy to seek consistency with regional and local plans and policies, where feasible.

The proposed ND Ph2 project would be consistent with the land use categories in the NDD Plan. The proposed ND Ph2 project would not make substantial changes in the amount of area or square footage currently designated to each land use but would rather rearrange the land use areas within the project site to allow more efficient use of the site for the uses contemplated in the NDD Plan. As described in Section 3 of this document, the proposed ND Ph2 project is consistent with the objectives, population forecasts, land use designations, and development standards projections in the NDD Plan. Although the proposed ND Ph2 project would alter the configuration of the land use designations in the NDD Plan, it was conceptual, and the difference would be minimal, as the location of land use designation within the Plan area would change but not the overall types of land uses.

Consistent with the NDD Plan EIR discussion for the NDD Plan Land Use and Planning impacts, the proposed ND Ph2 project would be consistent with campus planning principles regarding location and design maximizing and efficiently using available developable space on campus. The following land use and planning PSs and PPs are relevant to the NDD Plan, including the proposed ND Ph2 project: PS Campus & Community 1, PS Development Strategy 1, PS Land Use 4, PS Land Use 7, PS Open Space 4, PS Transportation 6, PP 4.9-1(a), and PP 4.9-1(b).

Furthermore, the Campus remains committed to participation in ongoing coordination with the City and local stakeholders through the University Neighborhood Enhancement Team (UNET) concept and the joint City/University Coordinating Committee, providing opportunities for City and local stakeholder input regarding relevant land uses and project design features. With implementation of these PSs and PPs, the proposed ND Ph2 project would not result in development of land uses that are substantially incompatible with existing adjacent land uses or with proposed uses and impacts would be less than significant.

For informational purposes, the NDD Plan area, which includes the ND Ph2 project site, is designated as Canyon Crest Gateway and Student Neighborhood in the Land Use Plan of the 2021 LRDP. For the Canyon Crest Gateway, the 2021 LRDP proposes transforming this corridor into a vibrant and welcoming campus “Main Street,” a common feature on many campuses across the country, with university-oriented high-density, horizontal and vertical mixed-use gateway environments that brings year-round vitality to the area. In addition to student housing, dining, recreation, and other services, it will also support an array of much needed commercial amenities and services presently unavailable on or in the immediate vicinity of campus. The 2021 LRDP Student Neighborhood land uses are meant to accommodate a diverse array of uses to ensure that student needs are met in an interactive, mixed-use environment. The Density Framework of the NDD Plan area in the 2021 LRDP includes height limits of 80 feet or 7-8 stories for mixed-use housing adjacent to Canyon Crest Drive and 65 feet or 5-6 stories for housing east of that and between Blaine Street and W. Linden Street. Therefore, the proposed ND Ph2 project would generally be consistent with the 2021 LRDP.

The proposed ND Ph2 project, would not conflict with the NDD Plan or the 2021 LRDP. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to conflicting with land use plans and policies.

4.1.11(b) Applicable MMs, PSs, and/or PPs:

PS Campus & Community 1: Provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.

PS Development Strategy 1: Establish a design review process to provide regular review of building and landscape development on campus.

PS Land Use 4: Pursue a goal of housing 50 percent of student enrollment in on campus or campus controlled housing.

PS Land Use 7: Over time, relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate.

PS Open Space 4: Provide landscaped buffers and setbacks along campus edges, such as Valencia Hill Drive and its extension south of Big Springs Road, Martin Luther King Boulevard, and the I-215/SR-60 freeway.

PS Transportation 6: Implement parking management measures that may include:

- Restricted permit availability
- Restricted permit mobility
- Differential permit pricing

PP 4.9-1(a) (modified in 2023): The Campus shall provide design professionals with the ~~2007 Campus Design Guidelines~~ Campus Construction and Design Standards and instructions to implement the ~~guidelines~~ Standards, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design.

PP 4.9-1(b) (modified in 2023): The Campus shall continue to provide design professionals with the ~~2007 Campus Design Guidelines~~ Campus Construction and Design Standards and instructions to develop project-specific landscape plans that are consistent with the ~~Guidelines~~ Standards with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible.

4.1.12 Mineral Resources

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the State?	No Impact	No	No	No	No MMs, PSs, or PPs required
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	No Impact	No	No	No	No MMs, PSs, or PPs required

a – b) The NDD Plan area, which includes the ND Ph2 project site, is not designated as a mineral resource zone, and no known or potential mineral resources are located on Campus. The proposed ND Ph2 project does not include mining activities or uses and thus would have no impact on mineral resources. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to mineral resources.

4.1.13 Noise

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Less than Significant with MMs, PS, and/or PPs Incorporated	No	No	No	MM NOI-1 PS Campus and Cmty. 1 PP 4.10-1(a) PP 4.10-2 PP 4.10-6 PP 4.10-7(b) PP 4.10-7(c) PP 4.10-7(d) PP 4.10-8
b)	Generate excessive groundborne vibration or groundborne noise levels?	Significant and Unavoidable even with MMs and PPs Incorporated	No	No	No	MM 4.10-2 MM NOI-2 PP 4.10-2, PP 4.10-7(c) PP 4.10-7(d) PP 4.10-8
c)	For a project is located within the vicinity of a private airstrip or within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	No Impact	No	No	No	No MMs, PSs, or PPs required

a) The NDD Plan accommodates an increase in on-campus student resident population, as well as additional employees for the commercial components. This results in increased vehicular traffic on and around campus. The NDD Plan EIR analyzed the potential for increased ambient noise levels associated with the increase in vehicular traffic attributed to the NDD Plan. It generally requires a doubling in traffic volume on a roadway for noise levels to increase by 3 decibels (dB), which is the change in noise that is perceptible to most individuals and are not typically noticed by the human ear. Changes from 3 to 5 dB(A) may be noticed by individuals who are especially sensitive to changes in noise. An increase in 5 dB(A)[12] is the threshold of significance, as it is potentially noticeable.

As analyzed, only W. Linden Street, east of Canyon Crest Drive, was anticipated to experience traffic volume doubling (or near doubling) during the Build-Out Plus ND Ph1 Project conditions. The greatest noise increase of approximately 3 dB(A) will occur at Aberdeen-Inverness Residence Hall (the closest on-campus receptor to the NDD Plan boundary), which although audible, is still below the 5 dB(A) threshold of significance. Because no on- or off-campus roadway noise levels would increase by more than 5 dB(A) Community Noise Equivalent Level, it was determined that the NDD Plan will not cause a substantial permanent increase in ambient noise levels on- or off-campus and implementation of the NDD Plan would not expose persons off- and on-campus to noise levels above applicable standards and this impact would be less than significant. Since the proposed ND Ph2 project is consistent with the NDD Plan buildout assumptions, it would not generate significant increased local traffic volumes that would cause a substantial permanent increase in ambient noise levels on- or off-campus.

Consistent with the NDD Plan EIR discussion, stationary mechanical heating, ventilation, and air conditioning (HVAC) equipment located on rooftops of proposed ND Ph2 buildings would be a source of stationary noise. Additionally, mechanical systems would be included on the ground floor and screened. The proposed surface parking lot would add noise from vehicles entering and exiting the lots, as well as from vehicle movement within the parking lot, vehicle start-ups, and occasional car alarms. With HVAC equipment/mechanical systems shielded and screened and the attenuation provided by the distance between on-site stationary and area noise sources and the nearest off-campus receptors, the proposed ND Ph2 project, would not result in a substantial permanent increase in ambient noise levels at off-campus locations beyond those analyzed in the NDD Plan EIR. Furthermore, to minimize noise from all stationary and area sources associated with the NDD Plan, including those proposed under the ND Ph2 project, PP 4.10-1(a) and PP 4.10-6 would be implemented, which require siting design measures to reduce long-term noise impacts and shielding of all new stationary sources of noise. The proposed ND Ph2 project is also designed in line with PS Campus and Community 1 to provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.

The proposed recreational area (e.g., intramural fields) would be located between the existing ND Ph1 student housing site and the existing surface parking area, south of Blaine Street. The recreational area would be available for use daily with lighting from dusk until 10 p.m. This recreational area does not include stadium seating or a loudspeaker system and is intended for use only by campus students.

The NDD Plan included construction of a 5,000 seat Athletic Event Center near the southwest quadrant of the proposed project site for the purpose of conducting periodic special events. As analyzed in the NDD Plan EIR, athletic events can generate noise from athletic activity, crowd noise, whistles from officials, and loudspeakers making announcements during athletic activities. Sample noise from stadiums with between 5,200 and 5,800 fans have an average ambient noise levels ranging from 81-97 dB(A). Whistles from officials are approximately 80 dB(A) at 50 feet. The nearest sensitive off-campus, off-site sensitive receptors to the proposed Athletic Event Center, were approximately 300 feet to the north of the NDD Plan boundary, and the nearest on-campus, off-site sensitive receptors are the Falkirk Apartments, approximately

[12] dB(A) = A-weighted sound level

115 feet to the west. Peak noise levels from the athletic event center were anticipated to result in temporary increases to ambient noise levels greater than 5 dB(A), without accounting for any noise shielding, as specific design features of the Athletic Event Center had not been developed yet. A project-level noise analysis was not completed for the athletic event center as part of the NDD Plan EIR as it was only conceptual and not fully designed, and in the event it would be implemented in any later phases of the NDD Plan, further review would be required, which would include noise reducing design features. However, the sporting events at the proposed Athletic Event Center would be exempt from the City of Riverside Municipal Code and thus were determined less than significant.

The recreational area of the proposed ND Ph2 project is in a different location than the proposed Athletic Event Center, shifted to the northeast within the NDD Plan area. The closest off-campus, off-site sensitive receptors to the ND Ph2 recreational fields would be greater than 300 feet to the north and the nearest on-campus, off-site sensitive receptor would be the Child Development Center approximately 50 feet to the east of the NDD Plan boundary. The proposed ND Ph2 recreational area includes use only by campus students which would end at 10 p.m. since the lighting would be turned off at that time, and no major athletic events (e.g., 5,000 fans), stadium seating or loudspeaker system are included as part of the ND Ph2 recreational component. Therefore, is not expected to generate a substantial source of noise that would affect on-site or off-site sensitive receptors. Therefore, the proposed recreational area of ND Ph2 project would not result in increased ambient noise levels greater than what was already considered in the NDD Plan EIR.

Basic types of activities that would be expected to generate noise during construction of the proposed ND Ph2 project are demolition and site clearance, grading and excavation, building construction, paving, architectural coating, and landscaping, all consistent with the construction noise sources analyzed for the NDD Plan EIR. During each stage of construction, there would be a different mix of equipment operating and noise levels would vary based on the number and type of equipment in operation and the location of the activity. Construction noise levels could substantially increase existing noise levels at sensitive receptors on- and off-campus during normal construction hours. However, construction activity would be subject to PP 4.10-2, which, in part, limits the hours of exterior construction activities from 7:00 a.m. to 9:00 p.m. Monday through Friday and 8:00 a.m. to 6:00 p.m. on Saturday when necessary. Furthermore, the following PPs are required for development of the NDD Plan, including the proposed ND Ph2 project, to reduce potential impacts associated with construction noise: PP 4.10-7(b), PP 4.10-7(c), PP 4.10-7(d), and PP 4.10-8. Enforcement of standard Campus construction activity regulations and implementation of these PPs would reduce construction-related noise to the extent feasible. However, the Campus cannot ensure that construction noise levels would not exceed a 10 dB(A) threshold of significance at sensitive receptors located near the construction site.

Therefore, the NDD Plan EIR concluded that mitigation is required to reduce construction noise to a less than significant level. Implementation of MM NOI-1 would ensure that temporary construction noise levels would not exceed the 10 dB(A) threshold of significance at adjacent sensitive receptors, and impacts would be less than significant. As such, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to the periodic increase in ambient noise levels from construction activities in the project vicinity above existing levels.

4.1.13(a) Applicable MMs, PSs, and/or PPs:

MM NOI-1: Barriers such as plywood structures or flexible sound control curtains shall be erected, as needed, between the proposed project and adjacent sensitive receptors to minimize the amount of noise during construction. These temporary sound barriers shall be capable of achieving a sound attenuation of at least 5 dB(A) and block the line of sight between the project site and these adjacent land uses. Sound barriers between the project site and the UCR Child Development Center shall be capable of achieving a sound attenuation of at least 16 dB(a) and block the line of sight between the project site and the Child Development Center.

PP 4.10-1(a): UCR will incorporate the following siting design measures to reduce long-term noise impacts:

i. Truck access, parking area design, and air conditioning/refrigeration units will be designed and evaluated when planning specific individual new facilities to minimize the potential for noise impacts to adjacent developments.

ii. Building setbacks, building design and orientation will be used to reduce intrusive noise at sensitive student residential and educational building locations near main campus access routes, such as Blaine Street, Canyon Crest Drive, University Avenue, and Martin Luther King Jr. Boulevard. Noise walls may be advisable to screen existing and proposed facilities located near the I-215/SR-60 freeway.

iii. Adequate acoustic insulation would be added to residence halls to ensure that the interior Ldn would not exceed 45 dB(A) during the daytime and 40 dB(A) during the nighttime (10:00 PM to 7:00 AM) in rooms facing major streets.

iv. Potential noise impacts would be evaluated as part of the design review for all projects. If determined to be significant, mitigation measures would be identified and alternatives suggested. At a minimum, campus residence halls and student housing design would comply with Title 24, Part 2 of the California Administrative Code.

PP 4.10-6: The Campus shall continue to shield all new stationary sources of noise that would be located in close proximity to noise sensitive buildings and uses.

PS Campus and Community 1: Provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.

PP 4.10-2: The UCR campus shall limit the hours of exterior construction activities from 7:00 a.m. to 9:00 p.m. Monday through Friday and 8:00 a.m. to 6:00 p.m. on Saturday when necessary. Construction traffic shall follow transportation routes prescribed for all construction traffic to minimize the impact of this traffic (including noise impacts) on the surrounding community.

PP 4.10-7(b): The Campus shall continue to require by contract specifications that construction equipment be required to be muffled or otherwise shielded. Contracts shall specify that engine-driven equipment be fitted with appropriate noise mufflers.

PP 4.10-7(c): The Campus shall continue to require that stationary construction equipment material and vehicle staging be placed to direct noise away from sensitive receptors.

PP 4.10-7(d): The Campus shall continue to conduct regular meetings, as needed, with on- campus constituents to provide advance notice of construction activities in order to coordinate these activities with the academic calendar, scheduled events, and other situations, as needed.

PP 4.10-8: The Campus shall continue to conduct meetings, as needed, with off-campus constituents that are affected by campus construction to provide advance notice of construction activities and ensure that the mutual needs of the particular construction project and of those impacted by construction noise are met, to the extent feasible.

b) The NDD Plan boundary is located approximately 50 feet west of the nearest on-campus sensitive receptor (Child Development Center) and approximately 225 feet southeast of the nearest off-campus sensitive receptor (Gethsemane Lutheran Church). At these distances, the vibration generated by typical construction equipment would range from approximately 58 vibration decibels (VdB) to 78 VdB. The analysis in the NDD Plan EIR used the Federal Railroad Administration's vibration impact thresholds of 65 VdB at buildings where vibration would interfere with interior operations (e.g., sensitive on-campus research buildings), 80 VdB at residences and buildings where people normally sleep (e.g., student housing buildings and nearby residences), and 83 Vdb at other institutional buildings. The nearest residences to the NDD Plan area are in the Aberdeen-Inverness Residence Hall, which is approximately 90 feet to the south. At this distance, the vibration generated would be approximately 70 VdB which falls below the 80 VdB vibration impact threshold for residential uses. However, the vibration generated by typical construction equipment would be above the 65 VdB vibration impact threshold for buildings where vibration would interfere with interior operations (e.g., Child Development Center). Therefore, construction associated with NDD Plan projects, including the proposed ND Ph2 project, may expose persons at the UCR Child Development Center to excessive groundborne vibration levels and this impact would be considered significant. During construction of the proposed ND Ph2 project, consistent with the requirements of the NDD Plan EIR, the Campus would implement MM 4.10-2 from the 2005 LRDP, MM NOI-2, and PP 4.10-2 to reduce potential impacts associated with construction vibration, to the extent feasible. In addition, during construction, the Campus would implement PP 4.10-7(c), 4.10-7(d), and 4.10-8.

Although implementation of MM NOI-2, MM 4.10-2, PP 4.10-2, PP 4.10-7(c), 4.10-7(d), and 4.10-8 would reduce vibration impacts at nearby sensitive receptors, MM NOI-2 may not be feasible at adjacent receptors such as the UCR Child Development Center, where activities such as grading for the NDD Plan, including the proposed ND Ph2 project, may require the use of construction equipment near the receptor. As a result, this impact would remain significant and unavoidable. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to construction vibration impacts at the UCR Child Development Center, the closest nearby sensitive receptor.

4.1.13(b) Applicable MMs, PSs, and/or PPs:

Refer to **PP 4.10-2, PP 4.10-7(c), PP 4.10-7(d), and PP 4.10-8** above.

MM 4.10-2 from the 2005 LRDP: The campus shall notify all academic and residential facilities within 300 feet of approved construction sites of the planned schedule of vibration causing activities so that the occupants and/or researchers can take necessary precautionary measures to avoid negative effects to their activities and/or research.

MM NOI-2: Noise and groundborne vibration construction activities whose specific location on the site may be flexible (e.g, operation of compressors and generators, cement mixing, general truck idling) shall be conducted as far as possible from the nearest noise- and vibration-sensitive land uses, and natural and/or manmade barriers (e.g., intervening construction trailers) shall be used to screen propagation of noise from such activities towards these land uses to the maximum extent possible.

c) The NDD Plan area, which includes the ND Ph 2 project site, is not located within an airport land use plan study area, nor is it within two miles of a public airport or in the vicinity of a private airstrip. Therefore, implementation of the proposed ND Ph2 project would not expose people residing or working in the area to excessive noise levels from an airport or airstrip. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to exposing people residing or working in the area to excessive noise levels from an airport or airstrip.

4.1.14 Population and Housing

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
b)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No Impact	No	No	No	No MMs, PSs, or PPs required

a) As outlined in the 2021 LRDP, first-year student, or "freshmen", applications increased by approximately 54 percent (from 31,884 students to 49,079 students) and transfer applications increased by 103 percent (from 6,060 students to 12,309 students) between 2009 and 2018.[13] Between Fall 2019 and Fall 2021, UCR developed Dundee Residence Hall and the ND Ph1 student housing apartments, adding 2,326 student beds to the campus. Even with the increase in student beds, all UCR's student housing facilities are operating at full capacity, and there remains substantial unmet demand for on-campus student housing.

The proposed ND Ph2 project contributes towards the objectives of the NDD Plan to support the campus goal to house up to 50 percent of the enrolled students on-campus, to guarantee on-campus housing to all freshmen and transfer students, and to provide affordable on-campus student housing. The NDD Plan does not increase enrollment at UCR, but rather provides additional on-campus housing and associated amenities, student support services, and recreational opportunities for the existing and projected student body. At buildout, the NDD Plan includes up to 4,000 beds in apartment-style units with the ability to accommodate one student per bed (i.e., 4,000 students). In addition, the NDD Plan accommodates up to 1,200 beds in residence halls, providing housing to an additional 1,200 students, for a total assumed student population of 5,200 residing in the NDD Plan area.

The ND Ph1 constructed 1,506 beds in apartment-style units to accommodate 1,506 students. Implementation of the proposed ND Ph2 project would provide apartment-style, on-campus housing for approximately 1,600 eligible students, including approximately 326 RCCD students[14], eliminating the need to seek housing in the City and other surrounding communities.

[13] Source: UC Undergraduate Admissions Summary for UC Riverside, 2019 https://www.universityofcalifornia.edu/infocenter/admissions-residency-and-ethnicity

[14] The ND Ph2 project is a unique joint effort between UCR and RCCD with a focus on student success, including strengthening the transfer pipeline between RCCD and UCR.

There would be up to approximately 2,094 additional beds, to accommodate up to another 2,094 students, remaining for future phases to achieve buildout of the housing assumed for the NDD Plan. Therefore, the anticipated 1,600 student beds, and student population, associated with the proposed ND Ph2 project is within the total anticipated buildout number of beds and corresponding population assumptions analyzed in the NDD Plan EIR.

Operation of the proposed ND Ph2 project includes the potential for approximately 21 employees. The NDD Plan EIR identified that the NDD Plan (at full buildout) includes the potential for 70 employees. For reference, the 2021 LRDP assumes an increase in the UCR employment population of approximately 2,806 more employees by the year 2035. The NDD Plan was included in the 2021 LRDP population assumptions. The increase in jobs resulting from the NDD Plan, including the proposed ND Ph2 project, would support new employment opportunities but would not be considered sufficient to include employment generating uses that would result in unplanned growth due to the small number of jobs added.

The proposed ND Ph2 project would not include new or extended public roads and would connect to existing electricity, water, and sewer utility systems. No new or expanded infrastructure is proposed which would indirectly induce unplanned population growth. However, to accommodate the proposed ND Ph2 project flow demand, the existing sewer line within Canyon Crest Drive, would be upsized from an 8-inch to a 15-inch pipe for approximately 1,400 feet between W. Linden Street and University Avenue, all within the existing public right-of-way. The proposed ND Ph2 project would tie into the existing water system with upgrades determined appropriate in coordination with the City of Riverside. Any system upgrades would involve limited work within the public right-of-way.

The proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to inducing substantial unplanned population growth.

b) The NDD Plan area, including the ND Ph2 project site, has been vacant since 2017, but was previously developed with the Canyon Crest Family Student Housing Complex. Demolition of the Canyon Crest Family Student Housing complex occurred as part of the demolition activities for the ND Ph1. The ND Ph1 project was the first project developed under the NDD Plan and involved the construction of 1,506 student beds and associated facilities. The ND Ph1 was completed and in operation as of Fall 2021. The ND Ph1 housing is located outside of the boundary of the proposed ND Ph2 project area, and as such, no housing exists within the ND Ph2 site.

Consequently, implementation of the proposed ND Ph2 project would not displace housing or people and no impact would occur. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to displacing substantial numbers of people or housing necessitating the construction of housing elsewhere.

4.1.15 Public Services

Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:					
i) Fire protection?	Less than Significant with PPs Incorporated	No	No	No	PP 4.12-1(a) PP 4.12-1(b)
ii) Police protection?	Less than Significant with PPs Incorporated	No	No	No	PP 4.12-2(a) PP 4.12-2(b)
iii) Schools?	No Impact	No	No	No	No MMs, PSs, or PPs required
iv) Parks?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
v) Other public facilities	No Impact	No	No	No	No MMs, PSs, or PPs required

The NDD Plan does not increase enrollment at UCR, but rather provides additional on-campus housing and associated amenities, student support services, and recreational opportunities for the existing and projected student body. The NDD Plan accounts for approximately 5,200 student housing beds. The ND Ph1 constructed 1,506 beds in apartment-style units to accommodate 1,506 students. Implementation of the proposed ND Ph2 project would provide apartment-style, on-campus housing for approximately 1,600 eligible students, including approximately 326 RCCD students. With ND Ph1 and the proposed ND Ph2 in operation, there would be up to approximately 2,094 additional beds, to accommodate up to another 2,094 students, remaining for future phases to achieve buildout of the housing assumed for the NDD Plan. Therefore, the anticipated 1,600 student beds, and student population, associated with ND

Ph2 project is within the total anticipated buildout number of beds and corresponding population assumptions analyzed in the NDD Plan EIR.

a) i) The City of Riverside Fire Department (RFD) manages fire services for the City which includes the NDD Plan area. The closest RFD station to the project site is Fire Station 4, located at 3510 Cranford Avenue, 0.7 mile west of the NDD Plan area. The Riverside County Fire Department is a part of a master mutual aid agreement with the RFD and provides fire protection services for the UCR campus on a backup basis. The nearest County fire station is Station 19, located approximately 2.3 miles north of the NDD Plan area, at 469 Center Street in Riverside.

The NDD Plan EIR determined that the NDD Plan would increase demand for fire services in the Plan area as it would transition from previously vacant buildings (i.e., Canyon Crest Family Student Housing Complex) to 1,506 student beds with implementation of ND Ph1, and ultimately up to approximately 5,200 beds at full buildout.

All NDD Plan structures are to be designed in accordance with applicable fire safety codes and regulations. PD&C Fire Life Safety programs such as design consultation services and inspections would further ensure fire safety. Assuming that the City maintains and staffs the existing fire stations near the campus, future on-campus development would continue to be served within the current response times and no increase in service response time is anticipated. Additionally, the County Fire Department would continue to assist the City in mutual aid situations.

To meet the fire service needs of the NDD Plan population at full buildout, PP 4.12-1(a) and PP 4.12-1(b) would be implemented to ensure continued adequate fire protection. As determined under *City of Hayward v. Trustees of the California State University* (2015) 242 Cal.App.4th at 833 (*City of Hayward v. CSU*), it is not UCR's responsibility to build new City fire protection facilities, just to mitigate physical impacts of construction of such facilities if they are determined to be required by UCR actions. Although the number of calls could increase due to the implementation of the NDD Plan, including the proposed ND Ph2 project, no new or expanded fire service facilities would be needed to maintain acceptable response times.

Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to fire protection services.

4.1.15(a)(i) Applicable MMs, PSs, and/or PPs:

PP 4.12-1(a) (modified in 2023): As development occurs, the following measures will be incorporated:

i. New structures would be designed with adequate fire protection features in compliance with State law and the requirements of the State Fire Marshal. Building designs would be reviewed by appropriate campus staff and government agencies.

ii. Prior to implementation of individual projects, the adequacy of water supply and water pressure will be determined in order to ensure sufficient fire protection services.

iii. Adequate access will be provided to within 50 feet of the main entrance of occupied buildings to accommodate emergency ambulance service.

iv. Adequate access for fire apparatus will be provided within 50 feet of stand pipes and sprinkler outlets.

v. Service roads, plazas, and pedestrian walks that may be used for fire or emergency vehicles will be constructed to withstand loads ~~of up to 45,000 pounds~~ consistent with the most recent Fire Code.

vi. As implementation of the LRDP occurs, campus fire prevention staffing needs would be assessed, increases in staffing would be determined through such needs assessments.

PP 4.12-1(b):

i. Accident prevention features shall be reviewed and incorporated into new structures to minimize the need for emergency response from the City of Riverside.

ii. Increased staffing levels for local fire agencies shall be encouraged to meet needs generated by LRDP project related on-campus population increases.

a) ii) The UCRPD is responsible for providing police services on the campus. The department is located near the NDD Plan area at 3500 Canyon Crest Drive, immediately south of W. Linden Street. The City of Riverside Police Department (RPD) serves University-owned and leased off-campus facilities, as well as providing additional support to UCRPD as needed. The closest City police station to the NDD Plan area is located at 4102 Orange Street, approximately 2.5 miles to the southwest. The Riverside County Sheriff's Office is located at 4095 Lemon Street in the City, approximately 2.5 miles west of the NDD Plan area. The County Sheriff's Office does not patrol the UCR campus but assists the UCRPD and the RPD upon request, which usually consists of crime investigation support, crowd control, and coroner's duties.

The NDD Plan would increase demand for police services in the Plan area, as it would transition from previously vacant buildings (i.e., Canyon Crest Family Student Housing Complex) to 1,506 student beds with implementation of ND Ph1, and ultimately up to approximately 5,200 beds at full buildout.

To maintain or improve existing service levels as on-campus housing opportunities grow, the 2005 LRDP included the projected expansion of police facilities which would adhere to the 2005 LRDP PP 4.12-2(a) and PP 4.12-2(b). Further, it is standard procedure for campus architectural design development to incorporate *Crime Prevention Through Environmental Design* concepts in the design of buildings, lighting, and landscaping. The UCRPD is represented on campus project design teams. Per PP 4.12-2(b), campus also remains committed to participation in ongoing coordination with the City through the University Neighborhood Enhancement Team (UNET) concept and the joint City/University Coordinating Committee, providing opportunities for City and RPD input regarding relevant design features.

The campus has adequate land for expansion of the police facilities as needed. As the UCRPD would expand to meet the needs of the growing campus population, with or without the proposed NDD Plan, including the proposed ND Ph2 project, the impact generated by the implementation of the proposed NDD Plan related to police services would be less than significant. Furthermore, for reference, the 2021 LRDP anticipates future UCRPD facility needs as part of the approximately 896,229 assignable square feet (1,344,344 gsf) new administrative and support facility space proposed in the buildout of the 2021 LRDP. The NDD Plan was included in the 2021 LRDP growth assumptions.

Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to police protection services.

4.1.15(a)(ii) Applicable MMs, PSs, and/or PPs:

PP 4.12-2(a): As development under the LRDP occurs, the Campus will hire additional police officers and support staff as necessary to maintain an adequate level of service, staff, and equipment, and will expand the existing police facility when additional space is required.

PP 4.2-2(b) (modified in 2023): The Campus will continue to participate in the "UNET" program <u>or similar </u>(for coordinated police response and staffing of a community service center), which provides law enforcement services in the vicinity of the campus, with equal participation of UCR and City police staffs.

a) iii) The NDD Plan, including the proposed ND Ph2 project, does not include housing opportunities that accommodate families with school-aged children that would attend local schools. There would be no impact on local schools. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to the construction or physical alteration of local schools.

a) iv) The NDD Plan impacts to parks and recreational facilities were discussed in Section 4.9, Recreation, of the NDD Plan EIR. Likewise, proposed ND Ph2 project impacts on parks and recreational facilities are analyzed in Section 4.1.16, Recreation (below), of this Addendum.

a) v) The NDD Plan does not increase enrollment at UCR, but rather provides additional on-campus housing and associated amenities, student support services, and recreational opportunities for the existing and projected student body. Therefore, the students associated with the proposed ND Ph2 project would already be served by existing campus libraries (Tomás Rivera Library, the Orbach Science Library, and the Special Collections and University Archives) and expansion of libraries would not be needed. There would be no impact on libraries. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to the construction or physical alteration of libraries.

4.1.16 Recreation

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	Less Than Significant Impact	No	No	No	No MMs, PSs, or PPs required
b)	Require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	Less Than Significant Impact	No	No	No	No MMs, PSs, or PPs required

a) The NDD Plan does not increase enrollment at UCR, but rather provides additional on-campus housing and associated amenities, student support services, and recreational opportunities for the existing and projected student body. Therefore, the students associated with the proposed ND Ph2 project would already be served by the variety of existing indoor and outdoor UCR recreational facilities available to the entire campus population. The campus currently has seven outdoor recreational fields, and 211,061 gsf of indoor recreational facilities. The closest existing campus recreational facility to the ND Ph2 project site is the Student Recreation Center, located adjacent to the NDD Plan area and the ND Ph2 project site, just south of W. Linden Street and east of Canyon Crest Drive. UCR employs technicians, mechanics, and maintenance staff to maintain and repair fitness equipment, as well as HVAC equipment, plumbing, pools, and other recreational facility components. The campus landscape and turf crew maintain the grass and synthetic turf fields throughout Campus.

The NDD Plan EIR analyzed the construction and operation of an Athletics Event Center on an approximately 5.7-acre site at the northeast corner of Canyon Crest Drive and W. Linden Street, anticipated to include a competition field, stadium seating for 5,000, and a 22,000 square foot Field House, under a future phase. The proposed ND Ph2 project does not include construction and operation of an Athletics Event Center, but rather proposes a recreational component for the NDD student residents and the overall campus population. The proposed recreational area (e.g., intramural fields) would be located between the existing ND Ph1 student housing site and the existing surface parking area, south of Blaine Street. The recreational area would be approximately 5.7 acres and available for use daily with lighting from dusk until 10 p.m. However, the proposed ND Ph2 recreational fields would not include a competition field, stadium seating (and therefore no loudspeaker system), or Field House as conceptually envisioned. Therefore, construction and operation of the proposed ND Ph2 recreational fields would be less intense and have less of an impact than the originally assumed Athletics Event

Center, while still providing recreational opportunities near the NDD Plan student housing buildings.

As analyzed in the NDD Plan EIR, while UCR manages existing on-campus facilities to optimize availability and meet recreational needs on campus, it is assumed that unmet campus demand for recreational facilities could lead to use of off-campus recreational facilities. As determined under *City of Hayward v. Trustees of the California State University* (2015) 242 Cal.App.4th at 833 (*City of Hayward v. CSU*), it is not UCR's responsibility to build new City recreational facilities, just to mitigate physical impacts of construction of such facilities if they are determined to be required by UCR actions. There are 14 parks within three miles of the UCR campus that are owned or managed by the City, which provide an array of active and passive recreational opportunities. These parks are expected to absorb any incremental share of campus population demand that is not met by on-campus facilities. However, the 2021 LRDP anticipates incremental development of an additional 97,740 gsf of indoor recreation space and four additional outdoor fields on the UCR campus, through 2035, to adequately serve the increased campus population without causing an increase in the use of existing neighborhood and regional parks or other recreational facility such that substantial physical deterioration of those facility would occur or be accelerated. The 2021 LRDP EIR determined that impacts related to increased use of parks and recreational facilities would be less than significant and no mitigation measures are required. The NDD Plan, including its conceptual recreational opportunities, was included in the 2021 LRDP growth assumptions.

Therefore, the proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan EIR, and for reference, the 2021 LRDP EIR, and would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to neighborhood and regional parks or other recreational facilities.

b) The proposed ND Ph2 project includes construction and operation of recreational fields on approximately 5.7 acres, which is a component of the overall NDD Plan uses. The potential impacts related to construction and operation of recreational facilities of the NDD Plan are addressed under the individual sections of the NDD Plan EIR, and as a component of the proposed ND Ph2 project, analyzed in Sections 4.1.1 through 4.1.20 of this Addendum. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to the construction or expansion of recreational facilities.

4.1.17 Transportation

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Conflict with an applicable program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
b)	Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b)?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
c)	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	Less than Significant with PP Incorporated	No	No	No	PP 4.14-4
d)	Result in inadequate emergency access?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required

On September 27, 2013, Senate Bill (SB) 743 was signed into law, which changed the way that transportation impacts are analyzed under CEQA. The transportation impact assessment updates to the CEQA Guidelines required under SB 743 were approved on December 28, 2018 and were required to be implemented statewide by July 1, 2020. Under the new (i.e., current) CEQA transportation guidelines, Level of Service (LOS), or vehicle delay, is no longer considered an environmental impact under CEQA and Vehicle Miles Traveled (VMT) has been adopted as the most appropriate measure of transportation impacts under CEQA. Thus, although the NDD Plan EIR analyzed transportation impacts based on LOS, or vehicle delay, this Addendum does not, as it is no longer the appropriate measure of impacts.

a) UCR is not required to comply with City policies. However, the City has multiple policies outlined in the Circulation and Community Mobility Element of its General Plan related to promoting the use of bicycles and walking. The NDD Plan was prepared to be consistent with these policies and incorporates numerous measures which support and promote walking and bicycling including extensive bicycle and pedestrian facilities, including bicycle racks and bicycle storage, and restricting vehicular traffic within several areas of North District. A primary objective of the NDD Plan is to provide on-campus student housing, transitioning students from commuter to resident status. As such, it is anticipated the NDD Plan, including the proposed ND Ph2 project, will contribute to a decrease in student commuters and an increase in the use of available local public transit, bicycle, and pedestrian facilities.

The proposed ND Ph2 project would include an approximately 760-space surface parking lot located at the southeast corner of Canyon Crest Drive and Blaine Street, which would include approximately 740 standard spaces and approximately 20 ADA compliant spaces. One new ingress/egress for the surface parking area would be off Blaine Street. Additionally, the proposed ND Ph2 surface parking would be connected to the ND Ph1 surface parking area where vehicles would be able to enter/exit from the existing ingress/egress at the ND Ph1 surface parking area along Blaine Street. Drop off/pick up areas and short-term loading would be incorporated into the street improvements along Canyon Crest Drive, W. Linden Street, and/or the proposed ND Ph2 surface parking area.

Delivery, service, and emergency vehicles would have access around the student housing buildings off Canyon Crest Drive. The vehicles would enter between the proposed student housing buildings, go around the Central Park area and exit on the northern portion between the student housing Building B and surface parking area.

The proposed ND Ph2 project includes improvements to the surface street circulation system, that would further support and facilitate bicycle and pedestrian use. The W. Linden Street frontage will extend from the ND Ph1 to Canyon Crest Drive. The proposed 8-foot-wide sidewalk would align with the offset established in ND Ph1, with a new turn lane, and street lighting. Canyon Crest Drive would include street improvements from the existing roadway center line to the face of the new building loggias, along with access points and a sidewalk. The Blaine Street frontage would extend from the ND Ph1 parking lot to Canyon Crest Drive and include a sidewalk with street lighting.

As outlined in the VMT Screening Evaluation Memo (prepared by Urban Crossroads for the proposed ND Ph2 project provided in Appendix D of this Addendum) there are Riverside Transit Agency (RTA) routes that include segments along Canyon Crest Drive, W. Linden Street, and Blaine Street. The ND Ph2 project would not conflict with RTA routes, but would provide amenities for pedestrians and bicyclists that may utilize RTA to get to campus.

The proposed ND Ph2 project would not conflict with applicable programs, plans, or policies addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to the programs, plans or policies related to the circulation system.

b) A VMT Screening Evaluation Memo was prepared by Urban Crossroads for the proposed ND Ph2 project (provided in Appendix D to this Addendum) and the following analysis is based on this memo.

CEQA requires all lead agencies to adopt VMT as the measure for identifying transportation impacts for land use projects. To assist lead agencies in complying with CEQA requirements, the Governor's Office of Planning and Research (OPR) has provided their Technical Advisory on Evaluating Transportation Impacts in CEQA, which provides recommendations for methodologies to be used to conduct VMT screening evaluations and VMT analyses. The Technical Advisory has been used to identify various criteria or screening steps used to conduct the VMT screening evaluation for the proposed ND Ph2 project.

To assist in the assessment of VMT screening criteria applicable to the proposed ND Ph2 project, the Riverside County Transportation Model[15] (RIVCOM) was used to estimate VMT by parcel or

[15] RIVCOM is a sub-regional travel demand model developed and maintained by the Western Riverside Council of Governments for use throughout Western Riverside County.

group of parcels, and the region. Screening criteria described within the Technical Advisory was used to identify if the proposed ND Ph2 project would result in a less than significant impact without the need to conduct a more detailed project level analysis. A project needs only to meet one of the screening criteria, listed below, to result in a less than significant impact. The screening criteria indicated in *italicized* text were selected as being the most applicable to the proposed ND Ph2 project and have been further evaluated in the screening evaluation.

- Project Size
- *Low Area VMT for Residential and Office Projects*
- *Transit Availability*
- Affordable Housing
- *Local Serving*

Low Area VMT for Residential and Office Projects

The Technical Advisory states residential and office projects that are in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. For residential projects, the Technical Advisory recommends the threshold of 15 percent or more below existing regional VMT per capita. The proposed ND Ph2 project's location was identified in the RIVCOM model to determine the traffic analysis zone (TAZ) in which the project resides. The proposed ND Ph2 project is located within TAZ 2095 of the RIVCOM model, and the proposed project is generally consistent with other land uses represented in the TAZ. As such, VMT has been estimated for TAZ 2095 using the Production-Attraction (PA) method to obtain PA home-based VMT per capita. TAZ 2095 was found to generate PA VMT per capita of 7.0 for existing conditions. RIVCOM was also used to calculate existing regional VMT per capita for Western Riverside County. Existing regional PA VMT per capita was calculated as 18.8, and when applying the Technical Advisory recommended threshold of 15 percent below existing regional VMT per capita. As the proposed project's TAZ was found to generate 7.0 VMT per capita it is in an area of low VMT, and thus the Low Area VMT for Residential and Office Projects screening criteria is met.

Transit Availability

Consistent with the guidance from the Technical Advisory, projects located within a Transit Priority Area (TPA) (i.e., within ½ mile of an existing "major transit stop"[16] or an existing stop along a "high-quality transit corridor"[17]) may be presumed to have a less than significant impact absent substantial evidence to the contrary. RTA Route 1 and Route 16 are located within ½ mile of the ND Ph2 project site and provide service at intervals of 15 minutes or less. Therefore, the proposed ND Ph2 project is located within a TPA. However, the presumption may not be appropriate if a project:

- Has a Floor Area Ratio (FAR) of less than 0.75;

  Due to the large open space areas, recreational fields, and parking lot components of this project, the buildings only encompass a small portion of the approximately 26-acre project

[16] Per Public Resources Code §21064.3, "major transit stop" is defined as a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.
[17] Per Public Resources Code §21155, a high-quality transit corridor means a corridor with fixed route bus service intervals no longer than 15 minutes during peak commute hours.

site, thereby resulting in a floor area ratio much less than 0.75. Additionally, FAR is not a standard metric used by UCR and would not apply properly to the proposed ND Ph2 project scenario. This presumptive exclusion of the use of a TPA does not apply, and the determination of a less than significant impact due to transit availability is still appropriate.

- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);

  The proposed project has been designed with the appropriate amount of parking to serve the project, as determined by UCR, and not more. Therefore, this presumptive exclusion of the use of a TPA does not apply, and the determination of a less than significant impact due to transit availability is still appropriate.

- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or

  The proposed ND Ph2 project is consistent with surrounding land uses, most of which are student-oriented housing. In addition, the proposed project is consistent with key aspects of the Sustainable Communities Strategy which includes utilizing infill opportunities and focusing on housing within existing urbanized areas. This presumptive exclusion of the use of a TPA does not apply, and the determination of a less than significant impact due to transit availability is still appropriate.

- Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

  The ND Ph2 project site is currently vacant, and the development of the proposed project would not replace affordable residential units; rather, it would create new housing for students. This presumptive exclusion of the use of a TPA does not apply, and the determination of a less than significant impact due to transit availability is still appropriate.

The proposed ND Ph2 project is located within a TPA and none of the presumptive exclusions of the use of a TPA apply. Thus, the Transit Availability screening criteria is met, and the determination of a less than significant impact due to transit availability is still appropriate.

Local Serving Uses

The Technical Advisory, in addition to Western Riverside Council of Governments' own recommendations to local agencies for VMT screening criteria, identifies local serving retail under 50,000 square feet and other local serving uses, such as parks, day care centers, and student housing, as land uses presumed to have a less than significant impact on VMT due to their ability to reduce the length of travel needed to obtain basic local services. A primary objective of the NDD Plan is to provide on-campus student housing, transitioning students from commuter to resident status. In addition, the mixed-use amenities offered in the NDD Plan will provide local retail and dining options for students, further reducing the need to travel. The proposed ND Ph2 project is consistent with the NDD Plan and consists of approximately 1,600 student housing beds in apartment-style units and student housing support services (e.g., retail, fitness space, laundry, group study space). Project residents will include both UCR students and up to 326 RCCD students who plan on transferring to UCR.

The NDD Plan EIR included an informational discussion of VMT for the NDD Plan at buildout. It is anticipated the NDD Plan, including the proposed ND Ph2 project, will contribute to a decrease in student commuters and an increase in the use of available local public transit, bicycle, and pedestrian facilities, thereby reducing VMT. As the proposed ND Ph2 project is student housing with supportive services within and in close proximity to UCR's main campus, for students already attending UCR, this would result in shifts in modes of transportation (i.e., walking or bicycling) and would discourage vehicle travel to the main campus for educational purposes and the surrounding community for supportive services, thus reducing VMT. RCCD students would also be able to access the supportive services and therefore discourage associated vehicle travel. In addition, RCCD students are expected to shift their mode of transportation through the utilization of the nearby Route 1 bus line which provides direct service to Riverside City College and downtown Riverside. Moreno Valley College students can utilize the nearby Route 16 bus line and transfer at the Moreno Valley Mall to bus lines serving Moreno Valley College. Thus, the Locally Serving Uses Screening criteria is met.

The proposed ND Ph2 project meets the Technical Advisory's Low Area VMT for Residential and Office Projects screening criteria, the Transit Availability Screening criteria, and partially meets the Locally Serving Uses Screening criteria, and the proposed project is presumed to have a less than significant impact on VMT consistent with the findings of the NDD Plan EIR. Therefore, the proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan EIR and would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to VMT.

c) Standard engineering practices (e.g., use of standard road and driveway widths, provision of adequate sight lines, and avoidance of sharp turning radii) and traffic mitigation strategies (e.g., installation of control devices such as stop signs, as needed) would be implemented to avoid design elements that could result in hazards due to features such as sharp curves and dangerous intersections. The proposed ND Ph2 project would implement PP 4.14-4, which includes providing the design architects with the Campus Construction and Design Standards (formerly called Campus Design Guidelines) and instructions to implement elements related to parking and roadway design, consistent with the NDD Plan EIR requirements. In addition, the NDD Plan, including the proposed ND Ph2 project, would not result in land use incompatibilities with either on-campus or off-campus land uses. Thus, no traffic hazards related to land use incompatibilities related to new development projects in the NDD Plan would result.

The NDD Plan, including the proposed ND Ph2 project, would not generate new hazards due to design features or land use incompatibilities and this impact would be less than significant. Therefore, the proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan EIR and would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to new hazards due to design features or land use incompatibilities.

4.1.17(c) Applicable MMs, PSs, and/or PPs:

PP 4.14-4 (modified in 2023): The campus shall provide design architects for roadway and parking improvements with the ~~Campus Design Guidelines~~ Campus Construction and Design Standards and instructions to implement those elements of the guidelines relevant to parking and roadway design.

d) The proposed ND Ph2 project would not result in inadequate or impeded emergency access. Development of the NDD Plan, including the proposed ND Ph2 project, would not involve the permanent closure of vehicular, bicycle, or pedestrian lanes or walkways, nor would it obstruct existing emergency access routes. During project construction, a designated construction laydown, staging, and parking area would be established on-site as to not impede emergency access circulation routes. The proposed ND Ph2 project is designed with emergency access routes, giving responders full access to all buildings and undeveloped portions of the site. Emergency access during operation would be provided via Blaine Street, W. Linden Street, and Canyon Crest Drive. Within the ND Ph2 project site, multi-modal paths transect the site and around the student housing apartment buildings, to be utilized by emergency vehicles as necessary. The proposed project would be designed to meet the requirements for emergency vehicle access in accordance with the most current CBC/Fire Code requirements related to loading and access to building facades.

As such, the proposed ND Ph2 project would have a less than significant impact on emergency access. Therefore, the proposed ND Ph2 project would be consistent with the analysis and determination in the NDD Plan EIR and would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to emergency access.

4.1.18 Tribal Cultural Resources

Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	Less than Significant with MM and PP Incorporated	No	No	No	MM CUL-1 PP 4.5-5

a) i) Threshold 4.1.18 a)1) noted above is detailed in Threshold 4.1.5 a), Cultural Resources of this Addendum. The ND Ph2 project site is currently vacant with only remnant landscape and hardscaped areas; no historical resources exist within the ND Ph2 project site. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to historical resources.

a) ii) The NDD Plan IS determined that the NDD Plan area, which includes the ND Ph2 site, is not known or expected to contain any Tribal Cultural Resources (TCRs). UCR consulted with the applicable tribes as part of the Assembly Bill 52 tribal consultation process during the NDD Plan

EIR process. The Agua Caliente Band of Cahuilla Indians responded to the Assembly Bill 52 notification letter stating that they did not require consultation and no other requests for formal consultation were received by UCR. The NDD Plan IS states that the NDD Plan area, which includes the ND Ph2 site, could expose previously undiscovered buried archaeological resources, including human remains, which could be determined to be TCRs. To address this potential, the proposed ND Ph2 project would incorporate MM CUL-1 to ensure that should cultural resources be encountered, they would be protected, documented, and preserved, as appropriate, consistent with the NDD Plan IS. If human remains are uncovered and are determined to be of Native American origin, UCR would implement PP 4.5-5 for protection of the remains, documentation, and respectful treatment in consultation with a Native American Most Likely Descendent. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan IS, and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact to TCRs.

4.1.18(a)(2) Applicable MMs, PSs, and/or PPs:

Refer to **MM CUL-1 and PP 4.5-5** in Section 4.1.5, Cultural Resources of this Addendum.

4.1.19 Utilities and Service Systems

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	Less than Significant with PPs Incorporated	No	No	No	PP 4.15-1(a) PP 4.15-1(b) PP 4.15-1(c) PP 4.15-1(d) PP 4.8-3(e)
b)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple-dry years?	Less than Significant with PPs Incorporated	No	No	No	PP 4.15-1(a) PP 4.15-1(b) PP 4.15-1(c) PP 4.15-1(d)
c)	Result in a determination by the waste water treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the providers existing commitments?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
d)	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required
e)	Comply with federal, State, and local management and reduction statues and regulations related to solid waste?	Less than Significant Impact	No	No	No	No MMs, PSs, or PPs required

a) Development of the proposed ND Ph2 project would be adjacent to existing campus development and would connect to existing utility facilities, including for water supply, wastewater treatment, storm water drainage, electric power, and telecommunications. The proposed ND Ph2 project would be electric and not use natural gas. All connections would be implemented during project construction which would result in only temporary impacts, be located within developed/disturbed areas, and not substantially increase the disturbance area considered in the NDD Plan EIR. All project construction activities would comply with BMPs which would minimize any environmental impacts.

Water and Wastewater Facilities

The campus has a combined fire and domestic water system that is sufficient to serve the proposed ND Ph2 project. RPU provides potable water to the campus, which is used both in buildings and for landscape irrigation. An existing 12-inch RPU water line is located beneath Canyon Crest Drive, and a 14-inch RPU water line is located beneath W. Linden Street. In addition, UCR has a private on-campus water system that conveys potable, fire, and irrigation water supplies throughout the campus, as needed. The proposed ND Ph2 project would tie into the existing water system with upgrades determined appropriate in coordination with the City of Riverside. Any system upgrades would involve limited work within the public right-of-way. The proposed ND Ph2 project anticipates providing additional fire hydrants on-site and/or along the street frontages of W. Linden Street and Canyon Crest Drive.

The ND Ph2 irrigation system would meet or exceed the State of California Model Efficient Landscape Ordinance (CA AB 1881 requirements) and the UCR requirements for a water efficient landscape. Submeter and point of connection with a new back flow would be incorporated for the proposed irrigation.

Development of the NDD Plan would increase water demand on campus and the total average NDD Plan water demand at buildout was estimated at 624,474 gallons per day or 700 acre-feet per year. To minimize impacts on water utilities, NDD Plan developments including the proposed ND Ph2 project would follow water conservation policies in the UC Policy on Sustainable Practices and would implement PP 4.15-1(a) through PP 4.15-1(d). Since the proposed ND Ph2 project would not exceed the building space projections contemplated in the NDD Plan, the proposed ND Ph2 project would be consistent with the development projected in the NDD Plan and associated water demand. RPU is anticipated to meet future water demands, including those generated by the NDD Plan through 2040 and no new or expanded water supplies would be necessary and the impact to water facilities would be less than significant.

The Sewage Systems Services Program and Treatment Services unit, administered by the City Public Works Department, collects, treats, and disposes of all wastewater generated by the UCR campus, including the ND Ph2 project site. The proposed ND Ph2 project anticipates tying into the existing sewer line in Canyon Crest Drive, which is proposed to be upsized from an 8-inch to a 15-inch line for approximately 1,400 feet between W. Linden Street and University Avenue to accommodate the proposed ND Ph2 project's projected flows. The installation of 1,400 feet of the upsized sewer line in Canyon Crest Drive would not cause significant impacts on the environment. Wastewater generated from the NDD Plan, including the proposed ND Ph2 project, would be treated at the City's Regional Water Quality Control Plant (RWQCP) which has a treatment capacity of 46 million gallons per day. Since the proposed ND Ph2 project would not exceed the beds or building space projections contemplated in the NDD Plan, the proposed ND Ph2 project would be consistent with the development projected in the NDD Plan and associated wastewater generation. The RWQCP is anticipated to adequately treat future wastewater generation, including those generated by the NDD Plan, including the proposed ND Ph2 project, and no new or expanded wastewater treatment facilities would be necessary and the impact would be less than significant.

Stormwater Drainage Facilities

Please refer to the analysis of drainage provided under Section 4.1.10, Hydrology and Water Quality, of this Addendum. In summary, the analysis concluded that operation of the proposed project would not exceed the capacity of the existing storm drain system, and there would be a less than significant impact. Furthermore, PP 4.8-3(e) would be implemented as part of the development under the NDD Plan and the proposed ND Ph2 project.

The existing topography of the ND Ph2 site has a gradual 60-foot east to west drop across approximately 1,880 feet (averaging 3.2 percent slope) where stormwater sheet-flows down the existing network of streets and gutters and onto Canyon Crest Drive to the west and, to a more limited degree, onto W. Linden Street to the south. From there, these flows are conveyed by street gutters into underground drainage systems in W. Linden Street and Blaine Street. The proposed ND Ph2 project would include installation of on-site stormwater improvements, the nature and extent of which would be determined through preparation of a WQMP and compliance with UCR's campus-wide stormwater permits. Any stormwater runoff from the ND Ph2 site would be routed to existing stormwater drainage facilities in W. Linden Street, Blaine Street and/or Canyon Crest Drive. Storm drain pipes from the ND Ph2 project site would connect to existing campus storm drains within the surrounding streets.

Electric Power and Natural Gas Facilities

The proposed ND Ph2 project would require the use of electricity for lighting, appliances, heating, and cooling. The proposed project would not utilize natural gas and the proposed ND Ph2 buildings would be fully electric. UCR purchases electricity for campus operations from RPU and through a power purchase agreement for on-site generation from the campus' solar infrastructure. The proposed ND Ph2 project would connect to the electrical line located within the public rights-of-way of Canyon Crest Drive or W. Linden Street. The total annual electricity demand/usage for the ND Ph2 project is estimated at 3,347,356 kWh, which is not anticipated to require additional electricity substations or construction or relocation of electrical infrastructure that would cause significant environmental effects. The proposed project is required to follow energy conservation policies listed in the UC Policy on Sustainable Practices to minimize energy use for the campus to attain the GHG reduction goals. Therefore, no impacts would occur.

Telecommunications Infrastructure

The proposed ND Ph2 project would include telecommunications/signals from distribution lines to buildings and would include minor telecommunications improvements such as underground connections in previously disturbed areas, which would not cause significant impacts on the environment.

Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to the construction or relocation of utilities.

4.1.19(a) Applicable MMs, PSs, and/or PPs:

PP 4.15-1(a): Improvements to the campus water distribution system, including necessary pump capacity, will be made as required to serve new projects. Project-specific CEQA analysis of environmental effects that would occur prior to project-specific approval will consider the continued adequacy of the domestic/fire water systems, and no new development would occur without a demonstration that appropriate domestic/fire water supplies continue to be available.

PP 4.15-1(b): To further reduce the Campus' impact on domestic water resources, to the extent feasible, UCR will:

i. Install hot water recirculation devices (to reduce water waste)

ii. Continue to require all new construction to comply with applicable State laws requiring water-efficient plumbing fixtures, including but not limited to the Health and Safety Code and Title 24, California Code of Regulations, Part 5 (California Plumbing Code)

iii. Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time

iv. Install recovery systems for losses attributable to existing and proposed steam and chilled water systems

v. Prohibit using water as a means of cleaning impervious surfaces

vi. Install water-efficient irrigation equipment to maximize water savings for landscaping and retrofit existing systems over time

PP 4.15-1(c): The Campus shall promptly detect and repair leaks in water and irrigation pipes.

PP 4.15-1(d): The Campus shall avoid serving water at food service facilities except upon request.

PP 4.8-3(e): Prior to the time of design approval, the campus will evaluate each specific project to determine if the project runoff would exceed the capacity of the existing storm drain system. If it is found that the capacity would be exceeded, one or more of the following components of the storm drain system would be implemented to minimize the occurrence of local flooding:

i. Multi-project stormwater detention basins

ii. Single-project detention basins

iii. Surface detention design

iv. Expansion or modification of the existing storm drain system

v. Installation of necessary outlet control facilities

b) Consistent with the NDD Plan EIR discussion, the total water demand of buildout of the NDD Plan was estimated to be 624,474 gallons per day or 700 acre-feet per year and recycled water would be used for approximately 11 acres of open space. In order to minimize impacts on water utilities, the proposed NDD Plan would follow water conservation policies listed in the UC Policy on Sustainable Practices and would implement PP 4.15-1(a) through 4.15-1(d). Since the proposed ND Ph2 project would not exceed the building space projections contemplated in the NDD Plan, the proposed ND Ph2 project would be consistent with the development projected in the NDD Plan and associated water demand. RPU is anticipated to meet future water demands, including those generated by the NDD Plan through 2040 and no new or expanded water supplies would be necessary and the impact to water supplies would be less than significant. The proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to sufficient waters supplies being available for the project.

4.1.19(b) Applicable MMs, PSs, and/or PPs:

Refer to **PP 4.15-1(a) through PP 4.15-1(d)** above.

c) As outlined in Threshold 4.1.19 a) above, since the proposed ND Ph2 project would not exceed the beds or building space projections contemplated in the NDD Plan, the proposed ND Ph2 project would be consistent with the development projected in the NDD Plan and associated wastewater generation. The RWQCP is anticipated to adequately treat future wastewater generation, including those generated by the NDD Plan, including the proposed ND Ph2 project, and no new or expanded wastewater treatment facilities would be necessary and the impact would be less than significant. The proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to adequate capacity of wastewater treatment provider to serve the project.

d, e) UCR's landfill-bound waste is picked up and hauled by UCR trucks to the CR&R Environmental Services facility in Perris, California (approximately 17 miles south from UCR). Materials for recycling are sorted out of the landfill waste stream and the remainder is used for waste-to-energy (the process of generating and capturing energy in the form of electricity and/or heat from the primary treatment of waste). UCR's recyclable materials are hauled to the UCR transfer station, just north of Parking Lot 30 on the West Campus. Compost, food waste, and the commingled recycle streams are picked up from the UCR transfer station by the current contracted vendor to be recycled or composted. Green waste is currently blended back into the soil by UCR's Agricultural Operations Course. The proposed ND Ph2 project would continue to utilize these solid waste programs and facilities.

Consistent with the NDD Plan EIR discussion, at buildout, the NDD Plan would generate approximately 1,244,025 tons per year of solid waste. The NDD Plan, including the ND Ph2 project, would not require the development of a new landfill or expansion of current facilities and the impact would be less than significant.

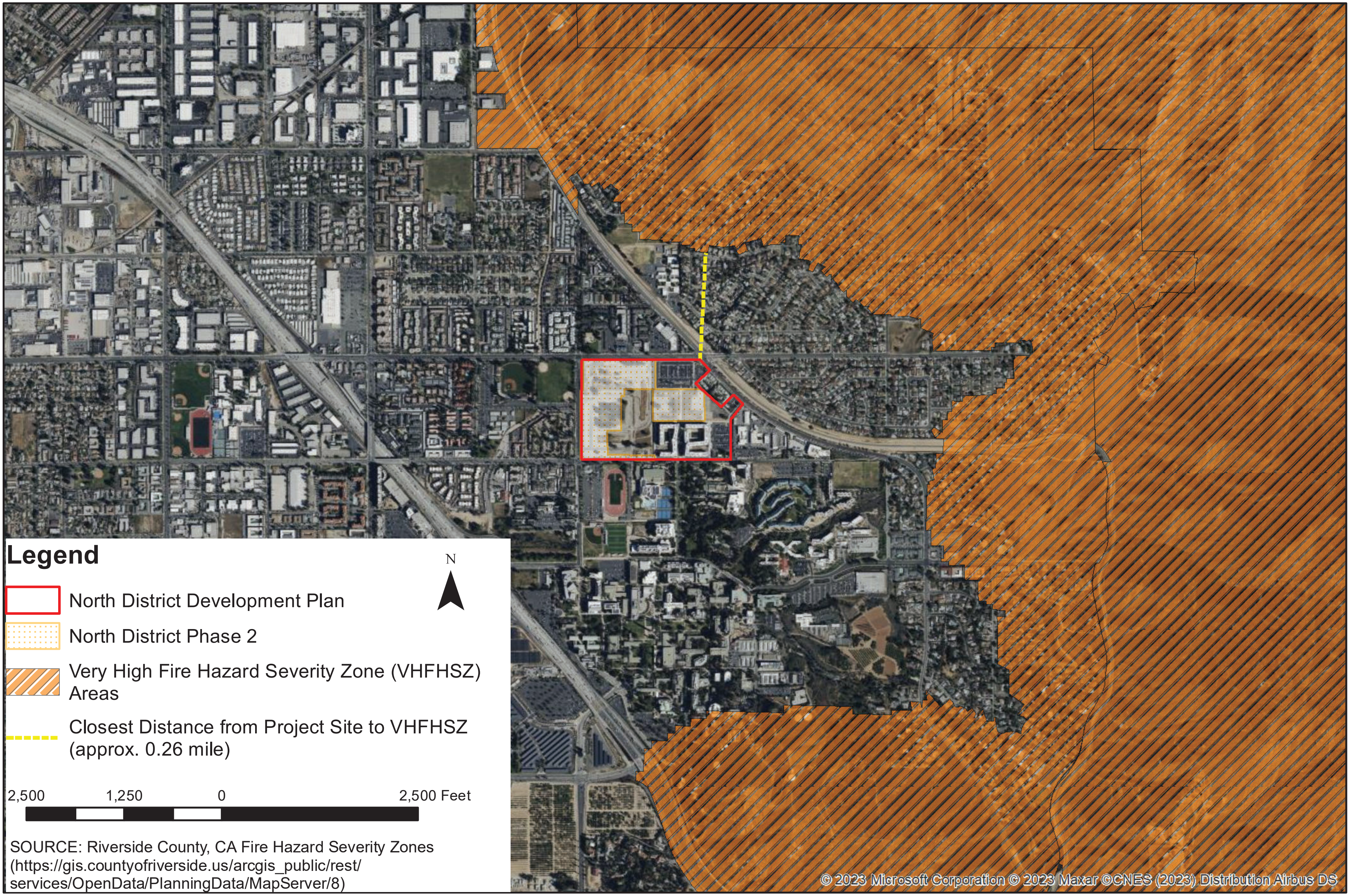
The proposed ND Ph2 project would implement features of the UC Policy on Sustainable Practices which directs UCR to reduce total per capita municipal solid waste generation by 25 percent and 50 percent from 2015/2016 levels by 2025 and 2030, respectively. The proposed ND Ph2 project would comply with all federal, State, and UC statues and regulations related to solid waste. The proposed ND Ph2 project would not generate solid waste in excess of State or local standards or negatively impact the provision of solid waste services or impair attainment of solid waste goals, and the proposed project would comply with all federal, State, and local management regulations related to solid waste. Therefore, the proposed project would be consistent with the analysis and determination in the NDD Plan EIR and the proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to solid waste.

4.1.20 Wildfire

	Would the proposed project:	NDD Plan EIR Significance Conclusion	Do Proposed Changes Require Major Revisions to the NDD Plan EIR?	Do New Circumstances Require Major Revisions to the NDD Plan EIR?	Is there Any New Information Resulting in New or Substantially More Severe Significant Impacts?	Applicable NDD Plan EIR MMs, PSs, and/or PPs to Address Project-Specific Impacts
a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	Less than Significant with PPs Incorporated	No	No	No	PP 4.7-7(a) PP 4.7-7(b)
b)	Exacerbate wildfire risks due to slope, prevailing winds, and other factors and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	N/A	No	No	No	No MMs, PSs, or PPs required
c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	N/A	No	No	No	No MMs, PSs, or PPs required
d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	N/A	No	No	No	No MMs, PSs, or PPs required

These specific thresholds related to wildfire were not explicitly addressed in the certified NDD Plan EIR because it was not included in the CEQA Guidelines in effect at the time. However, Section 4.9, *Hazards and Hazardous Materials,* of the NDD Plan EIR did discuss similar emergency evacuation plans and wildfire risk. This Addendum provides an analysis of the proposed ND Ph2 project's potential effects related to wildfire using the current CEQA Guidelines thresholds.

a) As shown in Figure 4-1, Fire Hazard Area Map, the project site is not located within a Very High Fire Hazard Severity Zone (VHFHSZ), including a Local Responsibility Area or State Responsibility Area. The nearest VHFHSZ to the project site is approximately 0.26 mile to the north (California Department of Forestry and Fire Protection [CAL FIRE] 2023a, 2023b, County of Riverside 2023). The proposed project would be developed on a site that has existing access from Blaine Street, Canyon Crest Drive, and W. Linden Street. Roadways within the campus (Canyon Crest Drive, W. Linden Street) and Blaine Street are not designated evacuation routes in the City's General Plan Public Safety Element Technical Background Report (City of Riverside 2021). Therefore, construction and operation of the proposed project would not substantially alter or otherwise interfere with evacuation routes or public rights-of-way.



RVA

UNIVERSITY OF CALIFORNIA, RIVERSIDE - NORTH DISTRICT PHASE 2

Fire Hazard Area Map

Figure 4-1

Development of the NDD Plan, including the proposed ND Ph2 project, would not interfere with the UCR Emergency Action Plan (EAP) through any construction-related road closures. UCR's EAP guides evacuation procedures in case of fire and other emergencies. UCR's Transportation and Parking Services personnel support evacuations and coordinate with other University departments and with the City, as necessary. As the proposed ND Ph2 construction would result in a similar amount of construction and would not require a significant increase in number of construction vehicles, the proposed project would not create congestion levels or road closures which would interfere with the EAP. The Campus Fire Marshal would review plans during the plan review process to ensure adequate ingress/egress of emergency vehicles on the project site during construction activities and adequate fire lanes and access as well as adequate fire protection (e.g., fire hydrants, sprinklers) with development of the proposed project. Adherence to PP 4.7-7(a) and PP 4.7-7(b) focused on addressing potential road closures during construction and coordination efforts with the applicable departments and agencies regarding roadway closures and detours that would ensure that construction would not result in significant impacts.

As the proposed ND Ph2 project would not affect vehicular and pedestrian circulation to and around the project site, impacts would be similar to that under the NDD Plan. The proposed ND Ph2 project would not impair implementation of or physically interfere with the EAP during operation. Therefore, operation of the ND Ph2 project would not impair implementation of or physically interfere with the EAP. The proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to substantially impairing an emergency response or emergency evacuation plan. Impacts would be less than significant with PPs incorporated.

4.1.20(a) Applicable MMs, PSs, and/or PPs:

PP 4.7-7(a): To the extent feasible, the campus shall maintain at least one unobstructed lane in both directions on campus roadways. At any time only a single lane is available, the campus shall provide a temporary traffic signal, signal carriers (i.e., flagpersons), or other appropriate traffic controls to allow travel in both directions. If construction activities require the complete closure of a roadway segment, the campus shall provide appropriate signage indicating alternative routes.

PP 4.7-7(b): To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, PD&C shall consult with the UCRPD, EH&S, and the RFD to disclose roadway closures and identify alternative travel routes.

b – d) The proposed ND Ph2 project would be constructed within the NDD Plan area, surrounded by existing development. The NDD Plan area, which includes the ND Ph2 site, is not adjacent to the southeast hills bordering the southeast end of campus that may be susceptible to wildland fires. The Campus Fire Marshal would ensure that there is proper storage, handling, and use of any hazardous materials during construction activities. Additionally, construction activities would be required to follow fire safety protocols including but not limited to on-site fire extinguishing equipment and compliance with Fire Code Chapter 33, and all construction equipment would be subject to standard operating procedures that would limit sources of ignition that could generate a wildfire. The proposed project would also have to be designed and constructed in adherence to Campus Construction and Design Standards and building codes, including the UCR Fire Prevention and Life Safety Policy and would be subject to Fire Code review and inspection by UCR's Building and Safety Division, Fire Prevention, EH&S, Office of Emergency Management, the Campus Fire Marshal, and/or other applicable UCR departments and staff.

Operation of the proposed project would not alter or interfere with public rights-of-way and would provide access for emergency response vehicles to the ND Ph2 site. Development of the proposed project would include new pedestrian pathways, pick-up/drop-off area, accessible parking, fire and service access, underground utility connections, and other associated infrastructure. The proposed ND Ph2 project's access connections would be developed at existing roadways and these roadways would remain with implementation of the proposed project. All utilities connections needed to serve the proposed project would be installed in accordance with the current building codes and safety standards to reduce the risk of fires. New electrical connections would be installed underground in accordance with UCR Campus Construction and Design Standards or City standards if within City's right-of-way. The existing and proposed fire hydrants, standpipes, and fire sprinklers in buildings would reduce fire risk by providing increased access to emergency services and fire protection.

Development and construction of the proposed ND Ph2 project would comply with CBC/California Fire Code and with all existing regulations for on-site vegetation and fuel management to maintain clearance around the proposed buildings and structures. Therefore, the proposed ND Ph2 project would not exacerbate wildfire risks exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire; exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; and would not expose people or structures to significant risks to flooding or landslides. The proposed ND Ph2 project would not result in any new significant impacts or a substantial increase in the severity of a previously identified significant impact related to wildfire risk. Impacts would be less than significant.

5 APPLICABLE MITIGATION MEASURES, PLANNING STRATEGIES, AND PROGRAMS AND PRACTICES

The following MMs, PSs, and PPs from the certified NDD Plan EIR Mitigation Monitoring and Reporting Program would be applicable to the impacts associated with the proposed ND Ph2 project. Minor modifications have been made in underline or ~~strikethrough~~ text to address minor technical changes based on updated document labeling, regulations or standards. No new significant impacts or increased severity in impacts that were not analyzed in the NDD Plan EIR have been identified; therefore, no additional project-specific mitigation is required.

5.1 AESTHETICS

PP 4.1-1 (modified in 2023): The Campus shall provide design professionals with the ~~2007 Campus Design Guidelines~~ Campus Construction and Design Standards and instructions to implement the ~~guidelines~~ Standards, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design.

PP 4.1-2(a) (modified in 2023): The Campus shall continue to provide design professionals with the ~~2007 Campus Design Guidelines~~ Campus Construction and Design Standards and instructions to develop project-specific landscape plans that are consistent with the ~~Guidelines~~ Standards with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible.

MM 4.1-3(a): Building materials shall be reviewed and approved as part of project-specific design and through approval of construction documents. Mirrored, reflective glass is prohibited on campus.

MM 4.1-3(b): All outdoor lighting on campus resulting from new development shall be directed to the specific location intended for illumination (e.g., roads, walkways, or recreation fields) to prevent stray light spillover onto adjacent residential areas. In addition, all fixtures on elevated light standards in parking lots, parking structures, and athletic fields shall be shielded to reduce glare. Lighting plans shall be reviewed and approved prior to project-specific design and construction document approval.

MM 4.1-3(c): Ingress and egress from new parking areas shall be designed and situated so as to minimize the impact of vehicular headlights on adjacent uses. Walls, landscaping or other light barriers will be provided. Site plans shall be reviewed and approved as part of project-specific design and construction document approval.

PS Campus & Community 1: Provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.

5.2 AGRICULTURE AND FORESTRY RESOURCES

None.

5.3 AIR QUALITY

None.

5.4 BIOLOGICAL RESOURCES

MM BIO-1 (modified in 2023): Prior to the onset of construction activities that would result in the removal of mature trees and would occur between mid-February and end of August ~~March and mid-August~~, surveys for nesting special-status avian species and raptors shall be conducted following the California Department of Fish and Wildlife (CDFW) guidelines. If no active avian nests are identified on or within 250 feet of the construction site, no further mitigation is necessary.

MM BIO-2: If active nests of special-status avian species or raptors are found within the construction footprint or within 250 feet of the construction site, exterior construction activities shall be delayed until the young have fledged or appropriate mitigation measures responding to the specific situation have been developed and implemented in consultation with CDFW.

5.5 CULTURAL RESOURCES

MM CUL-1: If an archaeological resource is discovered during construction, all soil-disturbing work within 100 feet of the find shall cease and the University Representative shall contact a qualified archaeologist meeting the Secretary of Interior standards within 24 hours of discovery to inspect the site. If a resource within the project area of potential effect is determined to qualify as a unique archaeological resource (as defined by CEQA), the University shall devote adequate time and funding to determine if it is feasible, through project design measures to preserve the find intact. If it cannot be preserved, the University shall retain a qualified non-University archaeologist to design and implement a treatment plan, prepare a report, and salvage the material, as appropriate. Any important artifacts recovered during monitoring shall be cleaned, catalogued, and analyzed, with the results presented in a report of finding that meets professional standards.

a) If significant Native American cultural resources are discovered, as determined by the consulting archaeologist for which a Treatment Plan must be prepared, the developer, or his archaeologist shall immediately contact the University Representative. The University Representative shall contact the appropriate Tribal representatives.

b) If requested by Tribal representatives, the University, the developer, or faith, consult on the discovery and its disposition (e.g., avoidance, preservation, return of artifacts to tribe).

PP 4.5-5: In the event of the discovery of a burial, human bone, or suspected human bone, all excavation or grading in the vicinity of the find shall halt immediately and the area of the find shall be protected and the University immediately shall notify the Riverside County Coroner of the find and comply with the provisions of P.R.C. Section 5097 with respect to Native American involvement, burial treatment, and re-burial, if necessary.

5.6 ENERGY

None.

5.7 GEOLOGY AND SOILS

PS Open Space 4: Provide landscaped buffers and setbacks along campus edges, such as Valencia Hill Drive and its extension south of Big Springs Road, Martin Luther King Boulevard, and the I-215/SR-60 freeway.

PS Conservation 2: Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce storm water runoff, and maintain existing landscapes, including healthy mature trees whenever possible.

PS Conservation 3: Continue with the increase in building densities on campus, particularly in academic zones, in order to preserve open space and conserve limited land resources and the agricultural fields.

PP 4.5-4: Construction specifications shall require that if a paleontological resource is uncovered during construction activities:

i. A qualified paleontologist shall determine the significance of the find.

ii. The Campus shall make an effort to preserve the find intact through feasible project design measures.

iii. If it cannot be preserved intact, then the University shall retain a qualified non-University paleontologist to design and implement a treatment plan to document and evaluate the data and/or preserve appropriate scientific samples.

iv. The paleontologist shall prepare a report of the results of the study, following accepted professional practice.

v. Copies of the report shall be submitted to the University and the Riverside County Museum.

PP 4.6-1(a): During project-specific building design, a site-specific geotechnical study shall be conducted under the direct supervision of a California Registered Engineering Geologist or licensed geotechnical engineer to assess seismic, geological, soil, and groundwater conditions at each construction site and develop recommendations to prevent or abate any identified hazards. The study shall follow applicable recommendations of CDMG Special Publication 117 and shall include, but not necessarily be limited to:

- Determination of the locations of any suspected fault traces and anticipated ground acceleration at the building site
- Potential for displacement caused by seismically induced shaking, fault/ground surface rupture, liquefaction, differential soil settlement, expansive and compressible soils, landsliding, or other earth movements or soil constraints
- Evaluation of depth to groundwater

The structural engineer shall incorporate the recommendations made by the geotechnical report when designing building foundations.

PP 4.6-1(b): The Campus shall continue to implement its current seismic upgrade program.

PP 4.6-1(c): The Campus will continue to fully comply with the University of California's Policy for Seismic Safety, as amended. The intent of this policy is to ensure that the design and construction of new buildings and other facilities shall, as a minimum, comply with seismic provisions of CCR, Title 24, California Administrative Code, the California State Building Code, or local seismic requirements, whichever requirements are most stringent.

PP 4.6-2(a): The Campus shall continue to implement dust control measures consistent with SCAQMD Rule 403—Fugitive Dust during the construction phases of new project development. The following actions are currently recommended to implement Rule 403 and have been quantified by the SCAQMD as being able to reduce dust generation between 30 and 85 percent depending on the source of the dust generation. The Campus shall implement these measures as necessary to reduce fugitive dust. Individual measures shall be specified in construction documents and require implementation by construction contractor:

i. Apply water and/or approved nontoxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas that have been inactive for 10 or more days)

ii. Replace ground cover in disturbed areas as quickly as possible

iii. Enclose, cover, water twice daily, or apply approved chemical soil binders to exposed piles with 5 percent or greater silt content

iv. Water active grading sites at least twice daily

v. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour over a 30-minute period

vi. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code

vii. Sweep streets at the end of the day if visible soil material is carried over to adjacent roads. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip

viii. Apply water three times daily or chemical soil stabilizers according to manufacturers' specifications to all unpaved parking or staging areas or unpaved road surfaces

ix. Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads

PP 4.6-2(b): In compliance with National Pollution Discharge Elimination System (NPDES), the Campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003):

i. Public education and outreach on stormwater impacts

ii. Public involvement/participation

iii. Illicit discharge detection and elimination

iv. Pollution prevention/good housekeeping for facilities

v. Construction site stormwater runoff control

vi. Post-construction stormwater management in new development and redevelopment

5.8 GREENHOUSE GAS EMISSIONS

MM GHG-1: By May 1, 2026, UC Riverside shall purchase carbon offsets and/or renewable energy certificates to achieve campus-wide carbon neutrality in Scope 1 and 2 emissions by 2025, consistent with the UC Policy on Sustainable Practices.

5.9 HAZARDS AND HAZARDOUS MATERIALS

PP 4.7-1: The Campus shall continue to implement the current (or equivalent) health and safety plans, programs, and practices related to the use, storage, disposal, or transportation of hazardous materials, including, but not necessarily limited to, the Business Plan, the Broadscope Radioactive Materials License, and the following programs: Biosafety, Emergency Management, Environmental Health, Hazardous Materials, Industrial Hygiene and Safety, Laboratory/Research Safety, Radiation Safety, and Integrated Waste Management. These programs may be subject to modification as more stringent standards are developed or if the programs are replaced by other programs that incorporate similar health and safety protection measures.

PP 4.7-2: The Campus shall perform hazardous materials surveys on buildings and soils, if applicable, prior to demolition. When remediation is deemed necessary, surveys shall identify all potential hazardous materials within the structure to be demolished, and identify handling and disposal practices. The Campus shall follow the practices during building demolition to ensure construction worker and public safety.

PP 4.7-3: The Campus will inform employees and students of hazardous materials minimization strategies applicable to research, maintenance, and instructional activities, and require the implementation of these strategies where feasible. Strategies include but are not limited to the following:

i. Maintenance of online database by EH&S of available surplus chemicals retrieved from laboratories to minimize ordering or new chemicals.

ii. Shifting from chemical usage to micro techniques as standard practice for instruction and research, as better technology becomes available.

PP 4.7-7(a): To the extent feasible, the campus shall maintain at least one unobstructed lane in both directions on campus roadways. At any time only a single lane is available, the campus shall provide a temporary traffic signal, signal carriers (i.e., flagpersons), or other appropriate traffic controls to allow travel in both directions. If construction activities require the complete closure of a roadway segment, the campus shall provide appropriate signage indicating alternative routes.

PP 4.7-7(b): To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, PD&C shall consult with the UCRPD, EH&S, and the RFD to disclose roadway closures and identify alternative travel routes.

5.10 HYDROLOGY AND WATER QUALITY

Refer to **PS Conservation 2 and PS Conservation 3** in Section 5.7, Geology and Soils, above.

PS Conservation 5: Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.

PP 4.8-1: The Campus will continue to comply with all applicable water quality requirements established by the SARWQCB.

PP 4.8-2(a): To further reduce the campus' impact on domestic water resources, to the extent feasible, UCR will:

i. Install hot water recirculation devices (to reduce water waste)

ii. Continue to require all new construction to comply with applicable State laws requiring water-efficient plumbing fixtures, including but not limited to the Health and Safety Code and Title 24, California Code of Regulations, Part 5 (California Plumbing Code)

iii. Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time

iv. Install recovery systems for losses attributable to existing and proposed steam and chilled-water systems

v. Prohibit using water as a means of cleaning impervious surfaces

vi. Install water-efficient irrigation equipment to maximize water savings for landscaping and retrofit existing systems over time

PP 4.8-2(b): The Campus shall promptly detect and repair leaks in water and irrigation pipes.

PP 4.8-2(c): The Campus shall avoid serving water at food service facilities except upon request.

PP 4.8-3(c): The Campus shall continue to implement dust control measures consistent with SCAQMD Rule 403—Fugitive Dust during the construction phases of new project development. The following actions are currently recommended to implement Rule 403 and have been quantified by the SCAQMD as being able to reduce dust generation between 30 and 85 percent depending on the source of the dust generation. The Campus shall implement these measures as necessary to reduce fugitive dust. Individual measures shall be specified in construction documents and require implementation by construction contractor:

i. Apply water and/or approved nontoxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas that have been inactive for 10 or more days)

ii. Replace ground cover in disturbed areas as quickly as possible

iii. Enclose, cover, water twice daily, or apply approved chemical soil binders to exposed piles with 5 percent or greater silt content

iv. Water active grading sites at least twice daily

v. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour over a 30-minute period (vi) All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code

vi. Sweep streets at the end of the day if visible soil material is carried over to adjacent roads

vii. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip

viii. Apply water three times daily or chemical soil stabilizers according to manufacturers' specifications to all unpaved parking or staging areas or unpaved road surfaces

ix. Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads

PP 4.8-3(d): In compliance with NPDES, the Campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003):

i. Public education and outreach on stormwater impacts

ii. Public involvement/participation

iii. Illicit discharge detection and elimination

iv. Pollution prevention/good housekeeping for facilities

v. Construction site stormwater runoff control

vi. Post-construction stormwater management in new development and redevelopment

PP 4.8-3(e): Prior to the time of design approval, the Campus will evaluate each specific project to determine if the project runoff would exceed the capacity of the existing storm drain system. If it is found that the capacity would be exceeded, one or more of the following components of the storm drain system would be implemented to minimize the occurrence of local flooding:

i. Multi-project stormwater detention basins

ii. Single-project detention basins

iii. Surface detention design

iv. Expansion or modification of the existing storm drain system

v. Installation of necessary outlet control facilities

5.11 LAND USE AND PLANNING

Refer to **PS Campus & Community 1** in Section 5.1, Aesthetics, and **PS Open Space 4** in Section 5.7, Geology and Soils, above.

PS Development Strategy 1: Establish a design review process to provide regular review of building and landscape development on campus.

PS Land Use 4: Pursue a goal of housing 50 percent of student enrollment in on campus or campus controlled housing.

PS Land Use 7: Over time, relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate.

PS Transportation 6: Implement parking management measures that may include:

- Restricted permit availability
- Restricted permit mobility
- Differential permit pricing

PP 4.9-1(a) (modified in 2023): The Campus shall provide design professionals with the ~~2007 Campus Design Guidelines~~ Campus Construction and Design Standards and instructions to implement the ~~guidelines~~ Standards, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design.

PP 4.9-1(b) (modified in 2023): The Campus shall continue to provide design professionals with the ~~2007 Campus Design Guidelines~~ Campus Construction and Design Standards and instructions to develop project-specific landscape plans that are consistent with the ~~Guidelines~~ Standards with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible.

5.12 MINERAL RESOURCES

None.

5.13 NOISE

Refer to **PS Campus & Community 1** in Section 5.1, Aesthetics, above.

MM NOI-1: Barriers such as plywood structures or flexible sound control curtains shall be erected, as needed, between the proposed project and adjacent sensitive receptors to minimize the amount of noise during construction. These temporary sound barriers shall be capable of achieving a sound attenuation of at least 5 dB(A) and block the line of sight between the project site and these adjacent land uses. Sound barriers between the project site and the UCR Child Development Center shall be capable of achieving a sound attenuation of at least 16 dB(a) and block the line of sight between the project site and the Child Development Center.

MM NOI-2: Noise and groundborne vibration construction activities whose specific location on the site may be flexible (e.g, operation of compressors and generators, cement mixing, general truck idling) shall be conducted as far as possible from the nearest noise- and vibration-sensitive land uses, and natural and/or manmade barriers (e.g., intervening construction trailers) shall be used to screen propagation of noise from such activities towards these land uses to the maximum extent possible.

MM 4.10-2: The campus shall notify all academic and residential facilities within 300 feet of approved construction sites of the planned schedule of vibration causing activities so that the occupants and/or researchers can take necessary precautionary measures to avoid negative effects to their activities and/or research.

PP 4.10-1(a): UCR will incorporate the following siting design measures to reduce long-term noise impacts:

i. Truck access, parking area design, and air conditioning/refrigeration units will be designed and evaluated when planning specific individual new facilities to minimize the potential for noise impacts to adjacent developments.

ii. Building setbacks, building design and orientation will be used to reduce intrusive noise at sensitive student residential and educational building locations near main campus access routes, such as Blaine Street, Canyon Crest Drive, University Avenue, and Martin Luther King Jr. Boulevard. Noise walls may be advisable to screen existing and proposed facilities located near the I-215/SR-60 freeway.

iii. Adequate acoustic insulation would be added to residence halls to ensure that the interior Ldn would not exceed 45 dB(A) during the daytime and 40 dB(A) during the nighttime (10:00 PM to 7:00 AM) in rooms facing major streets.

iv. Potential noise impacts would be evaluated as part of the design review for all projects. If determined to be significant, mitigation measures would be identified and alternatives suggested. At a minimum, campus residence halls and student housing design would comply with Title 24, Part 2 of the California Administrative Code.

PP 4.10-2: The UCR campus shall limit the hours of exterior construction activities from 7:00 a.m. to 9:00 p.m. Monday through Friday and 8:00 a.m. to 6:00 p.m. on Saturday when necessary. Construction traffic shall follow transportation routes prescribed for all construction traffic to minimize the impact of this traffic (including noise impacts) on the surrounding community.

PP 4.10-6: The Campus shall continue to shield all new stationary sources of noise that would be located in close proximity to noise sensitive buildings and uses.

PP 4.10-7(b): The Campus shall continue to require by contract specifications that construction equipment be required to be muffled or otherwise shielded. Contracts shall specify that engine-driven equipment be fitted with appropriate noise mufflers.

PP 4.10-7(c): The Campus shall continue to require that stationary construction equipment material and vehicle staging be placed to direct noise away from sensitive receptors.

PP 4.10-7(d): The Campus shall continue to conduct regular meetings, as needed, with on- campus constituents to provide advance notice of construction activities in order to coordinate these activities with the academic calendar, scheduled events, and other situations, as needed.

PP 4.10-8: The Campus shall continue to conduct meetings, as needed, with off-campus constituents that are affected by campus construction to provide advance notice of construction activities and ensure that the mutual needs of the particular construction project and of those impacted by construction noise are met, to the extent feasible.

5.14 POPULATION AND HOUSING

None.

5.15 PUBLIC SERVICES

PP 4.12-1(a) (modified in 2023): As development occurs, the following measures will be incorporated:

i. New structures would be designed with adequate fire protection features in compliance with State law and the requirements of the State Fire Marshal. Building designs would be reviewed by appropriate campus staff and government agencies.

ii. Prior to implementation of individual projects, the adequacy of water supply and water pressure will be determined in order to ensure sufficient fire protection services.

iii. Adequate access will be provided to within 50 feet of the main entrance of occupied buildings to accommodate emergency ambulance service.

iv. Adequate access for fire apparatus will be provided within 50 feet of stand pipes and sprinkler outlets.

v. Service roads, plazas, and pedestrian walks that may be used for fire or emergency vehicles will be constructed to withstand loads ~~of up to 45,000 pounds~~ consistent with the most recent Fire Code.

vi. As implementation of the LRDP occurs, campus fire prevention staffing needs would be assessed, increases in staffing would be determined through such needs assessments.

PP 4.12-1(b):

i. Accident prevention features shall be reviewed and incorporated into new structures to minimize the need for emergency response from the City of Riverside.

ii. Increased staffing levels for local fire agencies shall be encouraged to meet needs generated by LRDP project related on-campus population increases.

PP 4.12-2(a): As development under the LRDP occurs, the Campus will hire additional police officers and support staff as necessary to maintain an adequate level of service, staff, and equipment, and will expand the existing police facility when additional space is required.

PP 4.2-2(b) (modified in 2023): The Campus will continue to participate in the "UNET" program or similar (for coordinated police response and staffing of a community service center), which provides law enforcement services in the vicinity of the campus, with equal participation of UCR and City police staffs.

5.16 RECREATION

None.

5.17 TRANSPORTATION

PP 4.14-4 (modified in 2023): The campus shall provide design architects for roadway and parking improvements with the ~~Campus Design Guidelines~~ Campus Construction and Design Standards and instructions to implement those elements of the guidelines relevant to parking and roadway design.

5.18 TRIBAL CULTURAL RESOURCES

Refer to **MM CUL-1 and PP 4.5-4** in Section 5.5, Cultural Resources, above.

5.19 UTILITIES AND SERVICE SYSTEMS

PP 4.15-1(a): Improvements to the campus water distribution system, including necessary pump capacity, will be made as required to serve new projects. Project-specific CEQA analysis of environmental effects that would occur prior to project-specific approval will consider the continued adequacy of the domestic/fire water systems, and no new development would occur without a demonstration that appropriate domestic/fire water supplies continue to be available.

PP 4.15-1(b): To further reduce the campus' impact on domestic water resources, to the extent feasible, UCR will:

(i) Install hot water recirculation devices (to reduce water waste)

(ii) Continue to require all new construction to comply with applicable State laws requiring water-efficient plumbing fixtures, including but not limited to the Health and Safety Code and Title 24, California Code of Regulations, Part 5 (California Plumbing Code)

(iii) Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time

(iv) Install recovery systems for losses attributable to existing and proposed steam and chilled water systems

(v) Prohibit using water as a means of cleaning impervious surfaces

(vi) Install water-efficient irrigation equipment to maximize water savings for landscaping and retrofit existing systems over time

PP 4.15-1(c): The Campus shall promptly detect and repair leaks in water and irrigation pipes.

PP 4.15-1(d): The Campus shall avoid serving water at food service facilities except upon request.

PP 4.8-3: Prior to the time of design approval, the campus will evaluate each specific project to determine if the project runoff would exceed the capacity of the existing storm drain system. If it is found that the capacity would be exceeded, one or more of the following components of the storm drain system would be implemented to minimize the occurrence of local flooding:

(i) Multi-project stormwater detention basins

(ii) Single-project detention basins

(iii) Surface detention design

(iv) Expansion or modification of the existing storm drain system

(v) Installation of necessary outlet control facilities

5.20 WILDFIRE

Refer to **PP 4.7-7(a)and PP 4.7-7(b)** in Section 5.9, Hazards and Hazardous Materials, above.

6 CONCLUSION

As demonstrated in the discussions above regarding the potential environmental effects of the proposed ND Ph2 project, substantial changes are not proposed to the NDD Plan that would require major revisions to the NDD Plan EIR. Significant impacts beyond those identified and analyzed in the NDD Plan EIR would not occur as a result of the proposed ND Ph2 project. Minor modifications to existing MMs, PSs, or PPs have been made in underline or ~~strikethrough~~ text to address minor technical changes/clarifications based on updated document labeling, regulations and/or standards. Overall, the proposed ND Ph2 project would not result in new information of substantial importance that would result in new significant impacts, more severe impacts, or require new mitigation measures compared to those identified in the certified NDD Plan EIR.

As such, the proposed ND Ph2 project would not result in conditions identified in CEQA Guidelines Section 15162 requiring supplemental environmental review or a Subsequent EIR, and these are therefore not required for the proposed ND Ph2 project. Again, it should be noted that the proposed ND Ph2 project would remain subject to all applicable previously adopted MMs, PSs, and PPs included in the certified NDD Plan EIR. Based on the above analysis, this Addendum to the previously certified NDD Plan EIR for the proposed project has been prepared in accordance with CEQA Guidelines Section 15164.

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APPENDIX A – CalEEMod DETAILED REPORT

15278 - UCR North District Phase 2 Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	15278 - UCR North District Phase 2
Construction Start Date	9/22/2023
Operational Year	2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.20
Precipitation (days)	14.2
Location	33.98203521805506, -117.33037372527016
County	Riverside-South Coast
City	Riverside
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5481
EDFZ	11
Electric Utility	City of Riverside
Gas Utility	Southern California Gas
App Version	2022.1.1.14

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Apartments Mid Rise	440	Dwelling Unit	4.60	450,000	0.00	—	1,600	—
Fast Food Restaurant w/o Drive Thru	2.50	1000sqft	0.06	2,500	0.00	—	—	—
City Park	2.40	Acre	2.40	0.00	0.00	0.00	—	—
User Defined Recreational	252	User Defined Unit	5.80	0.00	0.00	—	—	—
Parking Lot	429	1000sqft	9.85	0.00	0.00	—	—	—
Other Non-Asphalt Surfaces	3.29	Acre	3.29	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Area Sources	AS-1	Use Low-VOC Cleaning Supplies

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.79	31.5	38.5	56.6	0.08	1.52	7.73	9.03	1.40	1.36	2.71	—	11,008	11,008	0.43	0.86	23.7	11,162
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.80	31.4	40.0	49.2	0.08	1.81	7.73	9.03	1.66	2.75	4.41	—	10,558	10,558	0.44	0.86	0.61	10,692

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.59	9.45	15.6	24.9	0.03	0.60	3.09	3.70	0.56	0.86	1.42	—	5,825	5,825	0.23	0.25	5.04	5,912
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.47	1.72	2.84	4.55	0.01	0.11	0.56	0.67	0.10	0.16	0.26	—	964	964	0.04	0.04	0.83	979

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	3.69	3.01	33.4	26.3	0.07	1.30	7.73	9.03	1.20	1.36	2.56	—	8,856	8,856	0.24	0.86	11.9	9,132
2024	4.45	3.68	38.5	41.0	0.08	1.52	4.35	5.39	1.40	1.30	2.71	—	10,512	10,512	0.35	0.65	20.2	10,722
2025	4.79	31.5	22.9	56.6	0.05	0.87	5.49	6.36	0.80	1.30	2.10	—	11,008	11,008	0.43	0.40	23.7	11,162
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	4.80	4.04	40.0	36.7	0.07	1.81	7.73	9.03	1.66	2.75	4.41	—	8,841	8,841	0.24	0.86	0.31	9,105
2024	4.44	3.73	38.7	34.5	0.08	1.60	5.93	7.53	1.47	2.75	4.22	—	10,491	10,491	0.35	0.65	0.52	10,692
2025	4.53	31.4	23.1	49.2	0.05	0.87	5.49	6.36	0.80	1.30	2.10	—	10,558	10,558	0.44	0.40	0.61	10,689
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.86	0.71	7.39	6.38	0.01	0.32	1.32	1.63	0.29	0.43	0.72	—	1,380	1,380	0.05	0.08	0.50	1,406
2024	2.59	2.21	15.6	24.9	0.03	0.60	3.09	3.70	0.56	0.86	1.42	—	5,825	5,825	0.23	0.25	5.04	5,912
2025	1.38	9.45	6.79	15.5	0.01	0.24	1.81	2.05	0.23	0.43	0.65	—	3,335	3,335	0.14	0.13	3.38	3,380
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.16	0.13	1.35	1.17	< 0.005	0.06	0.24	0.30	0.05	0.08	0.13	—	229	229	0.01	0.01	0.08	233

2024	0.47	0.40	2.84	4.55	0.01	0.11	0.56	0.67	0.10	0.16	0.26	—	964	964	0.04	0.04	0.83	979
2025	0.25	1.72	1.24	2.84	< 0.005	0.04	0.33	0.37	0.04	0.08	0.12	—	552	552	0.02	0.02	0.56	560

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	3.69	3.01	33.4	26.3	0.07	1.30	7.73	9.03	1.20	1.36	2.56	—	8,856	8,856	0.24	0.86	11.9	9,132
2024	4.45	3.68	38.5	41.0	0.08	1.52	4.35	5.39	1.40	1.30	2.71	—	10,512	10,512	0.35	0.65	20.2	10,722
2025	4.79	31.5	22.9	56.6	0.05	0.87	5.49	6.36	0.80	1.30	2.10	—	11,008	11,008	0.43	0.40	23.7	11,162
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	4.80	4.04	40.0	36.7	0.07	1.81	7.73	9.03	1.66	2.75	4.41	—	8,841	8,841	0.24	0.86	0.31	9,105
2024	4.44	3.73	38.7	34.5	0.08	1.60	5.93	7.53	1.47	2.75	4.22	—	10,491	10,491	0.35	0.65	0.52	10,692
2025	4.53	31.4	23.1	49.2	0.05	0.87	5.49	6.36	0.80	1.30	2.10	—	10,558	10,558	0.44	0.40	0.61	10,689
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.86	0.71	7.39	6.38	0.01	0.32	1.32	1.63	0.29	0.43	0.72	—	1,380	1,380	0.05	0.08	0.50	1,406
2024	2.59	2.21	15.6	24.9	0.03	0.60	3.09	3.70	0.56	0.86	1.42	—	5,825	5,825	0.23	0.25	5.04	5,912
2025	1.38	9.45	6.79	15.5	0.01	0.24	1.81	2.05	0.23	0.43	0.65	—	3,335	3,335	0.14	0.13	3.38	3,380
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.16	0.13	1.35	1.17	< 0.005	0.06	0.24	0.30	0.05	0.08	0.13	—	229	229	0.01	0.01	0.08	233
2024	0.47	0.40	2.84	4.55	0.01	0.11	0.56	0.67	0.10	0.16	0.26	—	964	964	0.04	0.04	0.83	979
2025	0.25	1.72	1.24	2.84	< 0.005	0.04	0.33	0.37	0.04	0.08	0.12	—	552	552	0.02	0.02	0.56	560

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	33.1	40.7	32.5	262	0.61	0.97	48.0	49.0	0.94	12.2	13.1	248	71,886	72,134	27.7	2.70	222	73,853
Mit.	33.1	40.0	32.5	262	0.61	0.97	48.0	49.0	0.94	12.2	13.1	248	71,886	72,134	27.7	2.70	222	73,853
% Reduced	—	2%	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	28.8	36.6	34.1	200	0.57	0.96	48.0	49.0	0.93	12.2	13.1	248	68,313	68,561	27.8	2.78	9.93	70,096
Mit.	28.8	35.8	34.1	200	0.57	0.96	48.0	49.0	0.93	12.2	13.1	248	68,313	68,561	27.8	2.78	9.93	70,096
% Reduced	—	2%	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	29.5	37.5	28.7	221	0.54	0.47	48.0	48.5	0.44	12.2	12.6	248	61,099	61,348	27.7	2.79	98.3	62,971
Mit.	29.5	36.8	28.7	221	0.54	0.47	48.0	48.5	0.44	12.2	12.6	248	61,099	61,348	27.7	2.79	98.3	62,971
% Reduced	—	2%	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.39	6.85	5.24	40.4	0.10	0.09	8.76	8.85	0.08	2.22	2.30	41.1	10,116	10,157	4.58	0.46	16.3	10,426
Mit.	5.39	6.72	5.24	40.4	0.10	0.09	8.76	8.85	0.08	2.22	2.30	41.1	10,116	10,157	4.58	0.46	16.3	10,426
% Reduced	—	2%	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	30.0	27.5	25.7	234	0.56	0.42	48.0	48.4	0.40	12.2	12.6	—	57,677	57,677	2.33	2.56	218	58,714
Area	3.15	13.2	6.81	27.8	0.04	0.54	—	0.54	0.54	—	0.54	0.00	8,405	8,405	0.16	0.02	—	8,414
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	5,501	5,501	0.30	0.04	—	5,519
Water	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Waste	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	745
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.28	4.28
Total	33.1	40.7	32.5	262	0.61	0.97	48.0	49.0	0.94	12.2	13.1	248	71,886	72,134	27.7	2.70	222	73,853
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	28.0	25.6	27.5	197	0.53	0.42	48.0	48.4	0.40	12.2	12.6	—	54,171	54,171	2.42	2.64	5.64	55,024
Area	0.77	10.9	6.57	2.80	0.04	0.53	—	0.53	0.53	—	0.53	0.00	8,338	8,338	0.16	0.02	—	8,347
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	5,501	5,501	0.30	0.04	—	5,519
Water	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Waste	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	745
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.28	4.28
Total	28.8	36.6	34.1	200	0.57	0.96	48.0	49.0	0.93	12.2	13.1	248	68,313	68,561	27.8	2.78	9.93	70,096
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	27.8	25.4	28.1	204	0.53	0.42	48.0	48.4	0.40	12.2	12.6	—	54,679	54,679	2.43	2.67	94.0	55,628
Area	1.69	12.1	0.62	17.3	< 0.005	0.05	—	0.05	0.04	—	0.04	0.00	617	617	0.01	< 0.005	—	618
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	5,501	5,501	0.30	0.04	—	5,519
Water	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456

Waste	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	745
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.28	4.28
Total	29.5	37.5	28.7	221	0.54	0.47	48.0	48.5	0.44	12.2	12.6	248	61,099	61,348	27.7	2.79	98.3	62,971
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.08	4.64	5.12	37.2	0.10	0.08	8.76	8.84	0.07	2.22	2.30	—	9,053	9,053	0.40	0.44	15.6	9,210
Area	0.31	2.21	0.11	3.16	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	102	102	< 0.005	< 0.005	—	102
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	911	911	0.05	0.01	—	914
Water	—	—	—	—	—	—	—	—	—	—	—	5.87	50.1	56.0	0.60	0.01	—	75.5
Waste	—	—	—	—	—	—	—	—	—	—	—	35.3	0.00	35.3	3.53	0.00	—	123
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.71	0.71
Total	5.39	6.85	5.24	40.4	0.10	0.09	8.76	8.85	0.08	2.22	2.30	41.1	10,116	10,157	4.58	0.46	16.3	10,426

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	30.0	27.5	25.7	234	0.56	0.42	48.0	48.4	0.40	12.2	12.6	—	57,677	57,677	2.33	2.56	218	58,714
Area	3.15	12.5	6.81	27.8	0.04	0.54	—	0.54	0.54	—	0.54	0.00	8,405	8,405	0.16	0.02	—	8,414
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	5,501	5,501	0.30	0.04	—	5,519
Water	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Waste	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	745
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.28	4.28
Total	33.1	40.0	32.5	262	0.61	0.97	48.0	49.0	0.94	12.2	13.1	248	71,886	72,134	27.7	2.70	222	73,853
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	28.0	25.6	27.5	197	0.53	0.42	48.0	48.4	0.40	12.2	12.6	—	54,171	54,171	2.42	2.64	5.64	55,024

Area	0.77	10.2	6.57	2.80	0.04	0.53	—	0.53	0.53	—	0.53	0.00	8,338	8,338	0.16	0.02	—	8,347
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	5,501	5,501	0.30	0.04	—	5,519
Water	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Waste	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	745
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.28	4.28
Total	28.8	35.8	34.1	200	0.57	0.96	48.0	49.0	0.93	12.2	13.1	248	68,313	68,561	27.8	2.78	9.93	70,096
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	27.8	25.4	28.1	204	0.53	0.42	48.0	48.4	0.40	12.2	12.6	—	54,679	54,679	2.43	2.67	94.0	55,628
Area	1.69	11.4	0.62	17.3	< 0.005	0.05	—	0.05	0.04	—	0.04	0.00	617	617	0.01	< 0.005	—	618
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	5,501	5,501	0.30	0.04	—	5,519
Water	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Waste	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	745
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.28	4.28
Total	29.5	36.8	28.7	221	0.54	0.47	48.0	48.5	0.44	12.2	12.6	248	61,099	61,348	27.7	2.79	98.3	62,971
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.08	4.64	5.12	37.2	0.10	0.08	8.76	8.84	0.07	2.22	2.30	—	9,053	9,053	0.40	0.44	15.6	9,210
Area	0.31	2.08	0.11	3.16	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	102	102	< 0.005	< 0.005	—	102
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	911	911	0.05	0.01	—	914
Water	—	—	—	—	—	—	—	—	—	—	—	5.87	50.1	56.0	0.60	0.01	—	75.5
Waste	—	—	—	—	—	—	—	—	—	—	—	35.3	0.00	35.3	3.53	0.00	—	123
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.71	0.71
Total	5.39	6.72	5.24	40.4	0.10	0.09	8.76	8.85	0.08	2.22	2.30	41.1	10,116	10,157	4.58	0.46	16.3	10,426

3. Construction Emissions Details

3.1. Demolition (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.39	2.84	27.3	23.5	0.03	1.20	—	1.20	1.10	—	1.10	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	6.21	6.21	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.39	2.84	27.3	23.5	0.03	1.20	—	1.20	1.10	—	1.10	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	6.21	6.21	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.28	0.23	2.25	1.93	< 0.005	0.10	—	0.10	0.09	—	0.09	—	282	282	0.01	< 0.005	—	282
Demolition	—	—	—	—	—	—	0.51	0.51	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.41	0.35	< 0.005	0.02	—	0.02	0.02	—	0.02	—	46.6	46.6	< 0.005	< 0.005	—	46.8
Demolition	—	—	—	—	—	—	0.09	0.09	—	0.01	0.01	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.08	1.36	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	220	220	0.01	0.01	0.94	224
Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	62.8	62.8	< 0.005	0.01	0.17	65.8
Hauling	0.21	0.08	5.90	1.41	0.03	0.10	1.31	1.41	0.10	0.37	0.46	—	5,148	5,148	0.09	0.82	10.8	5,405
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.09	1.03	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	202	202	0.01	0.01	0.02	205
Vendor	< 0.005	< 0.005	0.08	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	62.9	62.9	< 0.005	0.01	< 0.005	65.7
Hauling	0.20	0.08	6.18	1.44	0.03	0.10	1.31	1.41	0.10	0.37	0.46	—	5,151	5,151	0.09	0.82	0.28	5,397
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16.9	16.9	< 0.005	< 0.005	0.03	17.1
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.16	5.16	< 0.005	< 0.005	0.01	5.40
Hauling	0.02	0.01	0.51	0.12	< 0.005	0.01	0.11	0.11	0.01	0.03	0.04	—	423	423	0.01	0.07	0.38	444
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.79	2.79	< 0.005	< 0.005	0.01	2.83
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.86	0.86	< 0.005	< 0.005	< 0.005	0.89
Hauling	< 0.005	< 0.005	0.09	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	70.1	70.1	< 0.005	0.01	0.06	73.5

3.2. Demolition (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.39	2.84	27.3	23.5	0.03	1.20	—	1.20	1.10	—	1.10	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	6.21	6.21	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.39	2.84	27.3	23.5	0.03	1.20	—	1.20	1.10	—	1.10	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	6.21	6.21	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.28	0.23	2.25	1.93	< 0.005	0.10	—	0.10	0.09	—	0.09	—	282	282	0.01	< 0.005	—	282
Demolition	—	—	—	—	—	—	0.51	0.51	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.41	0.35	< 0.005	0.02	—	0.02	0.02	—	0.02	—	46.6	46.6	< 0.005	< 0.005	—	46.8
Demolition	—	—	—	—	—	—	0.09	0.09	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.08	1.36	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	220	220	0.01	0.01	0.94	224
Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	62.8	62.8	< 0.005	0.01	0.17	65.8
Hauling	0.21	0.08	5.90	1.41	0.03	0.10	1.31	1.41	0.10	0.37	0.46	—	5,148	5,148	0.09	0.82	10.8	5,405
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.09	1.03	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	202	202	0.01	0.01	0.02	205
Vendor	< 0.005	< 0.005	0.08	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	62.9	62.9	< 0.005	0.01	< 0.005	65.7
Hauling	0.20	0.08	6.18	1.44	0.03	0.10	1.31	1.41	0.10	0.37	0.46	—	5,151	5,151	0.09	0.82	0.28	5,397
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16.9	16.9	< 0.005	< 0.005	0.03	17.1
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.16	5.16	< 0.005	< 0.005	0.01	5.40
Hauling	0.02	0.01	0.51	0.12	< 0.005	0.01	0.11	0.11	0.01	0.03	0.04	—	423	423	0.01	0.07	0.38	444
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.79	2.79	< 0.005	< 0.005	0.01	2.83
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.86	0.86	< 0.005	< 0.005	< 0.005	0.89
Hauling	< 0.005	< 0.005	0.09	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	70.1	70.1	< 0.005	0.01	0.06	73.5

3.3. Site Preparation (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.70	3.95	39.7	35.5	0.05	1.81	—	1.81	1.66	—	1.66	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	5.66	5.66	—	2.69	2.69	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	0.46	4.59	4.10	0.01	0.21	—	0.21	0.19	—	0.19	—	611	611	0.02	< 0.005	—	614
Dust From Material Movement	—	—	—	—	—	—	0.65	0.65	—	0.31	0.31	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.84	0.75	< 0.005	0.04	—	0.04	0.03	—	0.03	—	101	101	< 0.005	< 0.005	—	102
Dust From Material Movement	—	—	—	—	—	—	0.12	0.12	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.11	1.20	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	236	236	0.01	0.01	0.03	239
Vendor	0.01	< 0.005	0.15	0.05	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	126	126	< 0.005	0.02	0.01	131
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	27.6	27.6	< 0.005	< 0.005	0.05	28.0
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.57	4.57	< 0.005	< 0.005	0.01	4.64
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.40	2.40	< 0.005	< 0.005	< 0.005	2.51
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.4. Site Preparation (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.70	3.95	39.7	35.5	0.05	1.81	—	1.81	1.66	—	1.66	—	5,295	5,295	0.21	0.04	—	5,314

Dust From Material Movement	—	—	—	—	—	—	5.66	5.66	—	2.69	2.69	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	0.46	4.59	4.10	0.01	0.21	—	0.21	0.19	—	0.19	—	611	611	0.02	< 0.005	—	614
Dust From Material Movement	—	—	—	—	—	—	0.65	0.65	—	0.31	0.31	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.84	0.75	< 0.005	0.04	—	0.04	0.03	—	0.03	—	101	101	< 0.005	< 0.005	—	102
Dust From Material Movement	—	—	—	—	—	—	0.12	0.12	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.11	1.20	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	236	236	0.01	0.01	0.03	239
Vendor	0.01	< 0.005	0.15	0.05	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	126	126	< 0.005	0.02	0.01	131
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	27.6	27.6	< 0.005	< 0.005	0.05	28.0
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.57	4.57	< 0.005	< 0.005	0.01	4.64
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.40	2.40	< 0.005	< 0.005	< 0.005	2.51
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Site Preparation (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.34	3.65	36.0	32.9	0.05	1.60	—	1.60	1.47	—	1.47	—	5,296	5,296	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	5.66	5.66	—	2.69	2.69	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.18	1.76	1.61	< 0.005	0.08	—	0.08	0.07	—	0.07	—	259	259	0.01	< 0.005	—	260

Dust From Material Movement	—	—	—	—	—	—	0.28	0.28	—	0.13	0.13	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.32	0.29	< 0.005	0.01	—	0.01	0.01	—	0.01	—	42.9	42.9	< 0.005	< 0.005	—	43.0
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.10	1.10	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	231	231	0.01	0.01	0.03	234
Vendor	0.01	< 0.005	0.15	0.04	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	124	124	< 0.005	0.02	0.01	130
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.5	11.5	< 0.005	< 0.005	0.02	11.6
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.08	6.08	< 0.005	< 0.005	0.01	6.36
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.90	1.90	< 0.005	< 0.005	< 0.005	1.93
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.01	1.01	< 0.005	< 0.005	< 0.005	1.05

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.6. Site Preparation (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.34	3.65	36.0	32.9	0.05	1.60	—	1.60	1.47	—	1.47	—	5,296	5,296	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	5.66	5.66	—	2.69	2.69	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.18	1.76	1.61	< 0.005	0.08	—	0.08	0.07	—	0.07	—	259	259	0.01	< 0.005	—	260
Dust From Material Movement	—	—	—	—	—	—	0.28	0.28	—	0.13	0.13	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.32	0.29	< 0.005	0.01	—	0.01	0.01	—	0.01	—	42.9	42.9	< 0.005	< 0.005	—	43.0

Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.10	1.10	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	231	231	0.01	0.01	0.03	234
Vendor	0.01	< 0.005	0.15	0.04	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	124	124	< 0.005	0.02	0.01	130
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.5	11.5	< 0.005	< 0.005	0.02	11.6
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.08	6.08	< 0.005	< 0.005	0.01	6.36
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.90	1.90	< 0.005	< 0.005	< 0.005	1.93
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.01	1.01	< 0.005	< 0.005	< 0.005	1.05
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Grading (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.19	3.52	34.3	30.2	0.06	1.45	—	1.45	1.33	—	1.33	—	6,598	6,598	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	2.67	2.67	—	0.98	0.98	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.19	3.52	34.3	30.2	0.06	1.45	—	1.45	1.33	—	1.33	—	6,598	6,598	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	2.67	2.67	—	0.98	0.98	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.69	0.58	5.64	4.96	0.01	0.24	—	0.24	0.22	—	0.22	—	1,085	1,085	0.04	0.01	—	1,088
Dust From Material Movement	—	—	—	—	—	—	0.44	0.44	—	0.16	0.16	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	1.03	0.91	< 0.005	0.04	—	0.04	0.04	—	0.04	—	180	180	0.01	< 0.005	—	180

Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.10	1.67	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	288	288	0.01	0.01	1.14	292
Vendor	0.01	< 0.005	0.14	0.04	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	124	124	< 0.005	0.02	0.35	130
Hauling	0.14	0.06	3.96	0.95	0.02	0.07	0.90	0.97	0.07	0.25	0.32	—	3,502	3,502	0.06	0.56	7.41	3,679
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.11	1.26	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	265	265	0.01	0.01	0.03	268
Vendor	0.01	< 0.005	0.15	0.04	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	124	124	< 0.005	0.02	0.01	130
Hauling	0.14	0.05	4.13	0.97	0.02	0.07	0.90	0.97	0.07	0.25	0.32	—	3,504	3,504	0.06	0.56	0.19	3,674
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.22	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	44.0	44.0	< 0.005	< 0.005	0.08	44.7
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	20.4	20.4	< 0.005	< 0.005	0.02	21.4
Hauling	0.02	0.01	0.68	0.16	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	576	576	0.01	0.09	0.52	604
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.29	7.29	< 0.005	< 0.005	0.01	7.39
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.38	3.38	< 0.005	< 0.005	< 0.005	3.54
Hauling	< 0.005	< 0.005	0.12	0.03	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	< 0.005	0.02	0.09	100

3.8. Grading (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.19	3.52	34.3	30.2	0.06	1.45	—	1.45	1.33	—	1.33	—	6,598	6,598	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	2.67	2.67	—	0.98	0.98	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.19	3.52	34.3	30.2	0.06	1.45	—	1.45	1.33	—	1.33	—	6,598	6,598	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	2.67	2.67	—	0.98	0.98	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.69	0.58	5.64	4.96	0.01	0.24	—	0.24	0.22	—	0.22	—	1,085	1,085	0.04	0.01	—	1,088
Dust From Material Movement	—	—	—	—	—	—	0.44	0.44	—	0.16	0.16	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	1.03	0.91	< 0.005	0.04	—	0.04	0.04	—	0.04	—	180	180	0.01	< 0.005	—	180
Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.10	1.67	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	288	288	0.01	0.01	1.14	292
Vendor	0.01	< 0.005	0.14	0.04	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	124	124	< 0.005	0.02	0.35	130
Hauling	0.14	0.06	3.96	0.95	0.02	0.07	0.90	0.97	0.07	0.25	0.32	—	3,502	3,502	0.06	0.56	7.41	3,679
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.11	1.26	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	265	265	0.01	0.01	0.03	268
Vendor	0.01	< 0.005	0.15	0.04	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	124	124	< 0.005	0.02	0.01	130
Hauling	0.14	0.05	4.13	0.97	0.02	0.07	0.90	0.97	0.07	0.25	0.32	—	3,504	3,504	0.06	0.56	0.19	3,674
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.22	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	44.0	44.0	< 0.005	< 0.005	0.08	44.7
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	20.4	20.4	< 0.005	< 0.005	0.02	21.4
Hauling	0.02	0.01	0.68	0.16	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	576	576	0.01	0.09	0.52	604
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.29	7.29	< 0.005	< 0.005	0.01	7.39
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.38	3.38	< 0.005	< 0.005	< 0.005	3.54
Hauling	< 0.005	< 0.005	0.12	0.03	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	< 0.005	0.02	0.09	100

3.9. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.55	1.30	12.2	14.2	0.03	0.54	—	0.54	0.49	—	0.49	—	2,630	2,630	0.11	0.02	—	2,639
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.55	1.30	12.2	14.2	0.03	0.54	—	0.54	0.49	—	0.49	—	2,630	2,630	0.11	0.02	—	2,639
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.78	0.65	6.12	7.16	0.01	0.27	—	0.27	0.25	—	0.25	—	1,323	1,323	0.05	0.01	—	1,327
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.12	1.12	1.31	< 0.005	0.05	—	0.05	0.05	—	0.05	—	219	219	0.01	< 0.005	—	220
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.79	1.63	1.53	26.5	0.00	0.00	4.15	4.15	0.00	0.97	0.97	—	4,575	4,575	0.19	0.16	18.1	4,645
Vendor	0.03	0.02	0.81	0.25	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	714	714	0.02	0.11	2.01	748
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.70	1.53	1.81	20.1	0.00	0.00	4.15	4.15	0.00	0.97	0.97	—	4,204	4,204	0.20	0.16	0.47	4,257
Vendor	0.03	0.02	0.85	0.26	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	715	715	0.02	0.11	0.05	747
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.85	0.77	0.91	10.6	0.00	0.00	2.07	2.07	0.00	0.49	0.49	—	2,142	2,142	0.10	0.08	3.94	2,172
Vendor	0.02	0.01	0.43	0.13	< 0.005	0.01	0.10	0.10	0.01	0.03	0.03	—	359	359	0.01	0.05	0.44	376
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.14	0.17	1.94	0.00	0.00	0.38	0.38	0.00	0.09	0.09	—	355	355	0.02	0.01	0.65	360
Vendor	< 0.005	< 0.005	0.08	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	59.5	59.5	< 0.005	0.01	0.07	62.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Building Construction (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.55	1.30	12.2	14.2	0.03	0.54	—	0.54	0.49	—	0.49	—	2,630	2,630	0.11	0.02	—	2,639
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.55	1.30	12.2	14.2	0.03	0.54	—	0.54	0.49	—	0.49	—	2,630	2,630	0.11	0.02	—	2,639
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.78	0.65	6.12	7.16	0.01	0.27	—	0.27	0.25	—	0.25	—	1,323	1,323	0.05	0.01	—	1,327
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.12	1.12	1.31	< 0.005	0.05	—	0.05	0.05	—	0.05	—	219	219	0.01	< 0.005	—	220
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.79	1.63	1.53	26.5	0.00	0.00	4.15	4.15	0.00	0.97	0.97	—	4,575	4,575	0.19	0.16	18.1	4,645
Vendor	0.03	0.02	0.81	0.25	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	714	714	0.02	0.11	2.01	748
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.70	1.53	1.81	20.1	0.00	0.00	4.15	4.15	0.00	0.97	0.97	—	4,204	4,204	0.20	0.16	0.47	4,257

Vendor	0.03	0.02	0.85	0.26	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	715	715	0.02	0.11	0.05	747
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.85	0.77	0.91	10.6	0.00	0.00	2.07	2.07	0.00	0.49	0.49	—	2,142	2,142	0.10	0.08	3.94	2,172
Vendor	0.02	0.01	0.43	0.13	< 0.005	0.01	0.10	0.10	0.01	0.03	0.03	—	359	359	0.01	0.05	0.44	376
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.14	0.17	1.94	0.00	0.00	0.38	0.38	0.00	0.09	0.09	—	355	355	0.02	0.01	0.65	360
Vendor	< 0.005	< 0.005	0.08	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	59.5	59.5	< 0.005	0.01	0.07	62.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.45	1.21	11.3	14.1	0.03	0.47	—	0.47	0.43	—	0.43	—	2,630	2,630	0.11	0.02	—	2,639
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.45	1.21	11.3	14.1	0.03	0.47	—	0.47	0.43	—	0.43	—	2,630	2,630	0.11	0.02	—	2,639
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	0.42	3.92	4.90	0.01	0.16	—	0.16	0.15	—	0.15	—	911	911	0.04	0.01	—	914
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.08	0.72	0.89	< 0.005	0.03	—	0.03	0.03	—	0.03	—	151	151	0.01	< 0.005	—	151
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.71	1.42	1.39	24.5	0.00	0.00	4.15	4.15	0.00	0.97	0.97	—	4,480	4,480	0.19	0.16	16.5	4,548
Vendor	0.03	0.02	0.77	0.24	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	704	704	0.02	0.11	2.00	738
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.50	1.34	1.53	18.5	0.00	0.00	4.15	4.15	0.00	0.97	0.97	—	4,118	4,118	0.19	0.16	0.43	4,170
Vendor	0.03	0.01	0.81	0.25	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	704	704	0.02	0.11	0.05	736
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.52	0.46	0.58	6.79	0.00	0.00	1.43	1.43	0.00	0.33	0.33	—	1,445	1,445	0.07	0.05	2.46	1,465
Vendor	0.01	0.01	0.28	0.08	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	244	244	0.01	0.04	0.30	255
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.11	1.24	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	239	239	0.01	0.01	0.41	243

Vendor	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.4	40.4	< 0.005	0.01	0.05	42.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.12. Building Construction (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.45	1.21	11.3	14.1	0.03	0.47	—	0.47	0.43	—	0.43	—	2,630	2,630	0.11	0.02	—	2,639
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.45	1.21	11.3	14.1	0.03	0.47	—	0.47	0.43	—	0.43	—	2,630	2,630	0.11	0.02	—	2,639
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	0.42	3.92	4.90	0.01	0.16	—	0.16	0.15	—	0.15	—	911	911	0.04	0.01	—	914
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.08	0.72	0.89	< 0.005	0.03	—	0.03	0.03	—	0.03	—	151	151	0.01	< 0.005	—	151
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.71	1.42	1.39	24.5	0.00	0.00	4.15	4.15	0.00	0.97	0.97	—	4,480	4,480	0.19	0.16	16.5	4,548
Vendor	0.03	0.02	0.77	0.24	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	704	704	0.02	0.11	2.00	738
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.50	1.34	1.53	18.5	0.00	0.00	4.15	4.15	0.00	0.97	0.97	—	4,118	4,118	0.19	0.16	0.43	4,170
Vendor	0.03	0.01	0.81	0.25	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	704	704	0.02	0.11	0.05	736
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.52	0.46	0.58	6.79	0.00	0.00	1.43	1.43	0.00	0.33	0.33	—	1,445	1,445	0.07	0.05	2.46	1,465
Vendor	0.01	0.01	0.28	0.08	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	244	244	0.01	0.04	0.30	255
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.11	1.24	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	239	239	0.01	0.01	0.41	243
Vendor	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.4	40.4	< 0.005	0.01	0.05	42.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	—	0.40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	—	0.40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.43	1.91	< 0.005	0.07	—	0.07	0.06	—	0.06	—	290	290	0.01	< 0.005	—	291
Paving	—	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.26	0.35	< 0.005	0.01	—	0.01	0.01	—	0.01	—	48.0	48.0	< 0.005	< 0.005	—	48.2
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.07	1.16	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	211	211	0.01	0.01	0.78	215
Vendor	0.01	< 0.005	0.17	0.05	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	153	153	< 0.005	0.02	0.43	160

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	194	194	0.01	0.01	0.02	197
Vendor	0.01	< 0.005	0.18	0.05	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	153	153	< 0.005	0.02	0.01	160
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.02	0.18	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	37.7	37.7	< 0.005	< 0.005	0.06	38.3
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	29.3	29.3	< 0.005	< 0.005	0.04	30.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.25	6.25	< 0.005	< 0.005	0.01	6.34
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.86	4.86	< 0.005	< 0.005	0.01	5.09
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.14. Paving (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	—	0.40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	—	0.40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.43	1.91	< 0.005	0.07	—	0.07	0.06	—	0.06	—	290	290	0.01	< 0.005	—	291
Paving	—	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.26	0.35	< 0.005	0.01	—	0.01	0.01	—	0.01	—	48.0	48.0	< 0.005	< 0.005	—	48.2
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.07	1.16	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	211	211	0.01	0.01	0.78	215
Vendor	0.01	< 0.005	0.17	0.05	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	153	153	< 0.005	0.02	0.43	160
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	194	194	0.01	0.01	0.02	197

Vendor	0.01	< 0.005	0.18	0.05	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	153	153	< 0.005	0.02	0.01	160
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.02	0.18	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	37.7	37.7	< 0.005	< 0.005	0.06	38.3
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	29.3	29.3	< 0.005	< 0.005	0.04	30.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.25	6.25	< 0.005	< 0.005	0.01	6.34
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.86	4.86	< 0.005	< 0.005	0.01	5.09
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.17	1.18	1.52	< 0.005	0.04	—	0.04	0.03	—	0.03	—	178	178	0.01	< 0.005	—	179
Architectural Coatings	—	27.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.17	1.18	1.52	< 0.005	0.04	—	0.04	0.03	—	0.03	—	178	178	0.01	< 0.005	—	179

Architect Coatings	—	27.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.35	0.46	< 0.005	0.01	—	0.01	0.01	—	0.01	—	53.7	53.7	< 0.005	< 0.005	—	53.8
Architect ural Coatings	—	8.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.88	8.88	< 0.005	< 0.005	—	8.91
Architect ural Coatings	—	1.49	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.34	0.28	0.28	4.91	0.00	0.00	0.83	0.83	0.00	0.19	0.19	—	896	896	0.04	0.03	3.29	910
Vendor	0.01	0.01	0.27	0.08	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	245	245	0.01	0.04	0.69	257
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30	0.27	0.31	3.71	0.00	0.00	0.83	0.83	0.00	0.19	0.19	—	824	824	0.04	0.03	0.09	834
Vendor	0.01	< 0.005	0.28	0.09	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	245	245	0.01	0.04	0.02	256

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.10	1.18	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	251	251	0.01	0.01	0.43	255
Vendor	< 0.005	< 0.005	0.08	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	73.8	73.8	< 0.005	0.01	0.09	77.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.01	0.02	0.22	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	41.6	41.6	< 0.005	< 0.005	0.07	42.2
Vendor	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.2	12.2	< 0.005	< 0.005	0.02	12.8
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.16. Architectural Coating (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.17	1.18	1.52	< 0.005	0.04	—	0.04	0.03	—	0.03	—	178	178	0.01	< 0.005	—	179
Architectural Coatings	—	27.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.17	1.18	1.52	< 0.005	0.04	—	0.04	0.03	—	0.03	—	178	178	0.01	< 0.005	—	179

Architectural	—	27.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.35	0.46	< 0.005	0.01	—	0.01	0.01	—	0.01	—	53.7	53.7	< 0.005	< 0.005	—	53.8
Architectural Coatings	—	8.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.88	8.88	< 0.005	< 0.005	—	8.91
Architectural Coatings	—	1.49	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.34	0.28	0.28	4.91	0.00	0.00	0.83	0.83	0.00	0.19	0.19	—	896	896	0.04	0.03	3.29	910
Vendor	0.01	0.01	0.27	0.08	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	245	245	0.01	0.04	0.69	257
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30	0.27	0.31	3.71	0.00	0.00	0.83	0.83	0.00	0.19	0.19	—	824	824	0.04	0.03	0.09	834
Vendor	0.01	< 0.005	0.28	0.09	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	245	245	0.01	0.04	0.02	256

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.10	1.18	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	251	251	0.01	0.01	0.43	255
Vendor	< 0.005	< 0.005	0.08	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	73.8	73.8	< 0.005	0.01	0.09	77.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.01	0.02	0.22	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	41.6	41.6	< 0.005	< 0.005	0.07	42.2
Vendor	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.2	12.2	< 0.005	< 0.005	0.02	12.8
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	30.0	27.5	25.7	234	0.56	0.42	48.0	48.4	0.40	12.2	12.6	—	57,677	57,677	2.33	2.56	218	58,714
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	30.0	27.5	25.7	234	0.56	0.42	48.0	48.4	0.40	12.2	12.6	—	57,677	57,677	2.33	2.56	218	58,714
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	28.0	25.6	27.5	197	0.53	0.42	48.0	48.4	0.40	12.2	12.6	—	54,171	54,171	2.42	2.64	5.64	55,024
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	28.0	25.6	27.5	197	0.53	0.42	48.0	48.4	0.40	12.2	12.6	—	54,171	54,171	2.42	2.64	5.64	55,024
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	5.08	4.64	5.12	37.2	0.10	0.08	8.76	8.84	0.07	2.22	2.30	—	9,053	9,053	0.40	0.44	15.6	9,210

Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	5.08	4.64	5.12	37.2	0.10	0.08	8.76	8.84	0.07	2.22	2.30	—	9,053	9,053	0.40	0.44	15.6	9,210

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	30.0	27.5	25.7	234	0.56	0.42	48.0	48.4	0.40	12.2	12.6	—	57,677	57,677	2.33	2.56	218	58,714
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	30.0	27.5	25.7	234	0.56	0.42	48.0	48.4	0.40	12.2	12.6	—	57,677	57,677	2.33	2.56	218	58,714
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	28.0	25.6	27.5	197	0.53	0.42	48.0	48.4	0.40	12.2	12.6	—	54,171	54,171	2.42	2.64	5.64	55,024
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	28.0	25.6	27.5	197	0.53	0.42	48.0	48.4	0.40	12.2	12.6	—	54,171	54,171	2.42	2.64	5.64	55,024
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	5.08	4.64	5.12	37.2	0.10	0.08	8.76	8.84	0.07	2.22	2.30	—	9,053	9,053	0.40	0.44	15.6	9,210
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	5.08	4.64	5.12	37.2	0.10	0.08	8.76	8.84	0.07	2.22	2.30	—	9,053	9,053	0.40	0.44	15.6	9,210

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	5,501	5,501	0.30	0.04	—	5,519
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	5,501	5,501	0.30	0.04	—	5,519
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	5,501	5,501	0.30	0.04	—	5,519
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	5,501	5,501	0.30	0.04	—	5,519
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	911	911	0.05	0.01	—	914
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	911	911	0.05	0.01	—	914

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	5,501	5,501	0.30	0.04	—	5,519
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Total	—	—	—	—	—	—	—	—	—	—	—	—	5,501	5,501	0.30	0.04	—	5,519
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	5,501	5,501	0.30	0.04	—	5,519
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	5,501	5,501	0.30	0.04	—	5,519
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	911	911	0.05	0.01	—	914
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	911	911	0.05	0.01	—	914

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.77	0.38	6.57	2.80	0.04	0.53	—	0.53	0.53	—	0.53	0.00	8,338	8,338	0.16	0.02	—	8,347
Consumer Products	—	9.73	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	2.39	2.26	0.24	25.0	< 0.005	0.01	—	0.01	0.01	—	0.01	—	67.2	67.2	< 0.005	< 0.005	—	67.4
Total	3.15	13.2	6.81	27.8	0.04	0.54	—	0.54	0.54	—	0.54	0.00	8,405	8,405	0.16	0.02	—	8,414
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.77	0.38	6.57	2.80	0.04	0.53	—	0.53	0.53	—	0.53	0.00	8,338	8,338	0.16	0.02	—	8,347
Consumer Products	—	9.73	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.77	10.9	6.57	2.80	0.04	0.53	—	0.53	0.53	—	0.53	0.00	8,338	8,338	0.16	0.02	—	8,347

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.01	< 0.005	0.08	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	94.6	94.6	< 0.005	< 0.005	—	94.7
Consumer Products	—	1.78	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.30	0.28	0.03	3.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.62	7.62	< 0.005	< 0.005	—	7.65
Total	0.31	2.21	0.11	3.16	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	102	102	< 0.005	< 0.005	—	102

4.3.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.77	0.38	6.57	2.80	0.04	0.53	—	0.53	0.53	—	0.53	0.00	8,338	8,338	0.16	0.02	—	8,347
Consumer Products	—	9.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	2.39	2.26	0.24	25.0	< 0.005	0.01	—	0.01	0.01	—	0.01	—	67.2	67.2	< 0.005	< 0.005	—	67.4
Total	3.15	12.5	6.81	27.8	0.04	0.54	—	0.54	0.54	—	0.54	0.00	8,405	8,405	0.16	0.02	—	8,414

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.77	0.38	6.57	2.80	0.04	0.53	—	0.53	0.53	—	0.53	0.00	8,338	8,338	0.16	0.02	—	8,347
Consumer Products	—	9.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.77	10.2	6.57	2.80	0.04	0.53	—	0.53	0.53	—	0.53	0.00	8,338	8,338	0.16	0.02	—	8,347
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.01	< 0.005	0.08	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	94.6	94.6	< 0.005	< 0.005	—	94.7
Consumer Products	—	1.64	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.30	0.28	0.03	3.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.62	7.62	< 0.005	< 0.005	—	7.65
Total	0.31	2.08	0.11	3.16	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	102	102	< 0.005	< 0.005	—	102

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	5.87	50.1	56.0	0.60	0.01	—	75.5
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	5.87	50.1	56.0	0.60	0.01	—	75.5

4.4.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	35.5	303	338	3.65	0.09	—	456
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	5.87	50.1	56.0	0.60	0.01	—	75.5
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	5.87	50.1	56.0	0.60	0.01	—	75.5

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartme Mid Rise	—	—	—	—	—	—	—	—	—	—	—	197	0.00	197	19.7	0.00	—	691
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	15.5	0.00	15.5	1.55	0.00	—	54.3
City Park	—	—	—	—	—	—	—	—	—	—	—	0.11	0.00	0.11	0.01	0.00	—	0.39
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	745
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	197	0.00	197	19.7	0.00	—	691
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	15.5	0.00	15.5	1.55	0.00	—	54.3
City Park	—	—	—	—	—	—	—	—	—	—	—	0.11	0.00	0.11	0.01	0.00	—	0.39
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	745
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	32.7	0.00	32.7	3.27	0.00	—	114
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	2.57	0.00	2.57	0.26	0.00	—	8.99
City Park	—	—	—	—	—	—	—	—	—	—	—	0.02	0.00	0.02	< 0.005	0.00	—	0.06
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	35.3	0.00	35.3	3.53	0.00	—	123

4.5.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	197	0.00	197	19.7	0.00	—	691

Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	15.5	0.00	15.5	1.55	0.00	—	54.3
City Park	—	—	—	—	—	—	—	—	—	—	—	0.11	0.00	0.11	0.01	0.00	—	0.39
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	745
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	197	0.00	197	19.7	0.00	—	691
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	15.5	0.00	15.5	1.55	0.00	—	54.3
City Park	—	—	—	—	—	—	—	—	—	—	—	0.11	0.00	0.11	0.01	0.00	—	0.39
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	745

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	32.7	0.00	32.7	3.27	0.00	—	114
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	2.57	0.00	2.57	0.26	0.00	—	8.99
City Park	—	—	—	—	—	—	—	—	—	—	—	0.02	0.00	0.02	< 0.005	0.00	—	0.06
User Defined Recreational	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	35.3	0.00	35.3	3.53	0.00	—	123

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.88	2.88

Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.40	1.40
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.28	4.28
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.88	2.88
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.40	1.40
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.28	4.28
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.48	0.48
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.23	0.23
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.71	0.71

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.88	2.88
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.40	1.40
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.28	4.28
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.88	2.88
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.40	1.40
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.28	4.28
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.48	0.48

Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.23	0.23
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.71	0.71

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequest ered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequest ered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequest ered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	9/22/2023	11/2/2023	5.00	30.0	30
Site Preparation	Site Preparation	11/3/2023	1/25/2024	5.00	60.0	20
Grading	Grading	1/26/2024	4/18/2024	5.00	60.0	45
Building Construction	Building Construction	4/19/2024	6/26/2025	5.00	310	440
Paving	Paving	2/19/2025	5/27/2025	5.00	70.0	35
Architectural Coating	Architectural Coating	1/30/2025	7/2/2025	5.00	110	35

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Crawler Tractors	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41

Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Crawler Tractors	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	8.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Crawler Tractors	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Crawler Tractors	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40

Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	8.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	2.00	10.2	HHDT,MHDT
Demolition	Hauling	72.5	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	4.00	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	4.00	10.2	HHDT,MHDT

Grading	Hauling	50.0	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	318	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	23.0	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	5.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	63.6	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	8.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	2.00	10.2	HHDT,MHDT
Demolition	Hauling	72.5	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2

Site Preparation	Vendor	4.00	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	4.00	10.2	HHDT,MHDT
Grading	Hauling	50.0	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	318	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	23.0	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	5.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	63.6	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	8.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	911,250	303,750	3,750	1,250	34,353

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	8,700	—
Site Preparation	—	—	210	0.00	—
Grading	—	24,000	240	0.00	—
Paving	0.00	0.00	0.00	0.00	13.1

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Mid Rise	—	0%
Fast Food Restaurant w/o Drive Thru	0.00	0%
City Park	0.00	0%
User Defined Recreational	0.00	0%
Parking Lot	9.85	100%

Other Non-Asphalt Surfaces	3.29	29%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	787	0.03	< 0.005
2024	0.00	787	0.03	< 0.005
2025	0.00	600	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	6,406	6,406	6,406	2,338,336	67,744	67,744	67,744	24,726,500
Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	6,406	6,406	6,406	2,338,336	67,744	67,744	67,744	24,726,500

Fast Food Restaurant w/o Drive Thru	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	0
Gas Fireplaces	396
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	44

5.10.1.2. Mitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	0
Gas Fireplaces	396
Propane Fireplaces	0

Electric Fireplaces	0
No Fireplaces	44

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
911250	303,750	3,750	1,250	34,353

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Mid Rise	3,347,356	600	0.0330	0.0040	0.00
Fast Food Restaurant w/o Drive Thru	0.00	600	0.0330	0.0040	0.00
City Park	0.00	600	0.0330	0.0040	0.00

User Defined Recreational	0.00	600	0.0330	0.0040	0.00
Parking Lot	0.00	600	0.0330	0.0040	0.00
Other Non-Asphalt Surfaces	0.00	600	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Mid Rise	3,347,356	600	0.0330	0.0040	0.00
Fast Food Restaurant w/o Drive Thru	0.00	600	0.0330	0.0040	0.00
City Park	0.00	600	0.0330	0.0040	0.00
User Defined Recreational	0.00	600	0.0330	0.0040	0.00
Parking Lot	0.00	600	0.0330	0.0040	0.00
Other Non-Asphalt Surfaces	0.00	600	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	18,500,000	11,000,000
Fast Food Restaurant w/o Drive Thru	0.00	0.00
City Park	0.00	0.00
User Defined Recreational	0.00	0.00
Parking Lot	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	18,500,000	11,000,000
Fast Food Restaurant w/o Drive Thru	0.00	0.00
City Park	0.00	0.00
User Defined Recreational	0.00	0.00
Parking Lot	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	366	—
Fast Food Restaurant w/o Drive Thru	28.8	—
City Park	0.21	—
User Defined Recreational	0.00	—
Parking Lot	0.00	—
Other Non-Asphalt Surfaces	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	366	—
Fast Food Restaurant w/o Drive Thru	28.8	—
City Park	0.21	—
User Defined Recreational	0.00	—
Parking Lot	0.00	—
Other Non-Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	User Defined	750	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Fast Food Restaurant w/o Drive Thru	Household refrigerators and/or freezers	User Defined	150	0.00	0.60	0.00	1.00
Fast Food Restaurant w/o Drive Thru	Other commercial A/C and heat pumps	User Defined	750	1.80	4.00	4.00	18.0
Fast Food Restaurant w/o Drive Thru	Walk-in refrigerators and freezers	User Defined	150	< 0.005	7.50	7.50	20.0
City Park	Other commercial A/C and heat pumps	User Defined	750	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	User Defined	150	0.04	1.00	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	User Defined	750	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Fast Food Restaurant w/o Drive Thru	Household refrigerators and/or freezers	User Defined	150	0.00	0.60	0.00	1.00
Fast Food Restaurant w/o Drive Thru	Other commercial A/C and heat pumps	User Defined	750	1.80	4.00	4.00	18.0

Fast Food Restaurant w/o Drive Thru	Walk-in refrigerators and freezers	User Defined	150	< 0.005	7.50	7.50	20.0
City Park	Other commercial A/C and heat pumps	User Defined	750	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	User Defined	150	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	26.3	annual days of extreme heat
Extreme Precipitation	2.65	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	1.71	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A

Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract

Exposure Indicators	—
AQ-Ozone	97.6
AQ-PM	79.4
AQ-DPM	88.9
Drinking Water	77.4
Lead Risk Housing	43.1
Pesticides	0.00
Toxic Releases	54.7
Traffic	85.6
Effect Indicators	—
CleanUp Sites	47.0
Groundwater	0.00
Haz Waste Facilities/Generators	76.0
Impaired Water Bodies	0.00
Solid Waste	52.9
Sensitive Population	—
Asthma	23.8
Cardio-vascular	16.9
Low Birth Weights	88.0
Socioeconomic Factor Indicators	—
Education	53.4
Housing	98.5
Linguistic	76.1
Poverty	96.7
Unemployment	99.0

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—

Health Outcomes	—
Insured adults	—
Arthritis	99.7
Asthma ER Admissions	57.0
High Blood Pressure	99.4
Cancer (excluding skin)	99.8
Asthma	12.1
Coronary Heart Disease	99.7
Chronic Obstructive Pulmonary Disease	96.5
Diagnosed Diabetes	99.6
Life Expectancy at Birth	0.0
Cognitively Disabled	66.4
Physically Disabled	96.9
Heart Attack ER Admissions	76.0
Mental Health Not Good	18.5
Chronic Kidney Disease	99.6
Obesity	86.4
Pedestrian Injuries	0.0
Physical Health Not Good	82.3
Stroke	99.7
Health Risk Behaviors	—
Binge Drinking	63.5
Current Smoker	26.1
No Leisure Time for Physical Activity	36.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0

Children	87.9
Elderly	99.5
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	86.7
Climate Change Adaptive Capacity	—
Impervious Surface Cover	74.8
Traffic Density	0.0
Traffic Access	55.8
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	82.0
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Data provided by client
Construction: Construction Phases	Data provided by client
Construction: Off-Road Equipment	T/L/B replaced with Crawler Tractor to accurately calculate disturbance for Site Preparation and Grading phases Standard 8 hours work days
Construction: Trips and VMT	Vendor Trips adjusted based on CalEEMod defaults for Building Construction and number of days for Demolition, Site Preparation, Grading, Building Construction, Paving, and Architectural Coating
Construction: Architectural Coatings	SCAQMD Rule 1113
Operations: Vehicle Data	Trip characteristics based on information provided in the traffic assessment as well as the LRDP EIR
Operations: Hearths	SCAQMD Rule 445 no wood burning devices Wood burning devices added to gas devices
Operations: Architectural Coatings	SCAQMD Rule 1113
Operations: Energy Use	Per client data, no natural gas will be used. Electricity data provided by client.
Operations: Water and Waste Water	Water data provided by client
Operations: Refrigerants	As of 1 January 2022, new commercial refrigeration equipment may not use refrigerants with a GWP of 150 or greater. Further, R-404A (the CalEEMod default) is unacceptable for new supermarket and cold storage systems as of 1 January 2019 and 2023, respectively. Beginning 1 January 2025, all new air conditioning equipment may not use refrigerants with a GWP of 750 or greater.
Construction: Paving	Client provided asphalt data

APPENDIX B – TREE INVENTORY REPORT

August 10, 2023

Jerry Mercado
Senior Project Manager
Planning, Design, and Construction
University of California, Riverside
1223 University Avenue, Suite 240
Riverside, California 92507

VIA EMAIL
Gerardo.Mercado@ucr.edu

Subject: Tree Inventory Report for the North District Phase 2 Project Site, University of California Riverside

Dear Mr. Mercado:

Psomas is pleased to provide the following tree inventory report for the North District Phase 2 Project site (Project site) located on the campus of the University of California, Riverside (UCR) (Exhibit 1). The purpose of this Tree Inventory Report is to document trees that occur within the limits of the Project site to support the environmental analysis related to site development.

PROJECT LOCATION

The Project site is located in the northern portion of the UCR campus, at the location of the former Canyon Crest Student Housing complex. This area is north of West Linden Street, east of Canyon Crest Drive, and south of Blaine Street. The Project site occurs on the U.S. Geological Survey's (USGS') Riverside East 7.5-minute quadrangle. The site is generally flat with elevation ranging from approximately 1,037 to 1,102 feet above mean sea level.

METHODS

Psomas Certified Arborist Trevor Bristle (International Society of Arboriculture Certificate No. WE-10233A) visited the Project site on April 14 and August 3, 2023, to document the type, quantity, and condition of trees that exist in the survey area.

During the survey, each tree was assigned an individual number and the following data were collected: trunk diameter at breast height (dbh), tree height, and canopy width. The health and aesthetic quality of each tree were assessed and rated on a scale of 1 (poor) to 5 (excellent). The collected data are included in Attachment A and described in more detail below.

EXISTING TREE RESOURCES

A total of 118 trees were identified in the survey area, consisting of 25 different species as summarized in Table 1. Trees are separated into three categories in Table 1: (1) trees that are at least 12 inches in trunk dbh and considered herein as mature trees; (2) trees less than 12 inches in trunk dbh; and (3) newly planted trees (trees that were planted less than two years ago [based on aerial photo analysis]. and are generally less than 2 inches dbh).

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www.Psomas.com

Though none of the on-site trees were given a health rating of excellent, 68 percent were rated as very good. Additionally, 22 percent were rated as fair, 6 percent were poor, and 4 percent were very poor.

The locations of the trees included in this tree survey are provided in Exhibit 2. A detailed summary of all collected tree data is provided in Attachment A.

TABLE 1
SUMMARY OF TREES IN SURVEY AREA

Tree Species		Quantity			
Common Name	**Scientific Name**	**Trees greater than 12 inches dbh[a]**	**Trees less than 12 inches dbh[a]**	**Newly Planted Trees**	**Total**
tree of heaven	*Ailanthus altissima*	—	1	—	1
Italian cypress	*Cupressus sempervirens*	—	2	—	2
silver dollar gum	*Eucalyptus polyanthemos*	10	—	—	10
red ironbark	*Eucalyptus sideroxylon*	1	—	—	1
shamel ash	*Fraxinus uhdei*	1	1	16	18
velvet ash	*Fraxinus velutina*	9	—	—	9
honeylocust	*Gleditsia triacanthos*	1	—	—	1
jacaranda	*Jacaranda mimosifolia*	1	—	—	1
goldenrain tree	*Koelreuteria bipinnata*	2	1	—	3
crape myrtle	*Lagerstroemia indica*	—	—	8	8
Chinaberry	*Melia azedarach*	—	3	—	3
white mulberry	*Morus alba*	1	—	—	1
Canary Island pine	*Pinus canariensis*	5	—	—	5
Aleppo pine	*Pinus halepensis*	2	—	—	2
western sycamore	***Platanus racemosa***	7	—	—	7
Fremont cottonwood	***Populus fremontii***	—	1	—	1
coast live oak	***Quercus agrifolia***	—	—	10	10
holly oak	*Quercus ilex*	5	1	—	6
cork oak	*Quercus suber*	6	—	—	6
black willow	***Salix gooddingii***	1	3	—	4
red willow	***Salix laevigata***	—	3	—	3
Peruvian peppertree	*Schinus molle*	—	3	—	3
tipu	*Tipuana tipu*	4	—	—	4
Chinese elm	*Ulmus parvifolia*	7	—	—	7
Mexican fan palm	*Washingtonia robusta*	2	—	—	2
	TOTAL	**65**	**19**	**34**	**118**

Note: native trees species are indicated in bold type
dbh: trunk diameter at breast height
[a] The dbh of multi-trunk trees are represented as the sum of the largest two trunks.

TREE IMPACTS

The North District Phase 2 Project consists of several development components, including the Phase 2 Parking Lot in the northwestern portion of the Project site; Buildings A and B that will be located along the western boundary of the Project site; Recreation Fields 1 and 2 in the eastern portion of the Project site; a Central Park next to Building B; and a Construction Laydown, Staging, and Parking area in the middle of the Project site.

As summarized in Table 2, a total of 48 trees are expected to be removed as part of Project development. The majority of trees to be removed, 26 in all, occur in the Phase 2 Parking Lot area. Another 16 trees occur in the Building A and B areas, almost all of which consist of newly planted trees along Canyon Crest Drive. Other tree removals will occur in Recreation Field 1, which contains two mature trees and two other small trees (multi-trunk trees that have resprouted from past disturbance) that are found along Linden Street near the southern boundary of the Project site. In the Central Park area, tree number 39, a western sycamore (*Platanus racemosa*), was determined to be in very poor health and should be removed as it may constitute a hazard. After removal of this tree, the Central Park area will retain 32 trees that currently exist in this portion of the Project site.

Please note that tree number 50, a mature Aleppo pine (*Pinus halepensis*) occurs just outside the southern boundary of the Phase 2 Parking Lot area. Though this tree is outside a development area, it is included in the impact totals as adjacent ground disturbance is likely to damage the tree's root system which would require its removal.

The only native trees to be removed by the Project consist of 4 black willows (*Salix gooddingii*) in the Phase 2 Parking Lot area. The site contains 1 tree-of-heaven (*Ailanthus altissima*) to be removed. This species is recognized as an invasive species by the California Invasive Plant Council.

Trees to be removed from Project site development would be replaced at a minimum 1:1 ratio in accordance with the *UCR Tree Preservation and Replacement Guidelines*.

TABLE 2
SUMMARY OF TREES IMPACTS

Tree Species		Quantity				
			Removals			
Common Name	**Scientific Name**	**Total Present**	**Trees greater than 12 inches dbh[a]**	**Trees less than 12 inches dbh[a]**	**Newly Planted Trees**	**Total**
tree of heaven	*Ailanthus altissima*	1	—	1	—	1
Italian cypress	*Cupressus sempervirens*	2	—	—	—	0
silver dollar gum	*Eucalyptus polyanthemos*	10	8	—	—	8
red ironbark	*Eucalyptus sideroxylon*	1	—	—	—	0
shamel ash	*Fraxinus uhdei*	18	1	—	16	17
velvet ash	*Fraxinus velutina*	9	—	—	—	0
honeylocust	*Gleditsia triacanthos*	1	—	—	—	0
jacaranda	*Jacaranda mimosifolia*	1	—	—	—	0
goldenrain tree	*Koelreuteria bipinnata*	3	2	1	—	3
crape myrtle	*Lagerstroemia indica*	8	—	—	—	0
Chinaberry	*Melia azedarach*	3	—	1	—	1
white mulberry	*Morus alba*	1	—	—	—	0
Canary Island pine	*Pinus canariensis*	5	—	—	—	0
Aleppo pine	*Pinus halepensis*	2	1	—	—	1
western sycamore	***Platanus racemosa***	7	1	—	—	1
Fremont cottonwood	***Populus fremontii***	1	—	—	—	0
coast live oak	***Quercus agrifolia***	10	—	—	—	0
holly oak	*Quercus ilex*	6	2	1	—	3
cork oak	*Quercus suber*	6	1	—	—	1
black willow	***Salix gooddingii***	4	1	3	—	4
red willow	***Salix laevigata***	3	—	—	—	0
Peruvian peppertree	*Schinus molle*	3	—	2	—	2
tipu	*Tipuana tipu*	4	3	—	—	3
Chinese elm	*Ulmus parvifolia*	7	1	—	—	1
Mexican fan palm	*Washingtonia robusta*	2	2	—	—	2
	TOTAL	**118**	**23**	**9**	**16**	**48**

Note: native trees species are indicated in bold type
dbh: trunk diameter at breast height
[a] The dbh of multi-trunk trees are represented as the sum of the largest two trunks.

RECOMMENDATIONS

The following measures are recommended to avoid or minimize impacts to trees in the survey area that may result from Project construction activities:

1. Prior to the initiation of construction activities, protective fencing shall be placed around the critical root zone (five feet outside the outer canopy) of all trees that are in the Project construction area and are intended to remain in place. No ground disturbance or storage of construction materials should occur within the critical root zone during construction.

2. A Certified Arborist should be retained to monitor any ground disturbing activities that are planned within the critical root zone for any tree to be preserved during construction.

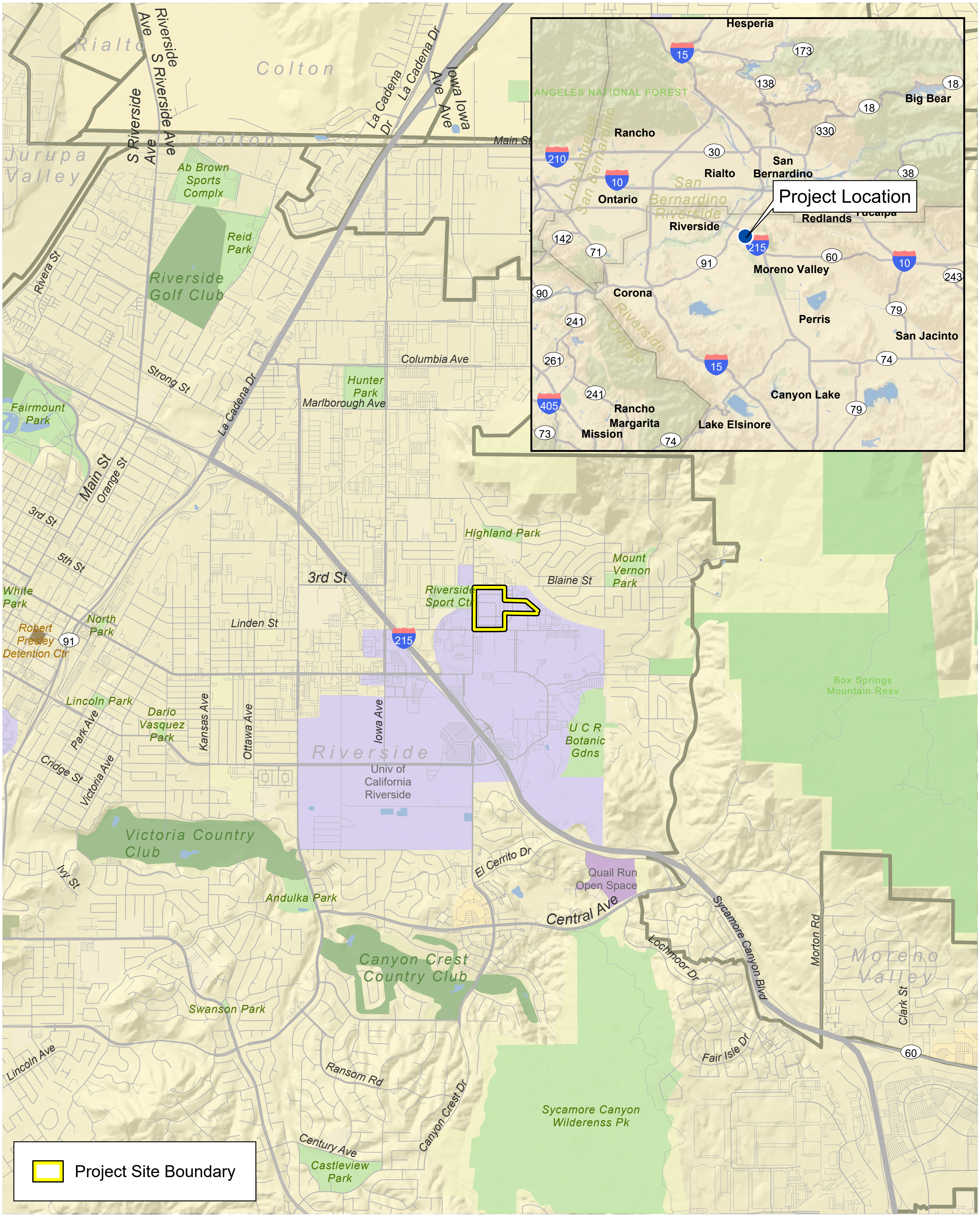
Please call Trevor Bristle at (626) 204-6538 with any questions related to this report.

Sincerely,
PSOMAS

David T. Hughes
Senior Project Manager

Trevor Bristle
Certified Arborist
International Society of Arboriculture
Certificate No. WE-10233A

Attachments: Exhibits 1 and 2
A – Tree Survey Data



Regional and Local Vicinity

Exhibit 1

Tree Inventory Report for the North District Phase 2 Project Site, University of California Riverside

4,000 2,000 0 4,000 Feet

PSOMAS

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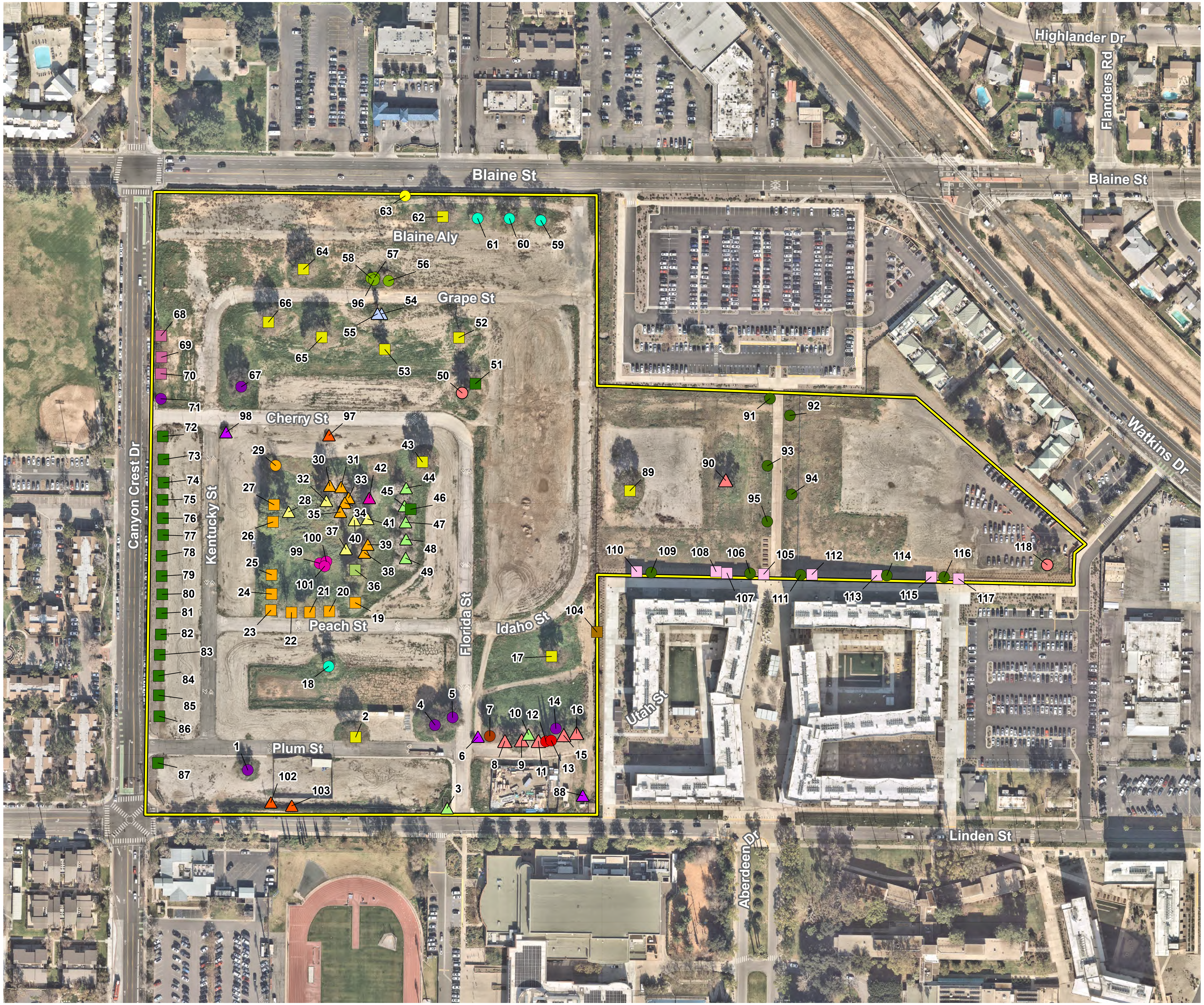

Project Site Boundary

Tree Species

- tree of heaven (*Ailanthus altissima*)
- Italian cypress (*Cupressus sempervirens*)
- silver dollar gum (*Eucalyptus polyanthemos*)
- red ironbark (*Eucalyptus sideroxylon*)
- shamel ash (*Fraxinus uhdei*)
- velvet ash (*Fraxinus velutina*)
- honey locust (*Gleditsia triacanthos*)
- jacaranda (*Jacaranda mimosifolia*)
- Chinese flame tree (*Koelreuteria bipinnata*)
- crape myrtle (*Lagerstroemia indica*)
- Chinaberry (*Melia azedarach*)
- white mulberry (*Morus alba*)
- Canary Island pine (*Pinus canariensis*)
- Aleppo pine (*Pinus halepensis*)
- western sycamore (*Platanus racemosa*)
- Fremont cottonwood (*Populus fremontii*)
- coast live oak (*Quercus agrifolia*)
- holly oak (*Quercus ilex*)
- cork oak (*Quercus suber*)
- black willow (*Salix gooddingii*)
- red willow (*Salix laevigata*)
- Peruvian pepper tree (*Schinus molle*)
- tipu tree (*Tipuana tipu*)
- Chinese elm (*Ulmus parvifolia*)
- Mexican fan palm (*Washingtonia robusta*)

N W E S

200 100 0 200 Feet

Aerial Source: NearMap 2023

Tree Locations **Exhibit 2**

Tree Inventory Report for the North District Phase 2 Project Site, University of California, Riverside

PSOMAS

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ATTACHMENT A

TREE SURVEY DATA

TABLE A-1
SUMMARY OF COLLECTED TREE DATA

Tree Tag #	Tree Species: Common name	Tree Species: Botanical Name	# Main Trunks	D.B.H. (in)	Tree Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	To Be Removed
1	holly oak	*Quercus ilex*	1	18	30	30	2	2	X
2	silver dollar gum	*Eucalyptus polyanthemos*	1	28.6	55	45	4	4	
3	Chinese elm	*Ulmus parvifolia*	5	4.0, 3.8, 3.5, 3.0, 2.0	25	30	4	3	X
4	holly oak	*Quercus ilex*	1	32.2	45	45	4	3	
5	holly oak	*Quercus ilex*	1	26.6	40	45	3	2	
6	Peruvian peppertree	*Schinus molle*	1	4.0	8	10	4	4	
7	red ironbark	*Eucalyptus sideroxylon*	1	22.7	55	35	4	4	
8	cork oak	*Quercus suber*	1	16.2	30	30	4	4	
9	cork oak	*Quercus suber*	1	28.3	40	40	3	3	
10	Chinese elm	*Ulmus parvifolia*	1	18.8	45	25	4	4	
11	cork oak	*Quercus suber*	1	18.5	40	30	3	3	
12	Italian cypress	*Cupressus sempervirens*	1	11.4	50	6	4	4	
13	Italian cypress	*Cupressus sempervirens*	1	11.2	50	8	4	3	
14	holly oak	*Quercus ilex*	1	14.5	40	35	4	4	
15	cork oak	*Quercus suber*	1	24.0	35	35	2	2	
16	cork oak	*Quercus suber*	1	23.9	50	40	2	2	
17	silver dollar gum	*Eucalyptus polyanthemos*	2	27.2, 26.4	55	50	3	3	
18	tipu tree	*Tipuana tipu*	1	19.8	45	45	4	4	
19	velvet ash	*Fraxinus velutina*	1	27.0	60	35	3	3	
20	velvet ash	*Fraxinus velutina*	1	28.3	50	40	4	3	
21	velvet ash	*Fraxinus velutina*	1	33.3	40	35	4	4	
22	velvet ash	*Fraxinus velutina*	1	28.8	45	30	4	4	
23	velvet ash	*Fraxinus velutina*	1	20.9	45	35	4	3	
24	velvet ash	*Fraxinus velutina*	1	21.5	40	35	4	3	

TABLE A-1
SUMMARY OF COLLECTED TREE DATA

Tree Tag #	Tree Species		# Main Trunks	D.B.H. (in)	Tree Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	To Be Removed
	Common name	Botanical Name							
25	velvet ash	*Fraxinus velutina*	1	24.3	45	35	4	4	
26	velvet ash	*Fraxinus velutina*	1	27.1	40	40	4	4	
27	velvet ash	*Fraxinus velutina*	1	26.2	45	35	4	4	
28	Canary Island pine	*Pinus canariensis*	1	22.8	45	25	4	4	
29	honey locust	*Gleditsia triacanthos*	1	15.5	35	25	4	4	
30	western sycamore	*Platanus racemosa*	1	20.6	45	35	4	4	
31	western sycamore	*Platanus racemosa*	1	30.0	50	40	4	4	
32	Canary Island pine	*Pinus canariensis*	1	26.6	45	30	3	3	
33	western sycamore	*Platanus racemosa*	1	20.3	50	35	3	2	
34	western sycamore	*Platanus racemosa*	1	17.5	35	30	2	2	
35	western sycamore	*Platanus racemosa*	1	20.2	45	35	3	3	
36	jacaranda	*Jacaranda mimosifolia*	1	22.3	50	40	4	4	
37	Canary Island pine	*Pinus canariensis*	1	19.7	50	12	3	3	
38	western sycamore	*Platanus racemosa*	1	18.3	35	30	3	3	
39	western sycamore	*Platanus racemosa*	1	22.2	45	20	1	1	X
40	Canary Island pine	*Pinus canariensis*	1	19.0	50	25	3	3	
41	Canary Island pine	*Pinus canariensis*	1	24.9	50	30	4	3	
42	white mulberry	*Morus alba*	1	25.3	40	40	4	4	
43	silver dollar gum	*Eucalyptus polyanthemos*	1	40.0	55	45	4	4	X
44	Chinese elm	*Ulmus parvifolia*	1	14.9	40	30	4	4	
45	Chinese elm	*Ulmus parvifolia*	1	16.9	35	25	4	3	
46	shamel ash	*Fraxinus uhdei*	1	7.1	35	20	4	4	
47	Chinese elm	*Ulmus parvifolia*	1	17.1	40	40	4	3	
48	Chinese elm	*Ulmus parvifolia*	1	18.0	45	40	4	3	

TABLE A-1
SUMMARY OF COLLECTED TREE DATA

Tree Tag #	Tree Species: Common name	Tree Species: Botanical Name	# Main Trunks	D.B.H. (in)	Tree Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	To Be Removed
49	Chinese elm	*Ulmus parvifolia*	1	19.3	50	35	4	3	
50	Aleppo pine	*Pinus halepensis*	1	26.4	55	35	4	4	X
51	shamel ash	*Fraxinus uhdei*	2	12.6, 11.0	30	30	4	4	X
52	silver dollar gum	*Eucalyptus polyanthemos*	1	32.6	60	40	1	1	X
53	silver dollar gum	*Eucalyptus polyanthemos*	1	17.4	30	25	4	4	X
54	Mexican fan palm	*Washingtonia robusta*	1	30.0	45	6	4	3	X
55	Mexican fan palm	*Washingtonia robusta*	1	12.0	25	10	3	3	X
56	black willow	*Salix gooddingii*	4	3.8, 3.0, 2.0, 2.0	25	25	4	3	X
57	black willow	*Salix gooddingii*	9	4.0, 3.2, 3.0, 3.0, 3.0, 2.5, 2.5, 1.0, 1.0	25	30	4	3	X
58	black willow	*Salix gooddingii*	3	3.0, 2.0, 1.5	25	10	4	3	X
59	tipu tree	*Tipuana tipu*	1	20.4	45	35	4	4	X
60	tipu tree	*Tipuana tipu*	1	21.6	45	45	4	4	X
61	tipu tree	*Tipuana tipu*	1	25.2	45	40	4	4	X
62	silver dollar gum	*Eucalyptus polyanthemos*	1	50.8	50	40	4	4	X
63	tree of heaven	*Ailanthus altissima*	4	6.2, 2.0, 2.0, 1.0	20	15	4	3	X
64	silver dollar gum	*Eucalyptus polyanthemos*	1	41	45	45	4	4	X
65	silver dollar gum	*Eucalyptus polyanthemos*	2	54.2, 5.2	45	45	4	3	X
66	silver dollar gum	*Eucalyptus polyanthemos*	1	35.8	45	40	4	4	X
67	holly oak	*Quercus ilex*	1	29.6	40	40	3	3	X
68	Chinese flame tree	*Koelreuteria bipinnata*	1	16.0	30	30	4	4	X
69	Chinese flame tree	*Koelreuteria bipinnata*	1	15.4	30	30	4	4	X
70	Chinese flame tree	*Koelreuteria bipinnata*	1	11.8	30	30	4	4	X
71	holly oak	*Quercus ilex*	5	1.3, 1.0, 1.0, 1.0, 0.5	10	7	4	3	X

TABLE A-1
SUMMARY OF COLLECTED TREE DATA

Tree Tag #	Tree Species		# Main Trunks	D.B.H. (in)	Tree Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	To Be Removed
	Common name	Botanical Name							
72	shamel ash	*Fraxinus uhdei*	1	2.1	10	5	4	4	X
73	shamel ash	*Fraxinus uhdei*	1	1.8	10	4	4	4	X
74	shamel ash	*Fraxinus uhdei*	1	2.0	10	4	4	4	X
75	shamel ash	*Fraxinus uhdei*	1	2.1	10	4	4	4	X
76	shamel ash	*Fraxinus uhdei*	1	1.9	10	4	4	4	X
77	shamel ash	*Fraxinus uhdei*	1	1.7	10	4	4	4	X
78	shamel ash	*Fraxinus uhdei*	1	1.9	10	5	4	4	X
79	shamel ash	*Fraxinus uhdei*	1	1.6	10	5	4	4	X
80	shamel ash	*Fraxinus uhdei*	1	1.7	10	4	4	4	X
81	shamel ash	*Fraxinus uhdei*	1	1.8	10	5	4	4	X
82	shamel ash	*Fraxinus uhdei*	1	1.7	10	4	4	4	X
83	shamel ash	*Fraxinus uhdei*	1	1.6	10	4	4	4	X
84	shamel ash	*Fraxinus uhdei*	1	2.0	10	5	4	4	X
85	shamel ash	*Fraxinus uhdei*	1	1.7	10	4	4	4	X
86	shamel ash	*Fraxinus uhdei*	1	1.8	10	5	4	4	X
87	shamel ash	*Fraxinus uhdei*	1	1.5	10	4	4	4	X
88	Peruvian peppertree	*Schinus molle*	8	2.0, 1.5, 1.5, 1.0, 1.0, 1.0, 1.0, 0.5	20	25	4	4	X
89	silver dollar gum	*Eucalyptus polyanthemos*	1	58.5	60	50	4	4	X
90	cork oak	*Quercus suber*	1	31.6	50	50	3	3	X
91	coast live oak	*Quercus agrifolia*	1	1.5	9	3	3	3	
92	coast live oak	*Quercus agrifolia*	1	0.75	9	3	4	4	
93	coast live oak	*Quercus agrifolia*	1	1.5	10	5	4	4	
94	coast live oak	*Quercus agrifolia*	1	1.5	12	7	4	4	
95	coast live oak	*Quercus agrifolia*	1	1.0	110	5	4	4	

TABLE A-1
SUMMARY OF COLLECTED TREE DATA

Tree Tag #	Tree Species		# Main Trunks	D.B.H. (in)	Tree Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	To Be Removed
	Common name	Botanical Name							
96	black willow	*Salix gooddingii*	1	2.5	15	12	4	4	X
97	Chinaberry	*Melia azedarach*	6	1.5, 1.5, 1.0, 1.0, 1.0, 1.0	15	20	4	4	X
98	Peruvian peppertree	*Schinus molle*	11	1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 0.5, 0.5, 0.5, 0.5, 0.5	15	20	4	3	X
99	red willow	*Salix laevigata*	1	1.5	20	5	2	2	
100	red willow	*Salix laevigata*	5	1.0, 0.5, 0.5, 0.5, 0.5	20	10	2	2	
101	red willow	*Salix laevigata*	2	2.0, 1.0	20	10	2	2	
102	Chinaberry	*Melia azedarach*	13	0.8, 0.8, 0.8, 0.8, 0.8, 0.8, 0.8, 0.8, 0.8, 0.5, 0.5, 0.5, 0.5	15	20	4	4	
103	Chinaberry	*Melia azedarach*	12	0.8, 0.8, 0.8, 0.8, 0.8, 0.8, 0.8, 0.8, 0.8, 0.8, 0.5, 0.5	15	20	4	4	
104	Fremont cottonwood	*Populus fremontii*	1	2.5	15	10	4	4	
105	crape myrtle	*Lagerstroemia indica*	1	1.2	10	8	4	4	
106	coast live oak	*Quercus agrifolia*	1	1.5	12	10	4	4	
107	crape myrtle	*Lagerstroemia indica*	1	1.0	10	10	4	4	
108	crape myrtle	*Lagerstroemia indica*	1	1.5	10	8	4	4	
109	coast live oak	*Quercus agrifolia*	1	1.7	10	8	4	4	
110	crape myrtle	*Lagerstroemia indica*	1	1.0	9	6	4	4	
111	coast live oak	*Quercus agrifolia*	1	1.5	10	6	4	4	
112	crape myrtle	*Lagerstroemia indica*	1	1.1	12	8	4	4	
113	crape myrtle	*Lagerstroemia indica*	1	1.0	12	8	4	4	
114	coast live oak	*Quercus agrifolia*	1	1.4	10	8	4	3	

TABLE A-1
SUMMARY OF COLLECTED TREE DATA

Tree Tag #	Tree Species		# Main Trunks	D.B.H. (in)	Tree Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	To Be Removed
	Common name	Botanical Name							
115	crape myrtle	*Lagerstroemia indica*	1	1.0	10	5	4	4	
116	coast live oak	*Quercus agrifolia*	1	1.8	10	6	4	4	
117	crape myrtle	*Lagerstroemia indica*	1	1.2	10	8	4	4	
118	Aleppo pine	*Pinus halepensis*	1	28.0	60	55	1	1	

D.B.H.: diameter at breast height; ft: feet

Aesthetics/Health Rating: 1=Very Poor, 2=Poor, 3=Fair, 4=Good, and 5=Excellent

APPENDIX C – GEOTECHNICAL INVESTIGATION REPORT

GEOTECHNICAL INVESTIGATION
UC RIVERSIDE – NORTH DISTRICT PHASE 2 DEVELOPMENTS
NORTH OF WEST LINDEN STREET,
EAST OF CANYON CREST DRIVE
RIVERSIDE, CALIFORNIA

www.haleyaldrich.com

by
Haley & Aldrich, Inc.
Costa Mesa, California

for
The University of California
Riverside, California

File No. 0205990-000
April 2023

HALEY & ALDRICH, INC.
3187 Red Hill Avenue
Suite 155
Costa Mesa, CA 92626
714.371.1800

28 April 2023
File No. 0205990-000

University of California, Riverside
Environmental Health & Safety
900 University Avenue
Riverside, California 92521

Attention: Mr. Drew Hecht

Subject: Geotechnical Investigation
UC Riverside – North District Phase 2 Developments
North of West Linden Street, East of Canyon Crest Drive
Riverside, California

Ladies and Gentlemen:

Enclosed is our geotechnical investigation report for the proposed North District Phase 2 Development located northeast of the intersection of Canyon Crest Drive and West Linden Street, in Riverside, California (Site). The Site is bounded by Cherry Street to the north, Canyon Crest Drive to the west, West Linden Street to the south, and University of California Riverside (UCR) North District Phase 1 student housing to the east.

We understand that the proposed Phase 2 Development includes demolishing the existing roads and redeveloping the Site with three new multi-story student residence structures, parking lots, a central park, and landscaping and hardscaping improvements. The planned residence halls are expected to be at-grade structures reaching five to seven stories. Approximately 8 acres of land area in the northern portion of the Phase 2 Site will be dedicated to asphalt-paved parking lots with a capacity for 750 vehicles. Cuts and fills on the order of 7 feet or less are anticipated. At this time, we do not anticipate any significant below grade structures such as swimming pools or basements.

This report contains a discussion of our findings regarding subsurface conditions, seismicity and seismic hazards, and foundation design recommendations. The primary geotechnical issues that should be addressed during the design are the potential for strong seismic shaking, including secondary seismic effects, and selecting an appropriate foundation system. We recommend that the proposed buildings be supported on shallow foundation systems that bear on a layer of well-compacted, engineered fill. Structures such as light poles and fence posts may be supported on cast-in-place drilled piers. Our recommendations regarding these and other geotechnical issues are presented in the following report.

We appreciate the opportunity to provide our services to you on this project. If you have any questions, please call.

Sincerely yours,
HALEY & ALDRICH, INC.

Ryan Hendrix
Project Professional

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1. Introduction

This report presents the results of our geotechnical investigation for Phase 2 of the proposed North District Residential Development located northeast of the intersection of Canyon Crest Drive and West Linden Street, in Riverside, California (Site). The Site is bounded by Cherry Street to the north, Canyon Crest Drive to the west, West Linden Street to the south, and University of California Riverside (UCR) North District Phase 1 student housing to the east, as shown on Figures 1 and 2. Most of the main UCR campus is located south of the Site.

1.1 BACKGROUND AND EXISTING SITE CONDITIONS

The proposed Phase 2 Development occupies the southwestern portion of the North District Development, where there are six asphalt-paved former residential streets within the development. Based on our review of readily available historical information and aerial photographs, much of the existing development was constructed as military housing in 1940, before which time the Site was covered with citrus groves.

Prior to construction of the Phase 1A and Phase 1B Development, the Site contained the Canyon Crest Student Housing development, a complex of single-story student housing units, as well as storage and maintenance facilities, including permanent structures and modular units. Based on a review of historical aerial imagery, the student housing development consisted of 186 structures with building footprints between 900 square feet and 4,000 square feet. The housing units and structures have been removed.

1.2 PROJECT DESCRIPTION

Our understanding of the proposed development project is based on the conceptual plan, “UCR North District Phase 2 Concept Design,” prepared by Solomon Cordwell Buenz, dated 2022, our discussions with you, and conversations with the project structural engineer, DCI Engineers. We understand that the proposed Phase 2 Development includes demolishing the existing roads and redeveloping the Site with three new multi-story student residence structures, parking lots, a central park, and landscaping and hardscaping improvements. The planned residence halls are expected to be at-grade structures reaching five to seven stories. Each of the three residence halls has a proposed footprint area of approximately 20,000 to 30,000 square feet. Approximately 8 acres of land area in the northern portion of the Phase 2 Site will be dedicated to asphalt-paved parking lots with a capacity for 750 vehicles. Cuts and fills on the order of 7 feet or less are anticipated. At this time, we do not anticipate any significant below grade structures such as swimming pools or basements.

Based on our conversations with the project structural engineer, DCI Engineers, we understand that maximum structural column loads for the residence halls will be on the order of 350 kips of dead load plus 100 kips live load.

If the project differs significantly, we should be contacted to review the applicability of our recommendations.

2. Scope of Services

Our geotechnical investigation included performing four (4) hollow-stem auger borings, six (6) cone penetration tests (CPTs), and two (2) percolation tests. Our services also included performing geotechnical laboratory testing on select soil samples collected from the borings. The results of our field exploration and laboratory testing were evaluated, and engineering analyses were performed to develop conclusions and recommendations regarding:

- Soil and groundwater conditions at the Site;
- Site seismicity and seismic hazards, including liquefaction and seismic settlement potential;
- Corrosivity of the near-surface soil;
- Settlement estimates;
- Foundation design criteria, including recommendations for compressive and lateral foundation support of building loads;
- Design criteria for slab-on-grade floors and exterior concrete flatwork;
- Flexible asphalt-concrete and rigid Portland cement concrete pavement designs for a range of estimated traffic indices;
- Design recommendations for earthwork, including Site grading as well as criteria for fill quality and compaction;
- Seismic design parameters in accordance with the 2022 California Building Code; and
- Additional geotechnical construction considerations.

3. Field Investigation

3.1 CURRENT INVESTIGATION

Subsurface conditions for this report were explored by advancing four (4) hollow-stem auger borings as designated HA-17 through HA-20 and six (6) CPTs designated as CPT-17, CPT-18, CPT-18A, CPT-18B, CPT-19, and CPT-20). The hollow-stem auger borings were advanced to depths ranging from about 25½ to 37 feet below ground surface (bgs). The CPTs were advanced to depths ranging between about 9 and 70 feet bgs. Borings for infiltration testing were advanced to approximately 5.5 feet bgs. Prior to performing our field investigation, we contacted Underground Service Alert (USA) and retained a private utility locator, GEOVision of Corona, California, to identify potential conflicts between the boring and CPT locations and existing utilities. The approximate locations of the borings and CPTs are presented on Figure 2.

3.1.1 Borings

Cascade Drilling, Inc., of Upland, California, drilled the hollow-stem and hand auger borings 21 February 2023. The hollow-stem auger borings were drilled using a CME-85 truck-mounted drill rig equipped with 8-inch outer-diameter augers. A hand auger boring was performed at each boring location to a depth of about 5 feet bgs prior to advancing the hollow-stem auger. Soil samples were obtained from the borings at discrete intervals during drilling using a lined Modified California sampler (MCS) and an unlined Standard Penetration Test (SPT) sampler. The MCS has a 3.0-inch outside diameter and a 2.43-inch inside diameter, and the SPT sampler has a 2.0-inch outside diameter and a 1.38-inch inside diameter. The locations where each sampler was used are recorded on the boring logs presented in Appendix A. MCS and SPT samples were collected by driving each respective sampler to a depth of 24 inches and 18 inches, respectively, or to penetration refusal, whichever was encountered first, using a 140-pound, aboveground automatic hammer falling 30 inches. Uncorrected blow counts were recorded for each 6-inch-long interval of sampler penetration and are presented on the boring logs.

3.1.2 Cone Penetration Tests

Kehoe Testing and Engineering (Kehoe) of Huntington Beach, California, performed the CPTs on 21 March 2023. A hand auger boring was performed at each CPT location to a depth of 5 feet bgs prior to advancing the CPT probe. The CPTs consisted of hydraulically pushing a 1.75-inch-diameter, cone-tipped probe into the soil using a rig with a push capacity of 20 tons. The cone tip measures tip resistance and the friction sleeve behind the cone tip measures frictional resistance. Electrical strain gauges within the cone continuously measured soil parameters during the entire depth the cone was advanced. Soil data, including tip resistance and frictional resistance, were recorded and then processed to provide information for use in our geotechnical engineering analyses. Once completed, the CPT holes were backfilled with cement grout in accordance with the Valley Water permit requirements.

To conduct the seismic shear wave test, the penetration of the cone is stopped and the rods decoupled from the rig. An automatic hammer is triggered to send a shear wave into the soil. The distance from the source to the cone is calculated knowing the total depth of the cone and the horizontal offset distance between the source and the cone. Seismic shear wave tests were performed at every 5-foot interval to a depth of about 70 feet at CPT-17.

The stratigraphic interpretation of the CPT data was performed based on relationships between cone bearing and sleeve friction versus penetration depth. The friction ratio, which is sleeve friction divided by cone bearing, is a calculated parameter used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone bearing and generate large excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate small excess pore water pressures. The interpretation of soil properties from the cone data has been carried out using recent correlations developed by Robertson and Cabal (2010). The CPT log and shear wave velocity tests, showing tip resistance and friction ratio by depth and interpreted soil classifications and strengths, are presented in Appendix B.

During planning for the field investigation, we proposed to conduct three CPT soundings for the Phase 2 development; however, given the refusal encountered during field activities, six CPT soundings were conducted. Refusal conditions were encountered at the six CPT locations. The six CPT locations met early refusal within dense sand or gravel layers.

Once completed, the borings were backfilled with soil cuttings, and the CPT locations were backfilled with bentonite grout. At exploration locations where pavements were penetrated, quick-set concrete or cold-patch asphalt was used to restore paved conditions.

3.1.3 Infiltration Test

Two infiltration tests[1] were performed at locations IT-1 and IT-2 on 21 February 2023. The infiltration tests consisted of installing a 2-inchdiameter polyvinyl chloride pipe with 0.020-inch of slotted screen within the center of each boring to a depth of approximately 5 feet bgs. The area around the pipe was backfilled with #3 filter sand to a depth of approximately 2 feet bgs. Hydrated bentonite was used to fill the area around the pipe at depths between 2 feet bgs and the ground surface. The borings were presoaked to the level of the ground surface prior to testing the infiltration rate of the borehole. The change in depth for the water was measured at 30-minute intervals. After each reading, the water level was restored to the same approximate starting depth (i.e., level with the surrounding ground surface) for subsequent test runs. Testing at each location was halted once the rate of percolation stabilized, as determined by relatively consistent readings over three consecutive test intervals (defined as less than 10 percent change in the rate of percolation over three tests). The results of our testing are discussed in the "Stormwater Infiltration" section of this report and the percolation test data are presented in Appendix C.

Based on our review of on-Site and local subsurface data, the predominant soil type identified in the 10 to 20 foot bgs depth range is silty sand (SM), interbedded with soil layers composed of clayey sand (SC), poorly graded sand (SP), poorly graded sand with silt (SP-SM), and poorly graded sand with clay (SP-SC). Commonly cited hydraulic conductivity rates for silty sand range from 10^{-3} to 10^{-2} centimeters per second ([cm/s]; Coduto, 1999).

[1] The percolation tests were performed in general accordance with the guidelines presented in the County of Los Angeles Department of Public Works Administrative Manual GS200.1.

3.1.4 Laboratory Testing

Soil samples from the borings were delivered to AP Engineering in Pomona, California, and select samples were tested to measure moisture content, fines content, sieve analysis, direct shear strength, corrosivity, collapse potential, and the State of California resistance-values (R-values). The geotechnical laboratory test results are presented in Appendix D and summarized on the boring logs.

3.2 PREVIOUS INVESTIGATIONS

We previously provided UCR with a feasibility level study in 2017 and a geotechnical design level study in 2018 . The results of the studies are presented in our report. The previous geotechnical related studies for the Site include the reports shown below.

- "Preliminary Geotechnical Investigation, North District Predevelopment Studies, North of West Linden Street and East of Canyon Crest Drive, Riverside, California" dated 9 June 2017 and prepared by Haley & Aldrich under file 128685-006.
- "Geotechnical Investigation, UC Riverside - North District Development, North of West Linden Street, East of Canyon Crest Drive, Riverside, California" dated 14 December 2018 and prepared by Haley & Aldrich under file 131648-003

The borings and CPTs from the previous studies are included in Appendix E and F and the laboratory testing for both are included in Appendix G. The approximate locations of the borings and CPTs are presented on Figure 2.

4. Existing Conditions

4.1 REGIONAL SEISMICITY

The major active faults in the area are the San Jacinto, San Andreas, and Elsinore faults. For each of the active faults within 100 kilometers (km) of the Site, the distance and direction from the Site and estimated maximum Moment magnitude (M_w),[2] are presented in Table I.

Table I. Active Faults within 100 km of the Site

Fault Name	Distance (km)	Direction from Site	Mean Characteristic or Maximum Moment Magnitude
San Jacinto - San Bernardino	8	Northeast	6.7
San Jacinto - San Jacinto Vly	9	East	6.9
San Andreas - San Bernardino [model 1]	21	Northeast	7.5
San Andreas - Southern 2 segments	21	Northeast	
San Andreas-All southern segments	21	Northeast	
Cucamonga	24	Northwest	7.0
Chino-Central Ave	28	West	6.7
Elsinore - Glen-Ivy	30	Southwest	6.8
Whittier	32	West	6.8
Cleghorn	33	North	6.5
San Jose	37	West	6.5
Elsinore - Temecula	38	South	6.8
San Andreas - 1857 [model 1]	38	Northwest	
San Andreas - Mojave [model 1]	38	Northwest	7.4
North Frontal fault zone-western	38	North	7.0
Sierra Madre	41	West	7.0
San Jacinto - Anza	47	East	7.2
Puente Hills blind thrust	50	West	7.1
San Joaquin Hills Thrust	53	Southwest	6.6
Clamshell-Sawpit	56	West	6.5
Pinto Mtn	57	East	7.0
Helendale-S. Lockhart	60	Northeast	7.1
North Frontal fault zone-eastern	63	Northeast	6.7
Raymond	64	West	6.5
Newport-Inglewood offshore	68	Southwest	6.9
Newport-Inglewood	69	Southwest	6.9
Upper Elysian Park	72	West	6.4
Elsinore – Julian	73	Southeast	7.1
Lenwood-Lockhart-Old Woman Springs	76	East	7.3
Verdugo	78	West	6.7

2 M_w is an energy-based scale used to provide a physically meaningful measure of the size of a faulting event. Moment magnitude is directly related to average slip and fault rupture area.

Table I. Active Faults within 100 km of the Site			
Fault Name	**Distance (km)**	**Direction from Site**	**Mean Characteristic or Maximum Moment Magnitude**
San Andreas - Coachella	79	East	7.2
Johnson Valley N	84	Northeast	6.7
Hollywood	85	West	6.4
Burnt Mtn	85	East	6.5
Landers	86	East	7.3
Eureka Peak	87	East	6.4
Palos Verdes	88	West	7.1
S Emerson-Copper Mtn	94	Northeast	6.9
Sierra Madre-San Fernando	95	West	6.7
San Gabriel	95	West	7.0
San Jacinto - Coyote Creek	96	Southeast	6.8
Rose Canyon	96	South	6.9
Coronado Bank	97	Southwest	7.4

The third Uniform California Earthquake Rupture Forecast (UCERF3) prepared by the U.S. Geological Survey (USGS) reports a 60 percent probability of a magnitude 6.7 or greater earthquake occurring in the Los Angeles region (which includes the Site) by the year 2044 (Working Group on California Earthquake Probabilities, 2014). More specific estimates of the probabilities for different faults in the Los Angeles area are as follows:

Table II. UCERF3 Estimates of 30-Year Probability (2014 to 2044) of a Magnitude 6.7 or Greater Earthquake in Los Angeles Region	
Fault	**Probability (percent)**
Southern San Andreas	19
San Jacinto	5
Elsinore	4

Based on our review of available geologic data, the Site is not located within a currently established Alquist-Priolo Earthquake Fault Zone for surface fault rupture hazards. As there are no active or potentially active faults with the potential for surface fault rupture known to be directly beneath the Site, the potential for surface rupture is considered low.

4.2 SUBSURFACE CONDITIONS

Based on our borings and CPTs performed at the Site on 21 February 2018, we conclude that the Site is primarily underlain by layers of poorly graded sand (SP) and silty sand (SM). The sands are generally fine- to medium-grained, with some coarse sand and fine gravel occurring in some layers, including poorly graded sand with silt (SP-SM) and well graded sand with silt (SW-SM). Boring HA-19 encountered lean clay (CL) from approximately 5.5 to 6.5 feet bgs, and clayey sand (SC) from approximately 6.5 feet to 14.5 feet bgs. The sands are typically medium dense to very dense.

Groundwater was not encountered at the Site within our three hollow-stem auger borings advanced to a maximum depth of 37½ feet bgs on 26 February 2018. This is consistent with our previous borings advanced to about 5½ feet on 26 March without encountering groundwater. Groundwater levels can fluctuate based on seasonal rainfall amounts, perched groundwater conditions, and elevation changes in nearby bodies of water. For our analyses, a design groundwater level of 100 feet bgs was selected based on the present groundwater level conditions reported by the California Department of Water Resources, 2021.

5. Discussion and Conclusions

The following conclusions and recommendations provided below are based on our review of Subsurface information for the Site.

The primary geotechnical issues for this project include:

- Site seismicity and seismic hazards;
- Presence of undocumented fill and buried features from the existing development; and
- Selecting an appropriate foundation system(s).

Our discussion of these and other geotechnical issues are presented in the remainder of this report.

5.1 SEISMIC HAZARDS

Very strong to severe shaking has the potential to occur at the Site during a major earthquake. Shaking during an earthquake can result in ground failure, such as that associated with soil liquefaction, lateral spreading, and cyclic densification.

5.1.1 Site Seismicity

We understand that the seismic design of this project will be performed in accordance with 2022 CBC, which references American Society of Civil Engineers (ASCE) 7-16. The basis of design for this code is nominally a 2,475-year (2 percent probability of exceedance in 50 years) return period hazard, referred to as the maximum considered earthquake (MCE). This spectrum is then adjusted for risk and peak direction hazard to form the risk-adjusted maximum considered earthquake (MCE_R). We obtained the seismic hazard from the USGS 2014 National Seismic Hazard Maps (USGS, 2014) for the Site location. The USGS maps are based on a probabilistic seismic hazard analysis that the USGS performed across the United States.

For our analysis, we used a shear wave velocity over the top 70 feet projected to 100 feet (30 meters) of the Site (V_{s30}) of 537 meters per second (Site Class C). Based on the seismicity of faults that may impact the Site and the results of the deaggregation analysis, a design earthquake with an M_w of 8.1 was selected for the seismic hazard evaluation. The risk-based site-modified peak ground acceleration (PGA_M) for the Site is 0.749g; this value was computed based on procedures outlined in ASCE 7-16.

5.1.2 Soil Liquefaction and Associated Hazards

Liquefaction is the process in which saturated cohesionless soil experiences a temporary loss of strength due to the buildup of excess pore water pressure during cyclic loading resulting from earthquake ground motions. The type of soils most susceptible to liquefaction are loose, clean, saturated, uniformly graded sand and silt that have low clay content. Flow failure, lateral spreading, differential settlement, loss of bearing strength, ground fissures, and sand boils are evidence of liquefaction.

The Riverside County Open Data geotechnical database maps the Site within a zone of "Low" liquefaction hazard susceptibility (County of Riverside, 2016). Our review of available geotechnical and well reports indicates that the historical high groundwater level is deeper than approximately 50 feet bgs, and that the current depth-to-groundwater is expected to be approximately 100 feet bgs.

We conclude that the potential for liquefaction and liquefaction-related secondary effects to develop at the Site following the design seismic event is negligible, given the deep groundwater conditions.

5.1.3 Cyclic Densification

Seismically-induced compaction or densification of non-saturated granular soil (such as sand above the groundwater table) due to earthquake vibrations can result in settlement of the ground surface. Based on the results of this investigation, we conclude that soil above the groundwater table is predominantly granular and generally medium dense to dense. Based on our analyses, we conclude that the potential for on-Site cyclic densification to occur is low.

5.1.4 Fault Rupture

Historically, ground surface displacements closely follow the trace of geologically young faults. The Site is not within an Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no known active or potentially active faults exist on the Site. Based on this information, we conclude the risk of surface faulting and secondary ground failure to be very low.

5.2 UNDOCUMENETED FILL AND SUBSURFACE FEATURES

The Site was previously developed, and fill was likely placed to create the building pads for the existing housing structures. In addition, demolition activities will need to be performed prior to any new construction that will disturb the subgrade. Undocumented fill is often variable in density and in composition. This variability can lead to excessive settlement. To mitigate this potential, we recommend that the foundations be placed on engineered fill.

Undocumented subsurface features may be present within the proposed development area. Premature CPT refusal was encountered on an impassible layer at about 11 feet bgs in CPT-18B. Our field staff was unable to discern if this layer is a natural feature, such as hardpan or soil with natural cementation, or if the layer coincides with abandoned utility lines or another artificial feature. Similar conditions may be present elsewhere on Site, and identifying these features may not be possible until the grading has begun. Unit prices for over-excavation and backfilling with engineered fill should be obtained.

5.3 EXPANSION AND COLLAPSE POTENTIAL

Expansive surface soils contain clay particles that experience high volume changes following exposure to seasonal or man-made fluctuations in moisture content. The volume changes from these soils can negatively impact foundations and other improvements if mitigation methods are not implemented. The results of our investigation indicate that near-surface soils across the Site are predominantly granular containing low to negligible volumes of clay particles; these soils are expected to have low expansion potential. We estimate that foundation movement associated with the presence of existing expansive near-surface soil will be negligible.

Collapsible soils are soil structures subject to a large and sudden reduction in volume upon wetting, and are often found in young alluvial deposits within arid or semi-arid environments. Collapsible soil structures contain granular particles with voids supported by a matrix of clay or silt particles or by carbonate cementation. Hydration of the matrix can result in a loss of support, resulting in densification and collapse of the soil structure. The resulting settlement can be severe enough to distress structures or improvements bearing on this soil. We performed one collapse test on a near-surface soil sample collected during our investigation. Based on this testing, the collapse potential for near-surface Site soils is low, and we estimate that foundation movement associated with the presence of collapsible near-surface soil will be negligible.

5.4 FOUNDATIONS AND SETTLEMENT

Based on the results of our subsurface investigation and engineering analyses, we conclude that new foundations for the residential structures may consist of a shallow foundation system bearing on competent native soil or a zone of overexcavated and recompacted fill soils overlying competent alluvial soils. Light standards and fence posts may also be supported on cast-in-place drilled piers. The primary geotechnical issue associated with the selection, design, and installation of the new building foundations is the potential for settlement under the weight of the building loads.

6. Recommendations

Our geotechnical recommendations for foundation support and other geotechnical aspects of the project are presented in this section of the report.

6.1 SHALLOW FOUNDATIONS

New continuous and isolated spread footings should be bottomed at least 24 inches below the lowest adjacent soil subgrade and should bear on competent native soil or at least a 12-inch-thick layer of compacted fill. Continuous and isolated footings should be at least 18 inches wide and 24 inches square, respectively. We recommend the proposed footings be designed using an allowable bearing pressure of 3,500 pounds per square foot (psf) for dead plus live load conditions. This value contains a factor of safety of at least 2 and may be increased by one-third for total loads, including wind or seismic forces. For shear wall footings, an average modulus of vertical subgrade reaction value of 75 pounds per cubic inch (pci) may be used with a one-third increase for transient loads. These allowable bearing value may be increased depending upon the specific foundation and floor slab design details, which will be discussed with the project structural engineer as the building design progresses.

We estimate that total foundation settlement under static loading conditions should be less than 1 inch, with differential settlements of less than ½ inch over a 50-foot distance.

Lateral loads may be resisted by a combination of passive pressure on the embedded vertical faces of the footings and grade beams and friction between the bottoms of the footings and the supporting soil. For passive resistance, we recommend using an equivalent fluid pressure of 450 pounds per cubic foot (pcf) for footings embedded in fill; the upper foot of soil should be ignored unless it is confined by a slab or pavement. Frictional resistance should be computed using a base friction coefficient of 0.40. The values are unfactored. Uplift resistance may be computed based on the dead weight of the planned foundation elements.

The footing excavations should be free of standing water, debris, and disturbed materials prior to placing concrete. The bottoms and sides of the footing excavations should be maintained in a moist condition until the concrete has been placed. A representative of the Geotechnical Engineer of Record (Geotechnical Engineer) should observe footing excavations for conformance with these recommendations prior to placing the reinforcing steel. Any loose or soft soil exposed beneath footing excavations should be removed, and the resulting overexcavations should be backfilled with compacted fill in accordance with the “Site Grading and Preparation” section of this report.

6.2 DRILLED PIERS

Drilled piers can be used to provide bearing capacity and resistance to lateral and uplift loads. Drilled shafts should consist of circular, straight shaft, cast-in-place reinforced concrete elements designed to develop their load carrying capacity from end bearing or shaft friction in compacted fill and alluvial soils. Drilled shafts designed solely for end-bearing should be designed using a maximum allowable bearing pressure of 4,500 psf. Lateral resistance for the light standards and fence foundations may be taken as an equivalent fluid weight of 450 pcf with a triangular distribution acting against the embedded length over a width of two diameters. Lateral resistance and skin friction of the upper 1 foot of soil should be disregarded when sizing drilled shaft foundations. The piers should have a minimum depth of 5 feet, a minimum diameter of 12 inches, and a center-to-center spacing of at least three (3) pier diameters. For resistance to uplift loads, the weight of the drilled pier and the reduced skin friction between the piers and native soils or compacted, engineered fill may be used. Allowable skin friction values to resist downward loads may be considered as 300 psf acting against the embedded length over the circumstantial area. A factor of safety of 2.0 was used. To resist uplift, 60 percent of the allowable skin friction may be used. A one-third increase is permitted for wind and/or seismic loading.

We recommend steel reinforcement and concrete be placed the same day that the holes are drilled and, ideally, within about 4 to 6 hours upon completing each drilled hole. The steel reinforcement should be centered in the drilled hole. Concrete used for pier construction should be discharged vertically into the holes to reduce aggregate segregation. Under no circumstances should concrete be allowed to free-fall against either the steel reinforcement or the sides of the excavation during construction. Based on our subsurface exploration, groundwater is not anticipated within the planned depths of the piers. However, if water more than 10 inches deep is present when placing concrete, either the water needs to be pumped out or the concrete placed into the hole using tremie methods. If tremie methods are used, the end of the tremie pipe must remain below the surface of the in-place concrete at all times. In order to develop the design skin friction value previously provided, concrete used for pier construction should have a slump of 6 to 8 inches. Although not anticipated, casing may be required where the piers extend into loose, sandy soils. The drilling contractor should have casing on hand during drilling operations.

The bottom of the drilled holes should be clean such that no more than 3 inches of loose soil remains in the hole prior to placing the concrete. A representative from the Geotechnical Engineer should be present to observe drilled holes to confirm bottom conditions prior to placing steel reinforcement.

6.3 SEISMIC DESIGN

For seismic design in accordance with the provisions of the 2022 CBC, we recommend using the seismic design parameters presented on Table III.

Table III. Seismic Parameters for MCE_R per ASCE 7-16 (CBC 2022)

Parameter	Value
Site Class	C
Latitude	33.980168°N
Longitude	117.330315°W
MCE Spectral Response at Short Periods (S_s)	1.5
MCE Spectral Response at 1-Second Period (S_1)	0.6
Site coefficient for Short Periods (F_a)	1.2
Site coefficient for 1-Second Period (F_v)	1.4
MCE_G Peak Ground Acceleration (PGA)	0.624
Site Coefficient for PGA (F_{PGA})	1.2
PGA Adjusted for Site Class Effects (PGA_M)	0.749

Notes:
* MCE: Maximum Considered Earthquake
** Values obtained from the ASCE 7 Hazard Tool, website: https://asce7hazardtool.online/ based on the ASCE-7-16 and 2022 California Building Code.

6.4 SITE PREPARATION AND GRADING

We recommend that proposed building and parking lot areas be cleared of existing structures, asphalt and concrete pavements, underground utilities, and other near-surface obstructions. Subsequently, the Site should be excavated to accommodate at least a 12-inch-thick layer, after compaction, of compacted engineered fill beneath the proposed building footings and slab-on-grade floors. The lateral limits of the excavation should extend at least 5 feet beyond the proposed outline of the new footings or the roofline, whichever is greater.

The surfaces exposed by stripping and excavation should be scarified to a depth of about 12 inches, moisture-conditioned to above the optimum moisture content, and compacted to at least 90 percent relative compaction.[3] In pavement areas that will receive vehicular traffic, the upper 12 inches of the soil subgrade and aggregate base should be compacted to at least 95 percent relative compaction to achieve a firm, unyielding subgrade. The soil subgrade should be kept moist until it is covered by aggregate base.

Fill placed below proposed building footings as pavement area subgrade or utility trench backfill should meet the requirements for engineering fill. Engineered fill should consist of on-site or imported soil that is non-hazardous, free of organic matter, contains no rocks or lumps greater than 3 inches in greatest dimension with a minimum of 90 percent less than 1 inch, and approved by the Geotechnical Engineer. Fill should be placed in horizontal lifts not exceeding 12 inches in uncompacted thickness, moisture-conditioned to above the optimum moisture content, and compacted to at least 90 percent relative compaction as presented in the Table IV, "Summary of Compaction Recommendations."

Where required, "non-expansive" engineered fill should be free of organics and meet the following minimum criteria:

Plasticity Index	15 or less
Liquid Limit	30 or less
Passing #200 Sieve	between 8% and 40%

We recommend that representative samples of the material proposed for use as fill be submitted to the Geotechnical Engineer for testing and approval at least 1 week prior to the import and start of grading of this material.

Site preparation and fill placement should be observed by the Geotechnical Engineer. It is important that a representative of the Geotechnical Engineer be present during the stripping and scarification process to observe whether any undesirable material is encountered in the construction area and whether exposed soils are similar to those encountered during the geotechnical Site exploration. Compaction recommendations for different areas are summarized in Table IV, "Summary of Compaction Recommendations."

3 Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material, as determined by the ASTM D1557 laboratory compaction procedure.

Table IV. Summary of Compaction Recommendations	
Area	**Compaction Recommendations** Notes 1 through 4
Subgrade Preparation and Placement of General Engineered Fill,[5] Including Imported Fill	Compact upper 12 inches to a minimum of 90 percent compaction at or above optimum moisture content.
Trenches[6]	Compact to a minimum of 90 percent compaction at or above optimum moisture content. The upper 12 inches should be compacted to 95 percent relative compaction in paved areas.
Exterior Flatwork	Compact upper 12 inches of subgrade to a minimum of 90 percent compaction at or above optimum moisture content. Compact imported "non-expansive" fill to a minimum of 90 percent relative compaction at or above optimum moisture content.
Paved Areas	Compact upper 12 inches of subgrade to a minimum of 90 percent compaction at or above optimum moisture content. Compact "non-expansive" fill to a minimum of 90 percent at or above optimum moisture. Compact Class 2 aggregate base to 95 percent at near optimum moisture content in areas subject to vehicle traffic loading.

Notes:
1) *Depths are below finished subgrade elevation.*
2) *All compaction requirements refer to relative compaction as a percentage of the laboratory standard described by ASTM D-1557 (latest version). All lifts to be compacted shall be a maximum of 8 inches loose thickness.*
3) *All compacted surfaces, such as fills, subgrades, and backfills need to be firm and stable, and should be unyielding under compaction equipment.*
4) *Where fills, such as backfill placement after removal of existing underground utility lines, are greater than 7 feet in depth, the portion of the fill deeper than 7 feet should be compacted to a minimum of 95 percent compaction.*
5) *Includes building pads.*
6) *In landscaping areas, this percent compaction in trenches may be reduced to 85 percent. Water jetting or flooding to obtain compaction of backfill should not be permitted.*

6.5 INTERIOR FLOOR SLAB

The soil subgrade beneath slab-on-grade floors should be prepared and compacted, as described in the "Site Grading and Preparation" section. If the previously compacted soil subgrade is disturbed during foundation and/or utility excavation, the subgrade should be scarified, moisture-conditioned, and recompacted as described in the "Site Gradation and Preparation" section, to provide a firm, unyielding surface.

We recommend that the proposed slab-on-grade floors be underlain by either a 6-inch-thick layer of angular gravel or crushed rock to provide a capillary moisture break and uniform support for the slab. To reduce water moisture transmission through the floor slab, such as for portions of the slab that will receive moisture-sensitive flooring, we recommend installing a Class C water vapor retarder beneath the floor. The vapor retarder should be placed in general accordance with the requirements of ASTM E1643. These requirements include overlapping seams by 6 inches, taping seams, and sealing penetrations in the vapor retarder. The vapor retarder should be covered with 2 inches of sand to aid in curing the concrete and to protect the vapor retarder during slab construction. This may be considered as part of the 6-inch thick capillary break section. The particle size of the gravel/crushed rock and sand should meet the gradation requirements presented in Table V, "Gradation Requirements for Capillary Moisture Break."

Table V. Gradation Requirements for Capillary Moisture Break	
Sieve Size	**Percentage Passing Sieve**
Gravel or Crushed Rock	
1 inch	90-100
3/4 inch	30-100
1/2 inch	5–25
3/8 inch	0-6
Sand	
No. 4	100
No. 200	0-5

The sand overlying the membrane should be moist at the time concrete is placed; however, it should not contain free water. Excess water trapped in the sand could eventually be transmitted as vapor through the slab. If the sand becomes wet, concrete should not be placed until the sand has been dried or replaced.

Concrete mixes with high water/cement (w/c) ratios will result in excess water in the concrete, which increases the cure time and may result in excessive vapor transmission through the slab. Therefore, concrete for the floor slab should have a low w/c ratio of less than 0.50. If approved by the project structural engineer, the sand can be eliminated beneath the slabs-on-grade and the concrete can be placed directly over the vapor retarder, provided the w/c ratio of the concrete does not exceed 0.45 and no water is added in the field. If necessary, workability should be increased by adding plasticizers. In addition, the slab should be properly cured.

Before the floor covering is placed, the contractor should check that the concrete surface and the moisture emission levels (if emission testing is required) meet the manufacturer's requirements.

6.6 EXTERIOR FLATWORK

Near-surface soils should be moisture conditioned according to the recommendations in Table IV, "Summary of Compaction Recommendations." In addition, all exterior concrete slabs should be supported on a minimum of 4 inches of Class 2 Aggregate Base (AB). To protect against edge effects adjacent to unprotected areas, such as vacant or landscaped areas, lateral cutoffs such as an inverted curbs are recommended. Prior to constructing the flatwork, underlying AB should be moisture conditioned to near optimum moisture content. If the AB is not covered within 30 days after placement, the soils below this material will need to be checked for appropriate moisture. If the moisture is found to be more than 2 percent outside of optimum, the flatwork areas will need to be soaked or dried until the proper moisture content is reached. Where flatwork is adjacent to curbs, reinforcing bars should be placed between the flatwork and the curbs. Expansion joint material should be used between flatwork and curbs and flatwork and buildings.

6.7 FLEXIBLE PAVEMENT DESIGN

The R-value method for flexible pavement design was used to develop recommendations for pavement sections. The thickness of pavement depends on the R-value of the subgrade soil and the volume of traffic anticipated. One R-value test was performed during the course of this investigation to supplement the R-values available from our previous studies. Laboratory analysis for the current sample resulted in an R-Value of 28. From our previous studies, R-values for the on-Site subgrade soils ranged from 35 to 75. For this project, we recommend using a lower soil subgrade R-value of 32 to reflect the lower values from the feasibility study and current testing. If the existing subgrade will be raised beneath the paved areas, the fill material should have the same or higher R-value than the native soil. Therefore, during the final design of the project, we recommend additional R-value testing be performed to confirm the R-value of the soil subgrade used in the design of the asphaltic concrete pavement sections.

We presume that pavement throughout the Site will be subjected to regular traffic loading from passenger vehicles and occasional loading from emergency vehicles and freight trucks. Based on this information, we have prepared flexible pavement design sections for the Site considering traffic indices (TI) ranging from 5.0 to 7.0. We recommend the following design pavements:

Table VI. Flexible Pavement Design for an R-Value of 32

Traffic Index	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)	Total (inches)
5.0	2.5	6.0	8.5
6.0	3.0	8.0	11.0
7.0	4.0	9.0	13.0

Pavement section recommendations for other TI can be provided upon request. Refer to the "Site Grading and Preparation" section of this report for pavement subgrade preparation recommendations. The aggregate base and subbase materials should conform to the current Caltrans Highway Design Manual (Chapters 610 and 630) and be compacted to at least 95 percent relative compaction.

6.8 RIGID PAVEMENT DESIGN

The recommended rigid pavement section for TI of 6.0 or less is 6 inches of Portland Cement Concrete (PCC) over 6 inches of Class 2 AB. For TI greater than 6.0 but less than 9.0, we recommend using 7 inches of PCC over 6 inches of Class 2 AB.

The modulus of rupture of the concrete should be at least 600 pounds per square inch (psi) at 28 days and the unconfined compressive strength of the concrete should be at least 3,500 psi at 28 days. Contraction joints should be constructed at a maximum 10-foot spacing for the 6-inch-thick concrete pavement and 15-foot spacing for the 7-inch-thick concrete pavement. Where the outer edge of a concrete pavement meets asphalt pavement, the concrete slab should be thickened by 50 percent at a taper not to exceed a slope of 1 in 10. Concrete placement should not be permitted to occur in adverse weather conditions that may impact proper curing behavior. If there is a conflict between the civil and geotechnical design recommendations for contraction joint spacing, slab reinforcement, or other structural properties of rigid pavements, we defer to the civil engineer's recommendations.

Recommendations for subgrade preparation and aggregate base compaction for concrete pavements are the same as those we have described in the “Site Grading and Preparation” section.

6.9 SITE RETAINING WALLS

It is anticipated that retaining walls with fill up to 7 feet in height will be constructed for grade transitions across the development. These walls may be supported on shallow footings as discussed in the "Foundations" section of this report, including being supported on 12 inches of compacted, engineered fill.

The retaining walls should be designed to resist static earth pressures due to the adjacent soil, and any surcharge effects caused by loads adjacent to the wall (i.e., structural loads, traffic loads). A rectangular distribution over the entire depth of the wall with a pressure equal to one-third of the surcharge load is normally used. It is recommended that the walls be designed for lateral earth pressures as presented in Table VII below.

Table VII. Lateral Earth Pressures for Walls (up to 15 Feet)
Maximum Backfill Inclination 6:1
(Horizontal to Vertical)

Earth Pressure	Equivalent Fluid Pressure, pcf
Active	35
At-Rest	55
Passive	450

Walls whose tops are not free to deflect should be designed for an at-rest condition, while an active case can be applied for walls that are free to deflect at the top. These values apply to horizontal backfill and do not include hydrostatic pressures that might be caused by groundwater or water trapped behind the structure.

To simulate the effect of seismic loading on walls greater than 6 feet in height, the walls may be evaluated using an active lateral soil pressure plus a horizontal seismic line force of $25H^2$ pounds per lineal foot (where H is the height of the wall from the wall base to the ground surface above). The active soil pressure may be calculated using an equivalent fluid weight of 35 pcf. The resultant of the active lateral soil pressure should be applied at H/3 above the wall base, and the resultant of the seismic line force should be applied at 2/3H above the wall base. A reduced factor of safety for overturning and sliding may be used in seismic design.

Where walls are higher than 3 feet, they should be well-drained to reduce hydrostatic pressure. A typical drainage system consists of a 1- to 2-foot-wide zone of Caltrans Class 2 Permeable material immediately adjacent to the structure with a perforated pipe at the base of the structure discharging to a storm drain or other discharge facility. As an alternative, a prefabricated drainage board may be used in lieu of the Class 2 Permeable material. Where conditions allow for the use of weep holes, they may be used in lieu of the perforated pipe. The holes should be a minimum of 3 inches in diameter, at spacing of 8 feet or less, center to center. Filter fabric or wire mesh should be placed over the holes at the backside of the wall to inhibit the permeable material, if used, from washing through the holes.

In computing passive pressure, we recommend that the passive resistance be neglected for the top 12 inches below design grade unless the adjacent ground is confined by a concrete slab or asphalt-concrete pavement.

6.10 UNDERGROUND UTILITIES

Excavations for utility trenches can be made with a backhoe. Despite careful Site preparation, unexpected obstructions may make some of the trenching operations difficult. All trenches should conform to the current Cal/OSHA requirements.

Backfill for utility trenches and other excavations should consist of select fill, and it should be moisture conditioned and compacted per the recommendations presented in the "Site Grading and Preparation" section. If imported clean sand or gravel is used as backfill, it should be compacted to at least 95 percent relative compaction. Jetting of trench backfill should not be permitted. Special care should be taken when backfilling utility trenches in pavement areas. Poor compaction may cause excessive settlements, resulting in damage to the pavement section.

Pipes or conduits should be supported on bedding material with a minimum thickness equal to D/4 (with D equal to the outside diameter of the pipe) or 4 inches of sand or fine gravel below the pipe, whichever is greater. Once the pipes and conduits have been tested, inspected (if required) and approved, they should be covered to a depth of 6 inches with sand or fine gravel and mechanically tamped.

Underground utilities should be located above a 2:1 (horizontal to vertical) plane projected downward from the bottom edge closest to the trench of the new footings to avoid undermining the footings during the excavation of the utility trench.

6.11 DRAINAGE AND LANDSCAPING

Positive surface drainage should be provided around the building to direct surface water away from the foundations. To reduce the potential for water ponding adjacent to the building, we recommend the ground surface within a horizontal distance of 5 feet from the building be designed to slope down and away from the building with a surface gradient of at least 2 percent in unpaved areas and 1 percent in paved areas. Alternatively, surface gradients provided by the project civil engineer may be used in lieu of the recommendations presented above. Roof downspouts should be discharged into controlled drainage facilities to keep the water away from the foundations. Preliminary gradients should be checked once final grading plans and anticipated cut/fill thicknesses are known.

6.12 CORROSIVITY

Two samples of near-surface soil were collected from borings HA-17 and HA-20 and tested for corrosivity characteristics by AP Engineering of Pomona, California. The samples, representing soils from 0 to 7 feet bgs, were found to have a minimum resistivity of 2,059 ohm-cm, a maximum sulfate content of 96 parts per million (ppm), and a maximum chloride content of 47 ppm. The pH of the samples ranged from 8.0 to 8.5. Based on these results, soil within the upper 10 feet of the ground surface is not expected to be corrosive to ferrous metals. The soil is not expected to pose a risk for sulfate attack on concrete placed at the Site. Haley & Aldrich does not specialize in the field of corrosion engineering. A corrosion engineer should be consulted if further information on soil corrosivity is desired.

The results of the corrosion testing are presented in Appendix D.

6.13 STORM WATER INFILTRATION FEATURES

One or more deep stormwater infiltration features is proposed for handling and removing stormwater runoff associated with the subject development. We understand that the proposed deep infiltration features are expected to penetrate to a depth of approximately 20 feet bgs. Water directed into the features will be dispersed into the subgrade soils. The target infiltration depth is expected to span the lower 10 feet (approximately) of each element, resulting in an infiltration depth range of 10 to 20 feet bgs.

Our evaluation of hydraulic conductivity rates for the on-Site soils is based on infiltration testing conducted for the current phase of work as well as our previous subsurface investigations at the subject Site and adjacent parcels as referenced in Section 3.2.

Based on our review of onsite and local subsurface data, the predominant soil type identified in the 10 to 20 foot bgs depth range is a medium dense, silty sand (SM), interbedded with soil layers composed of clayey sand (SC), poorly graded sand (SP), poorly graded sand with silt (SP-SM), and poorly graded sand with clay (SP-SC). The 10- to 20-foot-deep medium dense sand has an estimated permeability rate of about 10^{-2} to 10^{-1} cm/sec, or 14 to 141 inches per hour (Coduto, 1999).

The layers above and below this zone have hard and dense to very dense soils. Commonly cited hydraulic conductivity rates for dense to very dense silty sand range from 10^{-3} to 10^{-2} centimeters per second ([cm/s]. The referenced 2017 preliminary investigation included five shallow boring percolation tests performed within silty sands to a depth of about 5 feet bgs. The 2017 report recommended using a long-term infiltration rate on the order of 1 inch per hour ([in/hr]; 0.7 x 10^{-3} cm/s) to 4 in/hr (2.8 x 10^{-3} cm/s) for the design of on-Site infiltration facilities approximately 5 feet bgs.

For the current phase of the project, we conducted two shallow boring percolation tests (IT-01 and IT-02) within silty sands to a depth of about 5.5 feet bgs in each boring. Percolation testing at IT-01 resulted an unadjusted percolation rate of 19.7 in/hr and resulting in a design percolation rate of 0.7 in/hr (4.9 x 10^{-4} cm/s). Percolation testing at IT-02 resulted in an unadjusted percolation rate of 31.1 in/hr and a resulting design percolation rate of 1.1 in/hr (8.1 x 10^{-4} cm/s). These data are in the dense to very dense material.

Based on the above information, we are recommending using an unfactored design hydraulic conductivity rate of 10^{-2} cm/s (14 inches per hour) for 10 to 20 feet deep dry wells for designing the deep infiltration features at the project site. From depths of 20 feet and deeper, we recommend this be reduced to 5 to 10^{-3} cm/s (7 inches per hour). We have not applied a factor of safety to this value.

The factor of safety would be applied to the rates presented above; we recommend that a minimum factor of safety of 3 be applied.

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Note that for both the 2017 testing and current testing, the percolation tests were performed using modified procedures for boring percolation testing as presented in the County of Los Angeles Department of Public Works Administrative Manual GS200.1 (County of Los Angeles, 2014).

7. Supplemental Geotechnical Services

The final project plans and specifications should be reviewed by Haley & Aldrich prior to construction to check that they are in general conformance with the intent of our recommendations. During construction, we should observe the installation of the foundation system. In addition, our field engineer should observe the condition and test the compaction of the soil subgrade and new fill placed at the Site. These observations will allow for review that the contractor's work conforms to the geotechnical aspects of the plans and specifications, and ensure that the foundation systems and paved areas are installed as planned.

8. Limitations

This report was prepared for specific application to the proposed construction as understood at this time. In the event that changes in the nature, design, or location of the project are planned, the conclusions and recommendations contained in this report should not be considered valid, unless the changes are reviewed by Haley & Aldrich and the conclusions of this report modified or verified in writing.

The geotechnical analyses and recommendations are based, in part, upon the data obtained from the referenced subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations appear at that time, it may be necessary to re-evaluate the recommendations of this report.

This report was prepared for the exclusive use of the University of California, Riverside and their subconsultants in connection with the design and construction of the proposed residence halls in Riverside, California. There are no intended beneficiaries other than University of California, Riverside and their subconsultants. Haley & Aldrich shall owe no duty whatsoever to any other person or entity on account of the Agreement or the report. Use of this report by any person or entity other than University of California, Riverside and their subconsultants for any purpose whatsoever is expressly forbidden unless such other person or entity obtains written authorization from University of California, Riverside and from Haley & Aldrich. Use of this report by such other person or entity without the written authorization of University of California, Riverside and Haley & Aldrich shall be at such other person's or entity's sole risk, and shall be without legal exposure or liability to Haley & Aldrich.

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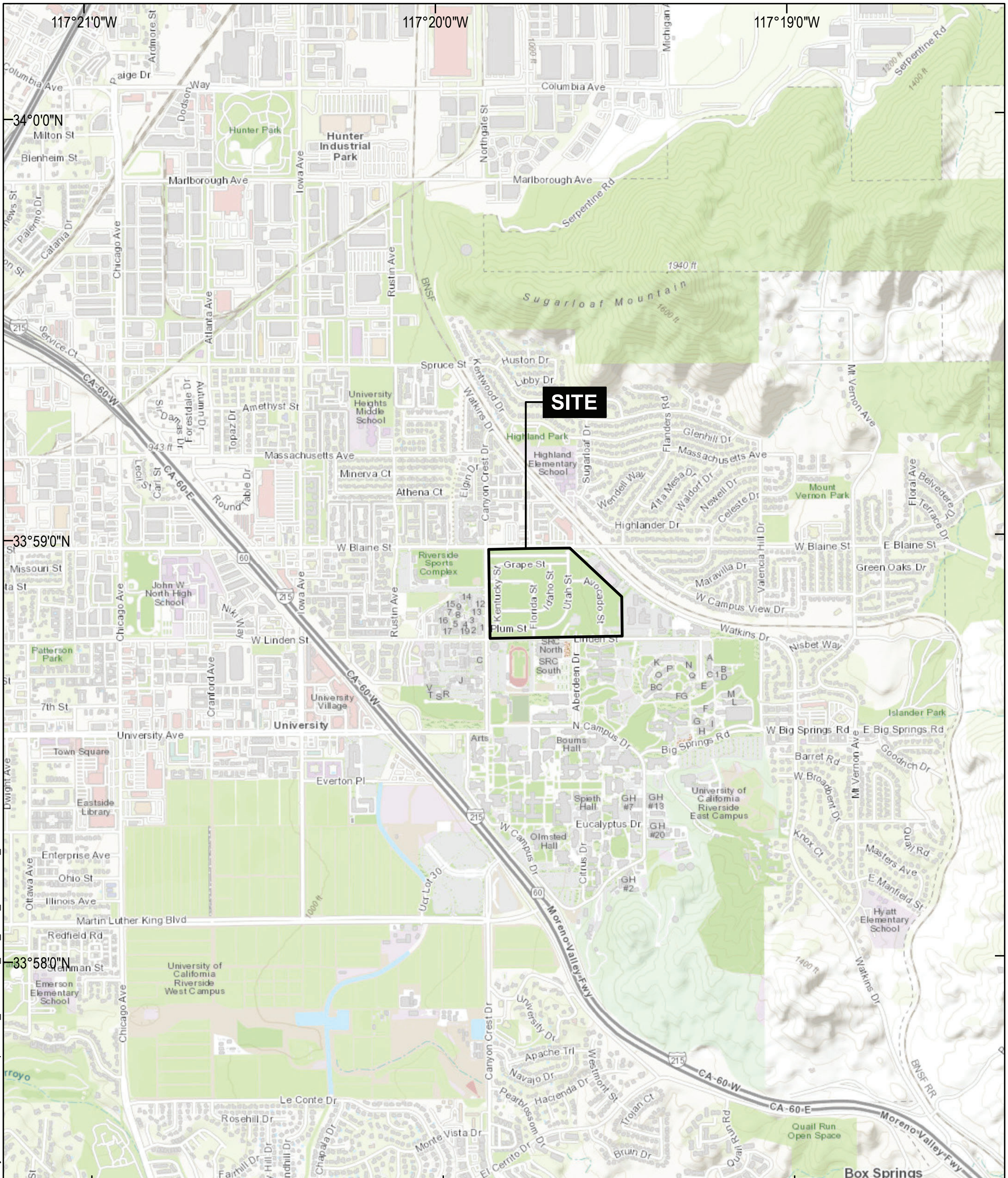
FIGURES



MAP SOURCE: ESRI
SITE COORDINATES: 33°58'52"N 117°19'41"W

HALEY ALDRICH

UC RIVERSIDE NORTH DISTRICT DEVELOPMENT
NORTH OF WEST LINDEN STREET, EAST OF CANYON CREST
RIVERSIDE, CALIFORNIA

PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT
APRIL 2023

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\0205990\GIS\Maps\2023_03\205990_001_0001_PROJECT_LOCUS.mxd — USER: mschweitzer — LAST SAVED: 3/22/2023 7:06:38 PM

LEGEND

CURRENT STUDY
- BORING
- CONE PENETROMETER
- INFILTRATION TEST

PREVIOUS STUDY
- BORING
- CONE PENETROMETER

- PHASE I BOUNDARY
- PHASE II BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE
2. AERIAL PHOTO: NEARMAP, 19 JANUARY 2023

N

0 200 400
SCALE IN FEET

HALEY ALDRICH

PRELIMINARY GEOTECHNICAL INVESTIGATION
NORTH DISTRICT FAMILY HOUSING PROJECT
NORTH OF WEST LINDEN STREET AND
EAST OF CANYON CREST DRIVE
RIVERSIDE, CALIFORNIA

SITE PLAN

APRIL 2023

FIGURE 2

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\0205990\GIS\Maps\2023_03\205990_001_0002_SITE_PLAN.mxd — USER: mschweitzer — LAST SAVED: 3/23/2023 7:54:37 PM

APPENDIX A

Boring Logs

IDENTIFICATION AND DESCRIPTION OF SUBSURFACE MATERIALS

SOIL

Soil description on logs of subsurface explorations are based on Standard Penetration Test results, visual-manual examination of exposed soil and soil samples, and the results of laboratory tests on selected samples. The criteria, descriptive terms and definitions are as follows:

DENSITY OR CONSISTENCY

Density of Cohesionless Soils	Standard Penetration Test (Blows per ft.)	Modified California (Blows per ft.)
Very Loose	0-4	0-4
Loose	5-10	5-12
Medium Dense	11-30	13-35
Dense	31-50	36-60
Very Dense	> 50	> 60

Consistency of Cohesive Soils	Penetration Resistance (Blows per ft.)
Very Soft	0-2
Soft	3-4
Medium Stiff	5-8
Stiff	9-15
Very Stiff	16-30
Hard	> 30

PENETRATION RESISTANCE

Standard Penetration Test (ASTM D-1586) - Number of blows required to drive a standard 2 in. O.D. split spoon or a modified California sampler 1 ft., with a 140 lb. weight falling freely through 30 in.

COLOR: Color descriptions based on the Munsell Soil Color Chart

SUPPLEMENTAL SOIL TERMINOLOGY:

Laminae	- 0 to 1/16 in. thick (cohesive)
Parting	- 0 to 1/16 in. thick (granular)
Seam	- 1/16 to 1/2 in. thick
Layer	- 1/2 to 12 in. thick
Stratum	- > 12 in. thick
Pocket	- Small, erratic deposit less than 12 in. size
Lens	- Lenticular deposit larger than a pocket
Occasional	- One or less per 12 in. of thickness
Frequent	- More than one per 12 in. of thickness
Interbedded	- Alternating soil layers of differing composition
Varved	- Alternating thin seams of silt and clay
Mottled	- Variation of color

GEOLOGIC INTERPRETATION

Deposit type - GLACIAL TILL, ALLUVIUM, FILL.....

The natural soils are identified by criteria of Unified Soil Classification System (USCS), with appropriate group symbol in parenthesis for each soil description.
Fill materials may not be classified by USCS criteria.

U.S. Standard Series Seive — Clear Square Sieve Openings

Sieve	12"		3"		3/4"		4		10		40		200	

Boulders	Cobbles	Gravel – Coarse	Gravel – Fine	Sand – Coarse	Sand – Medium	Sand – Fine	Silts and Clays
< 305 mm …	305 mm – 76 mm	76 mm – 19 mm	19 mm – 4.75 mm	4.75 mm – 2.00 mm	2.00 mm – 0.43 mm	0.43 mm – 0.074 mm	0.074 mm

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			Group Symbol	Graphic Symbol	TYPICAL NAMES
Coarse grained soils: more than half is larger than number 200 sieve	Gravels More than half of coarse fraction is larger than number 4 sieve	Gravels with little or no fines	GW		Well graded gravels, gravel-sand mixtures
			GP		Poorly graded gravels, gravel-sand mixtures
		Gravels with over 12% fines	GM		Silty gravels, poorly graded gravel-sand-silt mixtures
			GC		Clayey gravels, poorly graded gravel-sand-clay mixtures
	Sands More than half of coarse fraction is smaller than number 4 sieve	Sands with little or no fines	SW		Well graded sands, gravelly sands
			SP		Poorly graded sands, gravelly sands
		Sands with over 12% fines	SM		Silty sands, poorly graded sand-silt mixtures
			SC		Clayey sands, poorly graded sand-clay mixtures
Fined-grained soils: more than half smaller than number 200 sieve	Silts and Clays Liquid limit 50% or less		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic clays and organic silty clays of low plasticity
	Silts and Clays Liquid limit greater than 50%		MH		Inorganic silty, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silts
Highly organic soils			PT		Peat and other highly organic soils

GENERAL NOTES

1. Logs of subsurface explorations depict soil, rock and groundwater conditions only at the locations specified on the dates indicated. Subsurface conditions may vary at other locations and at other times.

2. Water levels noted on the logs were measured at the times and under the conditions indicated. During test borings, these water levels could have been affected by the introduction of water into the borehole, extraction of tools on other procedures and thus may not reflect actual groundwater level at the test boring location. Groundwater level fluctuations may also occur as a result of variations in precipitation, temperature, season, tides, adjacent construction activities and pumping of water supply wells and construction dewatering systems.

HALEY ALDRICH

GEOTECHNICAL TEST BORING REPORT

Boring No. HA-17

Project	UC Riverside-Phase II Development, North of West Linden St and East of Canyon Crest Dr
Client	UC Riverside
Contractor	Cascade Environmental

File No.	0205990-001
Sheet No.	1 of 2
Start	21 February 2023
Finish	21 February 2023
Driller	Ignacio
H&A Rep.	J. Vanderwal
Elevation	1055.57 ft
Datum	
Location	Southwest corner of Phase 2 parcel; N 2301766.976; E 6233996.469

		Drilling Equipment and Procedures
Boring Diameter (in.)	8.25	Rig Make & Model: CME 85 - Truck Mount
Hammer Type	Safety Hammer	Bit Type: Hollow-Stem Auger (HSA)
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: HSA
		Hoist/Hammer: / Safety Hammer
		PID Make & Model: MiniRAE 3000

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, color, moisture, consistency, density, grain size, plasticity, other descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)
0		Hand Auger					0.75 in. Crushed Aggregate BASE			
					1054.8 / 0.8	SC	Clayey SAND, red-brown, moist, sand fraction is mostly fine grained, no odor			
5	MCS	HA-17-5.0	48/ 48	11 19 26	1050.6 / 5.0	SW-SM	Well-graded SAND with Silt (SW-SM), gray, moist, dense, fines are nonplastic, no odor DS (See Appendix B) CORROSION TEST (See Appendix B)	125.4	12.6	
	SPT		36/ 36	10 15 20						
	SPT		36/ 36	9 13 15	1047.1 / 8.5	SM	Silty SAND (SM), gray, moist, medium dense, fines are nonplastic, no odor			
10	MCS	HA-17-10.0	48/ 48	8 14 14	1045.6 / 10.0	SM	Silty SAND (SM), red-brown, moist, medium dense, fines are nonplastic, no odor			
	SPT		28/ 36	8 13 14	1043.1 / 12.5	SP	Poorly-graded SAND (SP), red-brown, moist, medium dense, no odor			
	SPT		10/ 36							
15	MCS	HA-17-15.0	40/ 48	8 15 18	1040.1 / 15.5	SM	Silty SAND (SM), red-brown, moist, medium dense, fines are nonplastic, no odor			
	SPT		30/ 36	8 13 15						
	SPT		36/ 36							
20										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

MCS - Modified California Sampler (2.43-in ID)
SPT - Standard Penetration Test
ST - Shelby Tube
GB - Grab Sample

Summary

Overburden (ft)	25.5
Rock Cored (ft)	-
Samples	5 samples collected

Boring No. HA-17

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, color, moisture, consistency, density, grain size, plasticity, other descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)
20	MCS	HA-17-20.0	48/48	8 12 24	1035.6 20.0	SP	Poorly-graded SAND (SP), red-brown, moist, dense, fines are nonplastic, no odor			
	MCS	HA-17-25.0	48/48	17 20 23	1032.1 23.5	SM	Silty SAND (SM), red-brown, moist, dense, fines are nonplastic, no odor			
25					1030.1 25.5		BOTTOM OF EXPLORATION 25.5 FT Boring logged by Field Geologist. No groundwater observed in boring.			
30										
35										
40										
45										

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. **HA-18**

Project	UC Riverside-Phase II Development, North of West Linden St and East of Canyon Crest Dr
Client	UC Riverside
Contractor	Cascade Environmental

File No.	0205990-001
Sheet No.	1 of 2
Start	21 February 2023
Finish	21 February 2023
Driller	Ignacio
H&A Rep.	J. Vanderwal
Elevation	1051.12 ft
Datum	
Location	Eastern side of Phase 2 parcel N 2301984.133 E 6234148.193

		Drilling Equipment and Procedures
Boring Diameter (in.)	8.25	Rig Make & Model: CME 85 - Truck Mount
Hammer Type	Safety Hammer	Bit Type: Hollow-Stem Auger (HSA)
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: HSA
		Hoist/Hammer: / Safety Hammer
		PID Make & Model: MiniRAE 3000

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, color, moisture, consistency, density, grain size, plasticity, other descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)
0		Hand Auger					0.75 in. Crushed Aggregate BASE			
					1050.4 0.8	SM	Silty SAND (SM), light brown, moist, fines are nonplastic, no odor			
							Colors yellow-brown			
5	MCS	HA-18-5.0	48/ 48	20 26 55	1046.1 5.0	SP-SM	Poorly-graded SAND with Silt (SP-SM), yellow-brown, moist, very dense, fines are nonplastic, no odor		7.2	
	MCS	HA-18-10.0	48/ 48	11 28 50	1042.1 9.0	SP	Poorly-graded SAND (SM), red-brown, moist, very dense, no odor			
10					1040.6 10.5	ML	SILT (ML), brown, moist, hard, includes some fine-grained sand, fines are nonplastic, no odor			
15	MCS	HA-18-15.0	48/ 48	16 35 50/4"	1036.1 15.0	SM	Silty SAND (SM), brown, moist, very dense, fines are nonplastic, no odor			
20										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

MCS - Modified California Sampler (2.43-in ID)
SPT - Standard Penetration Test
ST - Shelby Tube
GB - Grab Sample

Summary

Overburden (ft)	26.0
Rock Cored (ft)	-
Samples	5 samples collected

Boring No. **HA-18**

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. **HA-18**
File No. 0205990-001
Sheet No. 2 of 2

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, color, moisture, consistency, density, grain size, plasticity, other descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)
20	MCS	HA-18-20.0	48/48	14 26 39	1031.1 20.0	SP-SM	Poorly-graded SAND with silt (SP-SM), brown, moist, dense, sand fraction is mostly fine grained, no odor		5.0	
	MCS	MCS HA-18-25.0	48/48	15 35 50/5"	1027.1 24.0	SM	Silty SAND (SM), light brown, moist, very dense, sand fraction is mostly fine grained, fines are nonplastic, no odor			
25										
					1025.1 26.0		BOTTOM OF EXPLORATION 26.0 FT			
							Boring logged by Field Geologist. No groundwater observed in boring.			
30										
35										
40										
45										

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY ALDRICH

GEOTECHNICAL TEST BORING REPORT

Boring No. **HA-19**

Project	UC Riverside-Phase II Development, North of West Linden St and East of Canyon Crest Dr
Client	UC Riverside
Contractor	Cascade Environmental

File No.	0205990-001
Sheet No.	1 of 2
Start	21 February 2023
Finish	21 February 2023
Driller	Ignacio
H&A Rep.	J. Vanderwal
Elevation	1052.18 ft
Datum	
Location	Western side of Phase 2 parcel N 2302096.566 E 6233975.024

		Drilling Equipment and Procedures
Boring Diameter (in.)	8.25	Rig Make & Model: CME 85 - Truck Mount
Hammer Type	Safety Hammer	Bit Type: Hollow-Stem Auger (HSA)
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: HSA
		Hoist/Hammer: / Safety Hammer
		PID Make & Model: MiniRAE 3000

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, color, moisture, consistency, density, grain size, plasticity, other descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)
0		Hand Auger					0.75 in. Crushed Aggregate BASE			
					1051.4 0.8	SM	Silty SAND (SM), brown, moist, sand fraction is mostly fine grained, fines are nonplastic, no odor			
5	MCS	HA-19-5.0	48/48	14 26 39			LL=49, PL=16, PI=33			
					1046.7 5.5	CL	Lean CLAY (CL), trace medium sand, brown, moist, hard, no odor			
					1045.7 6.5	SC	Clayey SAND (SC), brown, moist, very dense, sand fraction is fine to medium grained, fines are nonplastic, no odor			
10	MCS	HA-19-10.0	48/48	6 23 50/5"	1042.2 10.0	SC	Clayey SAND (SC), brown, moist, very dense, no odor			
					1037.7 14.5	SM	Silty SAND (SM), brown, moist, very dense, sand fraction is fine to medium grained, fines are nonplastic, no odor			
15	MCS	HA-19-15.0	48/48	10 35 48						14.8
							Slow drilling at 19 ft bgs			
20										

Water Level Data						
Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

MCS - Modified California Sampler (2.43-in ID)
SPT - Standard Penetration Test
ST - Shelby Tube
GB - Grab Sample

Summary

Overburden (ft)	37.0
Rock Cored (ft)	-
Samples	7 samples collected

Boring No. **HA-19**

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, color, moisture, consistency, density, grain size, plasticity, other descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)
20	MCS	HA-19-20.0	48/48	16 50/4"					9.5	
25	MCS	HA-19-25.0	48/48	7 26 50/6"			Colors light brown			
					1025.7 26.5	ML	Sandy SILT (ML), brown, moist, hard, sand fraction is fine to medium grained, fines are nonplastic, no odor			
30	MCS	HA-19-30.0	48/48	10 27 50/5"			Colors gray brown, sand fraction grades with trace medium sand			
					1021.2 31.0	SM	Silty SAND (SM), brown, moist, medium dense, sand fraction is mostly fine grained, fines are nonplastic, no odor			
35	MSC	HA-19-35.0	48/48	8 18 25			Becomes dense			
					1015.2 37.0		BOTTOM OF EXPLORATION 37.0 FT Boring logged by Field Geologist. No groundwater observed in boring.			
40										
45										

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No.	HA-20
File No.	0205990-001
Sheet No.	1 of 2
Start	21 February 2023
Finish	21 February 2023
Driller	Ignacio
H&A Rep.	J. Vanderwal
Elevation	1055.86 ft
Datum	
Location	Northeast corner of Phase 2 parcel N 2302412.661 E 6234132.016

Project: UC Riverside-Phase II Development, North of West Linden St and East of Canyon Crest Dr
Client: UC Riverside
Contractor: Cascade Environmental

		Drilling Equipment and Procedures
Boring Diameter (in.)	8.25	Rig Make & Model: CME 85 - Truck Mount
Hammer Type	Safety Hammer	Bit Type: Hollow-Stem Auger (HSA) Drill Mud: None
Hammer Weight (lb)	140	Casing: HSA Hoist/Hammer: / Safety Hammer
Hammer Fall (in.)	30	PID Make & Model: MiniRAE 3000

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, color, moisture, consistency, density, grain size, plasticity, other descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)
0		Hand Auger					0.75 in. Crushed Aggregate BASE			
					1055.1 0.8	SM	Silty SAND (SM), brown, moist, sand fraction is mostly fine grained with few medium particles, fines are nonplastic, no odor			
5	MCS	HA-20-5.0	48/ 48	9 16 16	1050.9 5.0	SP-SM	Poorly-graded SAND with Silt (SP-SM), red-brown, moist, medium dense, sand fraction is mostly fine grained with few course particles, fines are nonplastic, no odor CORROSION TEST (See Appendix B)			
10	MCS	HA-20-10.0	48/ 48	9 8 11	1045.9 10.0	SP	Poorly-graded SAND (SP), yellow-brown, medium dense, sand fraction is mostly medium to course grained with few fine particles, fines are nonplastic, no odor 1-D SWELL/COLLAPSE TEST (See Appendix B)	108.1	15.1	
15	MCS	HA-20-15.0	48/ 48	9 12 11	1040.9 15.0	SW	Well-graded SAND with Gravel, yellow-brown, moist, medium dense, sand fraction is mostly medium to course grained with few fine particles, no odor		2.6	
20										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

MCS - Modified California Sampler (2.43-in ID)
SPT - Standard Penetration Test
ST - Shelby Tube
GB - Grab Sample

Summary

Overburden (ft)	27.0
Rock Cored (ft)	-
Samples	5 samples collected

Boring No. HA-20

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, color, moisture, consistency, density, grain size, plasticity, other descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)
20	MCS	HA-20-20.0	48/48	13 41 50/4"	1035.9 20.0	SM	Silty SAND (SM), brown, moist, very dense, sand fraction is fine to medium grained, fines are nonplastic, no odor			
25	MCS	HA-20-25.0	48/48	13 26 36			Becomes dense			
					1028.9 27.0		BOTTOM OF EXPLORATION 27.0 FT			
							Boring logged by Field Geologist. No groundwater observed in boring.			
30										
35										
40										
45										

GEOTECHNICAL TEST BORING REPORT

Boring No. IT-01

Project	UC Riverside-Phase II Development, North of West Linden St and East of Canyon Crest Dr
Client	UC Riverside
Contractor	Cascade Environmental

File No.	0205990-001
Sheet No.	1 of 1
Start	22 February 2023
Finish	22 February 2023
Driller	Ignacio
H&A Rep.	J. Vanderwal
Elevation	1054.64 ft
Datum	
Location	Center of Phase 2 parcel
	N 2301840.781
	E 6234073.941

		Drilling Equipment and Procedures
Boring Diameter (in.)		Rig Make & Model: Hand Auger converted to Percolation Test Well
Hammer Type		Bit Type:
Hammer Weight (lb)		Drill Mud:
Hammer Fall (in.)		Casing:
		Hoist/Hammer: /
		PID Make & Model:

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, color, moisture, consistency, density, grain size, plasticity, other descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)
0						SM	Silty SAND (SM), yellow-brown, moist, mostly fine sand, little fines and medium sand, few course sand and fine gravel, trace organics			
5					1049.1 5.5		BOTTOM OF EXPLORATION 5.5 FT			
							Boring logged by Field Geologist. Boring converted to a percolation test well.			
10										
15										
20										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

MCS - Modified California Sampler (2.43-in ID)
SPT - Standard Penetration Test
ST - Shelby Tube
GB - Grab Sample

Summary

Overburden (ft)	5.5
Rock Cored (ft)	-
Samples	-

Boring No. IT-01

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

Boring No. IT-02

Project	UC Riverside-Phase II Development, North of West Linden St and East of Canyon Crest Dr
Client	UC Riverside
Contractor	Cascade Environmental

File No.	0205990-001
Sheet No.	1 of 1
Start	22 February 2023
Finish	22 February 2023
Driller	Ignacio
H&A Rep.	J. Vanderwal
Elevation	1050.70 ft
Datum	
Location	North side of Phase 2 parcel N 2302281.176 E 6234106.702

		Drilling Equipment and Procedures
Boring Diameter (in.)		Rig Make & Model: Hand Auger converted to Percolation Test Well
Hammer Type		Bit Type:
Hammer Weight (lb)		Drill Mud:
Hammer Fall (in.)		Casing:
		Hoist/Hammer: /
		PID Make & Model:

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	**VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION** (GROUP NAME, color, moisture, consistency, density, grain size, plasticity, other descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)
0						SM	Silty SAND (SM), brown, moist			
5					1045.2 5.5		BOTTOM OF EXPLORATION 5.5 FT Boring logged by Field Geologist. Boring converted to a percolation test well.			
10										
15										
20										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

MCS - Modified California Sampler (2.43-in ID)
SPT - Standard Penetration Test
ST - Shelby Tube
GB - Grab Sample

Summary

Overburden (ft)	5.5
Rock Cored (ft)	-
Samples	-

Boring No. IT-02

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Plasticity**: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

APPENDIX B

Cone Penetration Test Results

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

UC Riverside Phase 2 Development
Canyon Crest Drive & West Linden Street
Riverside, CA
February 21, 2023

Prepared for:

Mr. Karl Neill
Haley & Aldrich, Inc.
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Costa Mesa, CA 92626
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Prepared by:

KTE

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Huntington Beach, CA 92649-1518
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www.kehoetesting.com

TABLE OF CONTENTS

SUMMARY

OF

CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the UC Riverside Phase 2 Development project located at Canyon Crest Drive & West Linden Street in Riverside, California. The work was performed by Kehoe Testing & Engineering (KTE) on February 21, 2023. The scope of work was performed as directed by Haley & Aldrich, Inc. personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at six locations to determine the soil lithology. A summary is provided in **TABLE 2.1**.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-17	70	Refusal
CPT-18	11	Refusal
CPT-18A	25	Refusal
CPT-18B	9	Refusal
CPT-19	13	Refusal
CPT-19A	12	Refusal

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone with a cone net area ratio of 0.83. The following parameters were recorded at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed

At locations CPT-17, CPT-18, CPT-18A, CPT-18B, CPT-19 & CPT-19A, shear wave measurements were obtained at various depths. The shear wave is generated using an air-actuated hammer, which is located inside the front jack of the CPT rig. The cone has a triaxial geophone, which recorded the shear wave signal generated by the air hammer.

The above parameters were recorded and viewed in real time using a laptop computer. Data is stored at the KTE office for up to 2 years for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. These plots were generated using the CPeT-IT program. Penetration depths are referenced to ground surface. The soil behavior type on the CPT plots is derived from the attached CPT SBT plot (Robertson, “Interpretation of Cone Penetration Test…”, 2009) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used along with cone resistance to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

The CPT data files have also been provided. These files can be imported in CPeT-IT (software by GeoLogismiki) and other programs to calculate various geotechnical parameters.

It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgement and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

KEHOE TESTING & ENGINEERING

Steven P. Kehoe

Steven P. Kehoe
President

02/27/23-aga-5087

APPENDIX

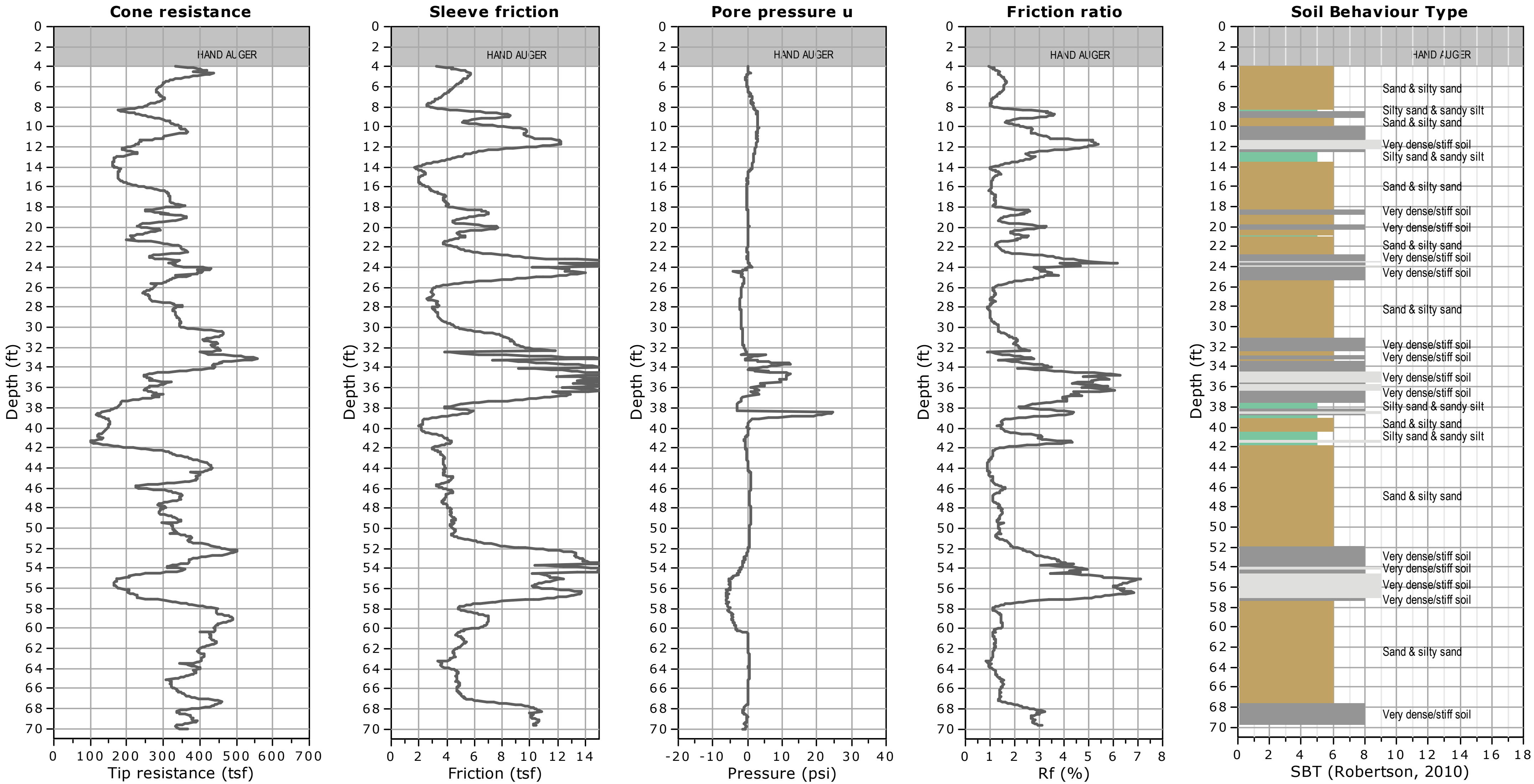
Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Haley & Aldrich / UC Riverside Phase 2 Development

Location: Canyon Crest Dr & West Linden St, Riverside, CA

CPT-17

Total depth: 70.09 ft, Date: 2/21/2023



Kehoe Testing and Engineering
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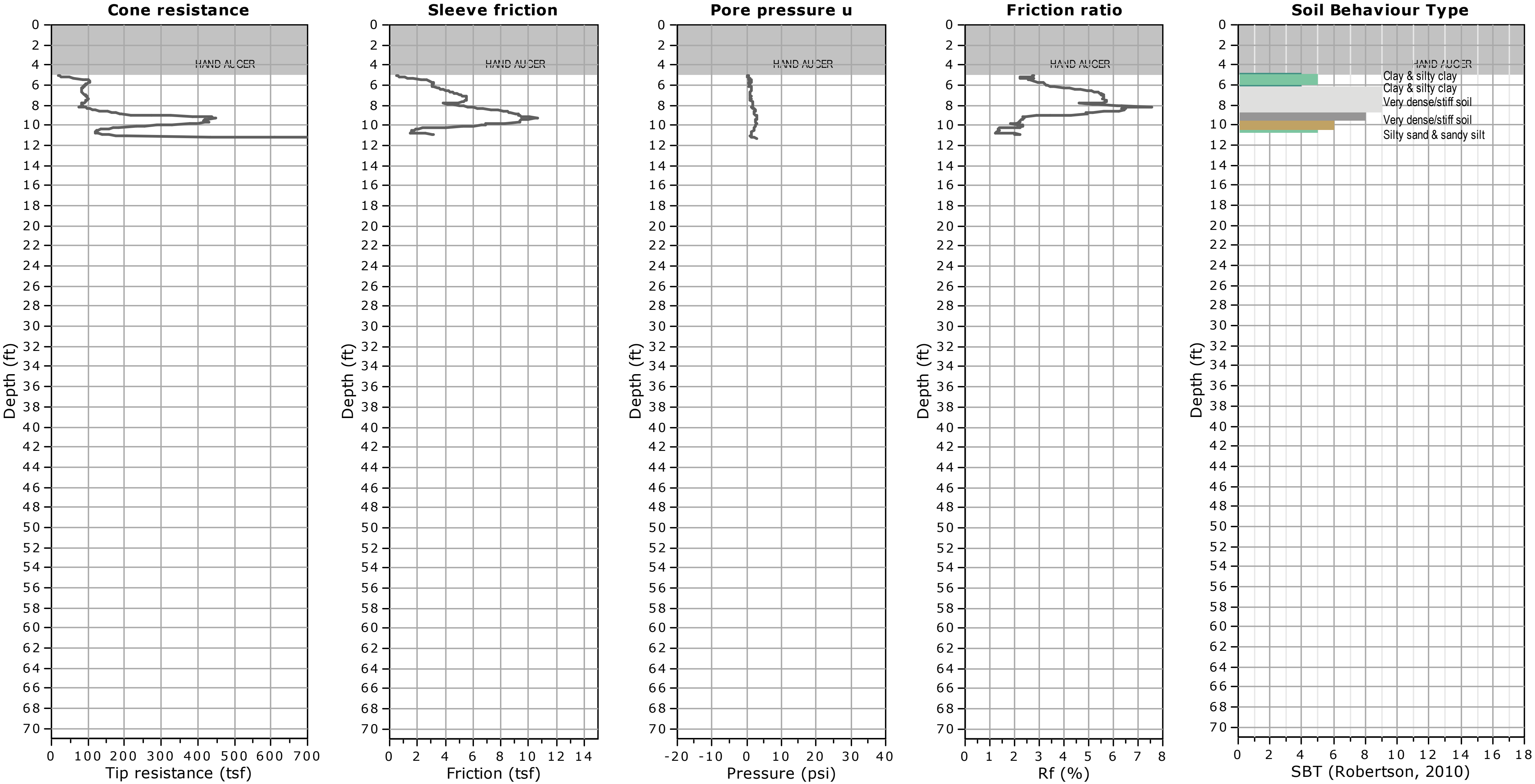
Project: **Haley & Aldrich / UC Riverside Phase 2 Development**
Location: **Canyon Crest Dr & West Linden St, Riverside, CA**

CPT-18
Total depth: 11.29 ft, Date: 2/21/2023



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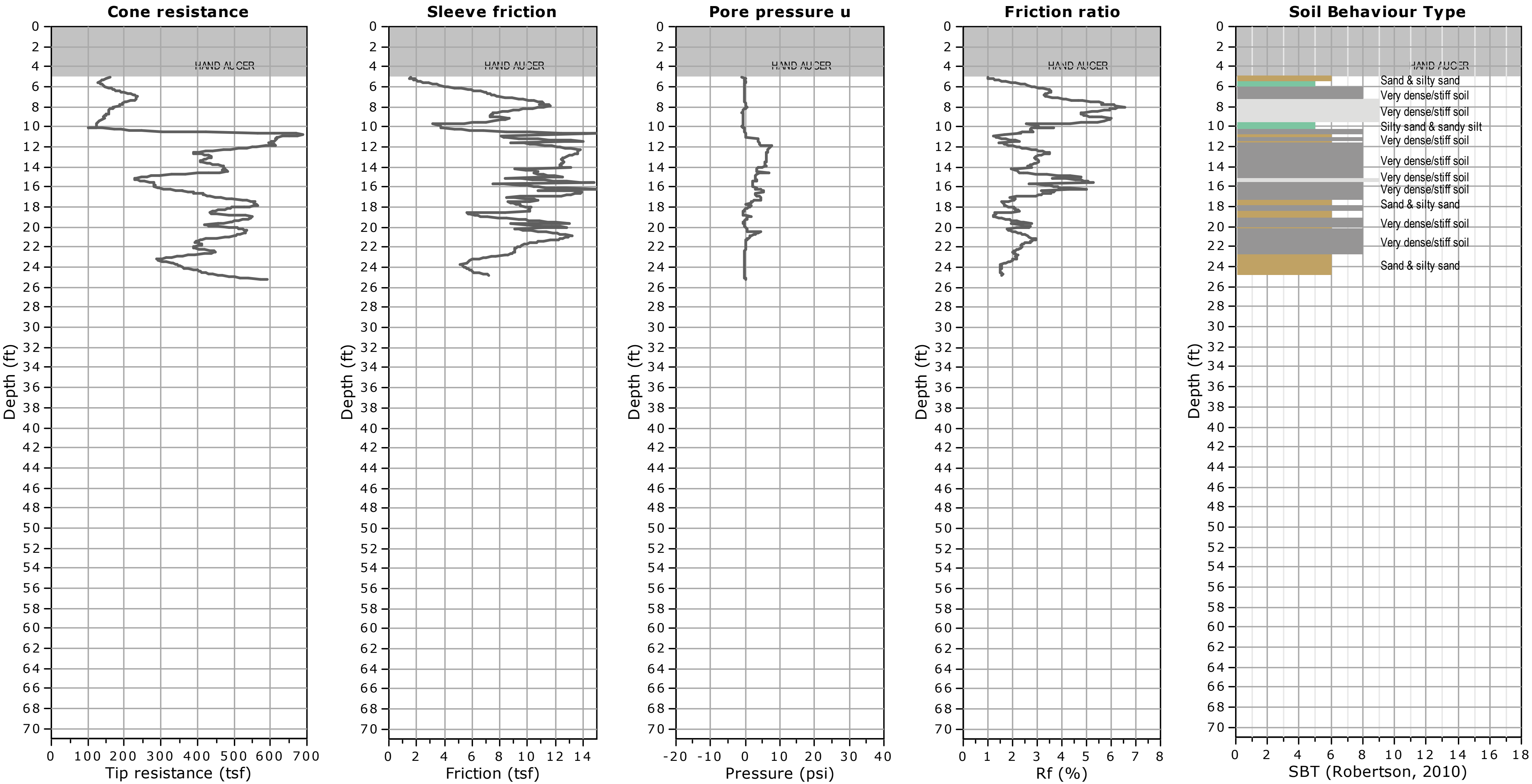
www.kehoetesting.com

Project: Haley & Aldrich / UC Riverside Phase 2 Development
Location: Canyon Crest Dr & West Linden St, Riverside, CA

CPT-18A
Total depth: 25.20 ft, Date: 2/21/2023



Kehoe Testing and Engineering
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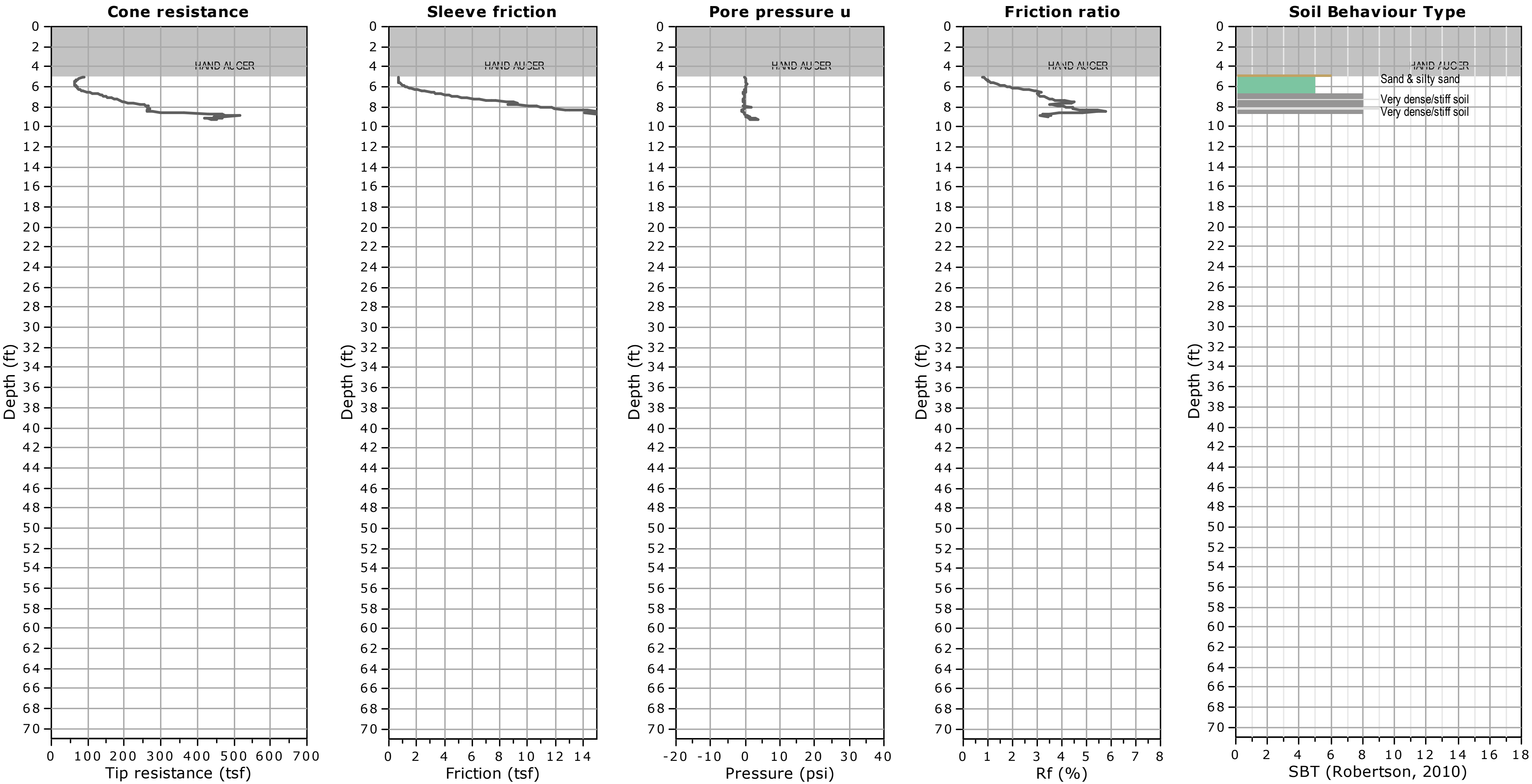
Project: Haley & Aldrich / UC Riverside Phase 2 Development
Location: Canyon Crest Dr & West Linden St, Riverside, CA

CPT-18B
Total depth: 9.33 ft, Date: 2/21/2023



Kehoe Testing and Engineering
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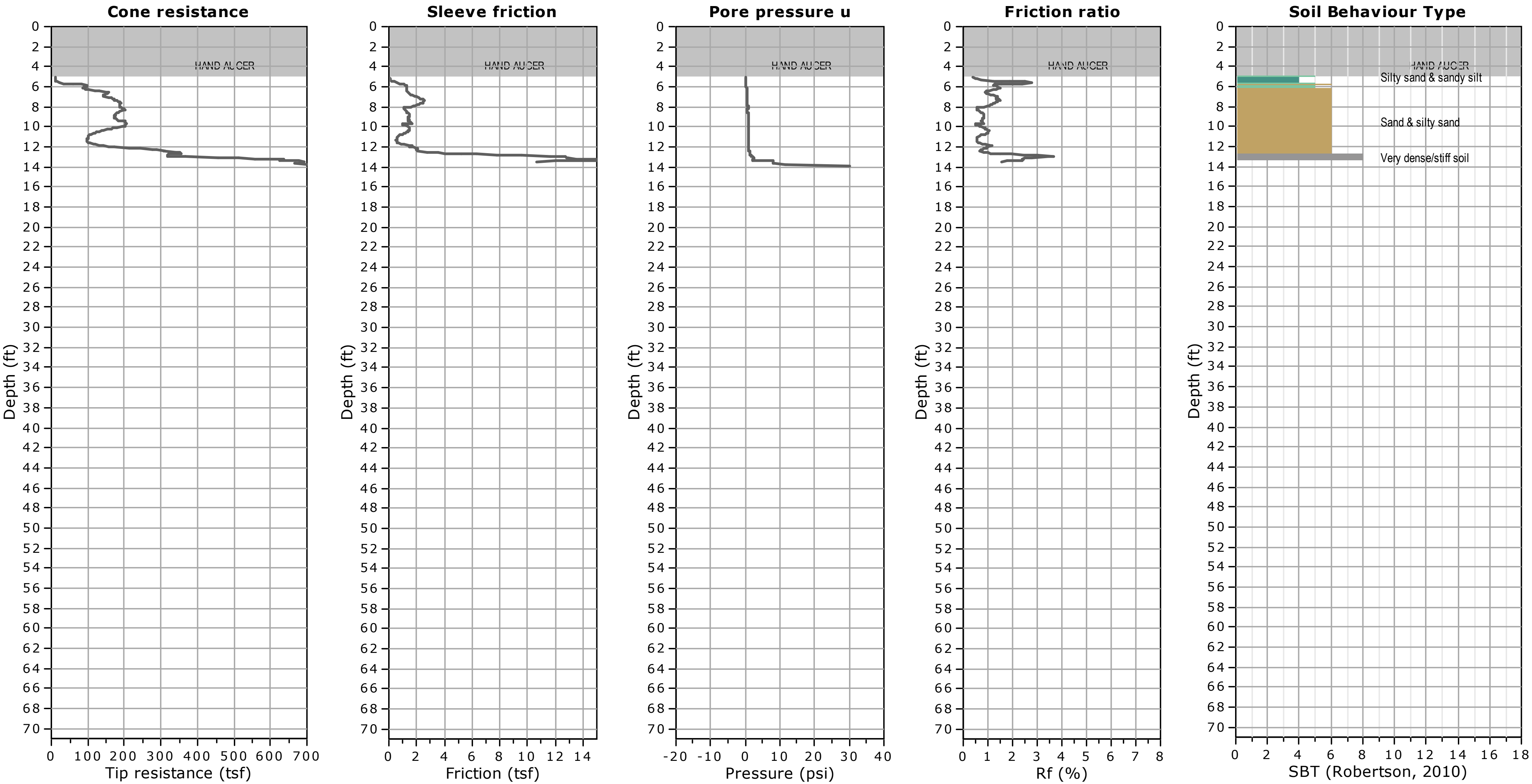
www.kehoetesting.com

Project: Haley & Aldrich / UC Riverside Phase 2 Development
Location: Canyon Crest Dr & West Linden St, Riverside, CA

CPT-19
Total depth: 13.85 ft, Date: 2/21/2023



Kehoe Testing and Engineering
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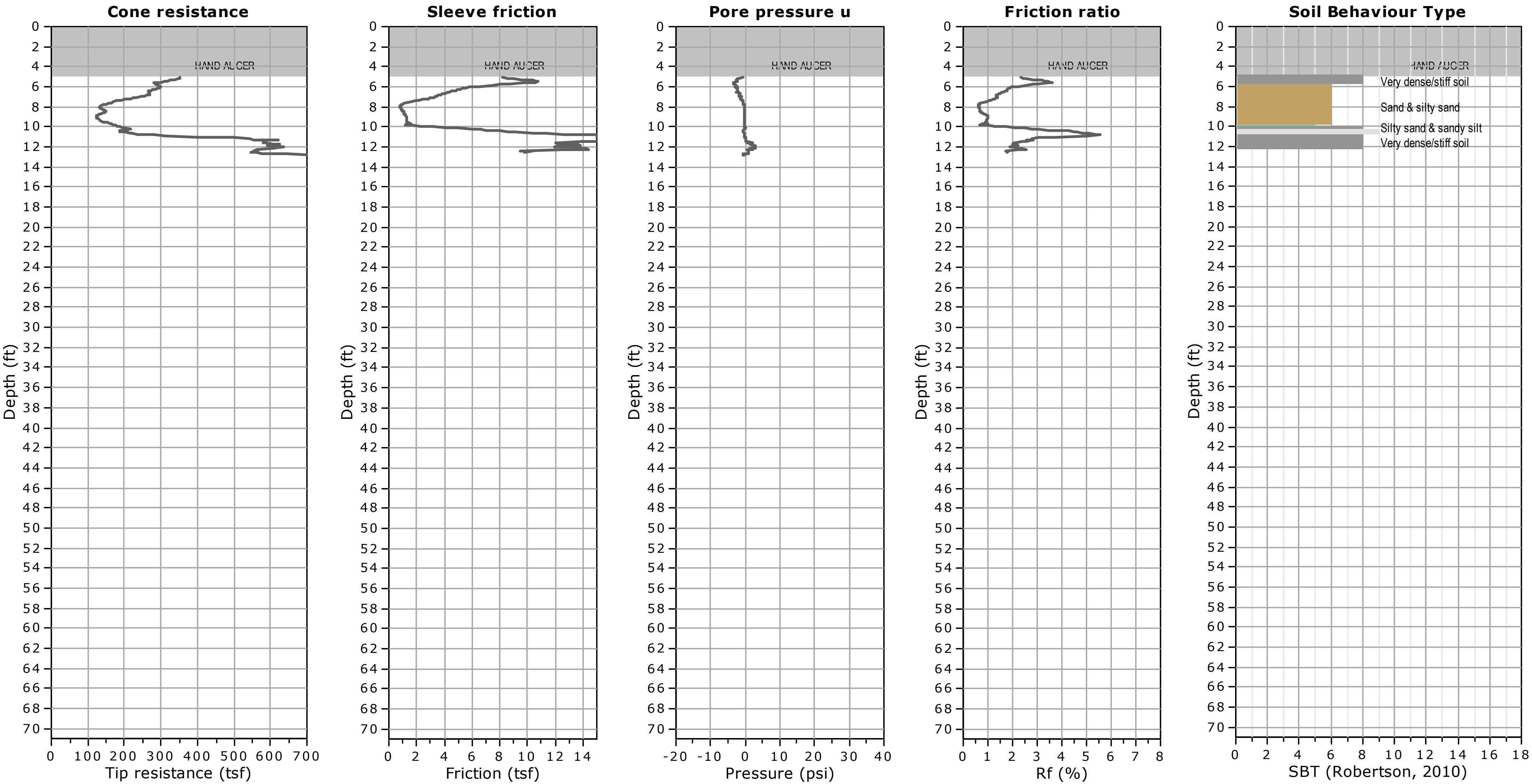
steve@kehoetesting.com
www.kehoetesting.com

Project: Haley & Aldrich / UC Riverside Phase 2 Development
Location: Canyon Crest Dr & West Linden St, Riverside, CA

CPT-19A
Total depth: 12.86 ft, Date: 2/21/2023



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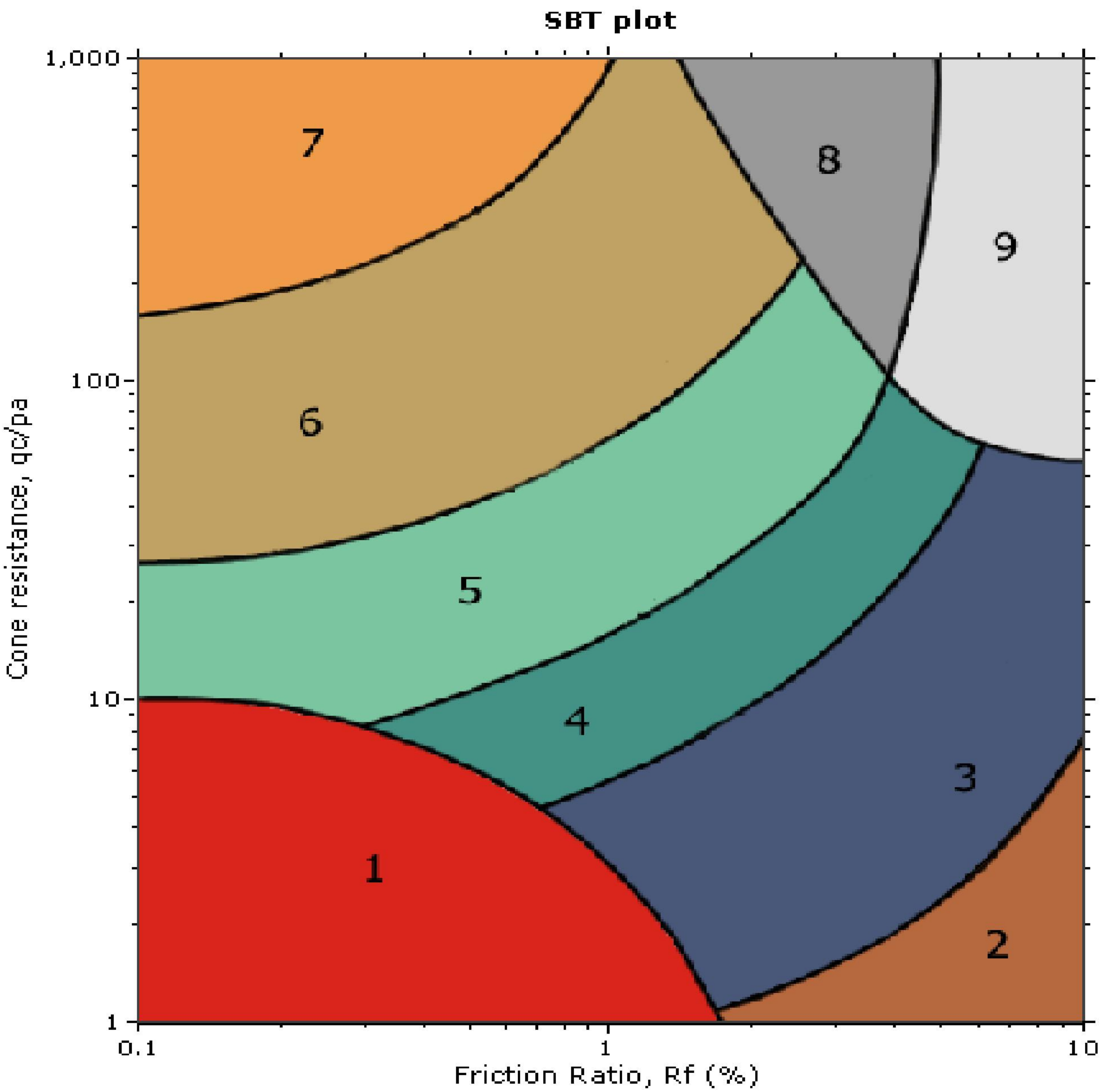
rich@kehoetesting.com
www.kehoetesting.com



SBT legend

1. Sensitive fine grained	4. Clayey silt to silty clay	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to clayey sand
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

Haley & Aldrich
UC Riverside Phase 2 Development
Riverside, CA

CPT Shear Wave Measurements

Location	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
CPT-17	5.09	4.09	4.55	5.56	819	
	10.07	9.07	9.29	8.44	1100	1644
	15.03	14.03	14.17	11.68	1213	1507
	20.51	19.51	19.61	15.28	1284	1511
	25.39	24.39	24.47	17.96	1363	1813
	30.12	29.12	29.19	21.72	1344	1254
	35.14	34.14	34.20	24.40	1402	1869
	40.06	39.06	39.11	26.96	1451	1919
	45.05	44.05	44.10	30.06	1467	1608
	50.46	49.46	49.50	34.46	1436	1228
	55.09	54.09	54.13	37.46	1445	1542
	60.27	59.27	59.30	40.56	1462	1670
	65.03	64.03	64.06	43.24	1482	1775
	70.05	69.05	69.08	45.82	1508	1945
CPT-18	5.12	4.12	4.58	6.00	763	
CPT-18A	5.09	4.09	4.55	5.36	849	
	10.01	9.01	9.23	10.36	891	935
	15.32	14.32	14.46	13.04	1109	1951
	20.08	19.08	19.18	15.60	1230	1846
	25.16	24.16	24.24	18.60	1303	1686
CPT-18B	5.05	4.05	4.52	3.64	1241	
	9.32	8.32	8.56	7.58	1129	1025
CPT-19	4.99	3.99	4.46	4.88	915	
	10.04	9.04	9.26	9.64	960	1007
	13.85	12.85	13.00	12.08	1077	1535
CPT-19A	5.02	4.02	4.49	4.58	980	
	10.04	9.04	9.26	9.32	993	1006

Shear Wave Source Offset - 2 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

APPENDIX C

Percolation Test Results

HALEY ALDRICH	PERCOLATION TEST DATA	File No.:	205990
		Sheet:	1 of 2
Client:	University of California, Riverside	Date:	22-Mar-2023
Project:	UC Riverside - Phase 2 Developments	Field Rep.	JV
Subject:	Infitration investigation		

Boring/Test Number	IT-01		Length of Casing	66	inches
Diameter of Boring	4	inches	Depth of Casing Below	5.50	feet
Diameter of Casing	2	inches	Depth to Initial Water	6	inches

Reading Number	Time Start/End	Elapsed Time (min)	Final Water Depth (in)	Water Drop (in)	Direct Percolation Rate (in/hr)	Reduction Factor	Adjusted Percolation Rate (in/hr)
1	presoak / presoak	30	6.00			31.00	0.00
2	presoak / presoak	30	6.00			31.00	0.00
3	presoak / presoak	30	6.00			31.00	0.00
4	12:15 / 12:45	30	16.08	10.08	20.16	28.48	0.71
5	12:45 / 13:15	30	15.84	9.84	19.68	28.54	0.69
6	13:15 / 13:45	30	15.72	9.72	19.44	28.57	0.68
7	13:45 / 14:15	30	15.96	9.96	19.92	28.51	0.70
				Average of Last 3 Readings:	19.68	28.54	0.69

Reduction Factors

Rf =	28.54	*(Calculated as Rf = [(2d1 - Δd) / DIA] + 1)*
CF_v =	1	*(moderate site variability, low number of tests)*
CF_s =	1	*(moderate long-term siltation)*
CF_{total} =	28.5	*(product of Rf, CFv, and CFs)*

Design Percolation Rate

Unadjusted Percolation Rate (P_R) =	19.68	in/hour *(average of last three)*
Design Percolation Rate (P_R / Cf_{total}) =	0.69	in/hour
	(4.9E-04	*cm/s)*

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HALEY ALDRICH	PERCOLATION TEST DATA	File No.:	205990
		Sheet:	2 of 2
Client:	University of California, Riverside	Date:	22-Mar-2023
Project:	UC Riverside - Phase 2 Developments	Field Rep.	JV
Subject:	Infitration investigation		

Boring/Test Number	IT-02		Length of Casing	66	inches
Diameter of Boring	4	inches	Depth of Casing Below	5.50	feet
Diameter of Casing	2	inches	Depth to Initial Water	6	inches

Reading Number	Time Start/End	Elapsed Time (min)	Final Water Depth (in)	Water Drop (in)	Direct Percolation Rate (in/hr)	Reduction Factor	Adjusted Percolation Rate (in/hr)
1	presoak / presoak	30	6.00			31.00	0.00
2	presoak / presoak	30	6.00			31.00	0.00
3	presoak / presoak	30	6.00			31.00	0.00
4	presoak / presoak	30	6.00			31.00	0.00
5	13:00 / 13:30	30	22.08	16.08	32.16	26.98	1.19
6	13:30 / 14:00	30	21.60	15.60	31.20	27.10	1.15
7	14:00 / 14:30	30	21.48	15.48	30.96	27.13	1.14
				Average of Last 3 Readings:	31.08	27.12	1.15

Reduction Factors

Rf =	27.12	*(Calculated as Rf = [(2d1 - Δd) / DIA] + 1)*
CF_v =	1	*(moderate site variability, low number of tests)*
CF_s =	1	*(moderate long-term siltation)*
CF_{total} =	27.1	*(product of Rf, CFv, and CFs)*

Design Percolation Rate

Unadjusted Percolation Rate (P_R) =	31.08	in/hour *(average of last three)*
Design Percolation Rate (P_R / Cf_{total}) =	1.15	in/hour
	(8.1E-04	*cm/s)*

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APPENDIX D

Laboratory Test Results

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MOISTURE AND DENSITY TEST RESULTS

ASTM D2216 and ASTM D7263 (Method B)

Client: Haley & Aldrich
Project Name: UC Riverside - Phase 2 Development
Project No.: 0205990-000

AP Lab No.: 23-0275
Test Date: 03/14/23

Boring No.	Sample No.	Sample Depth (ft.)	Moisture Content (%)	Dry Density (pcf)
HA-18	MC-1	5-7	7.2	NA
HA-18	MC-4	20-22	5.0	NA
HA-19	MC-4	20-22	9.5	NA
HA-20	MC-3	15-17	2.6	NA

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PERCENT PASSING NO. 200 SIEVE

ASTM D1140

Client:	Haley & Aldrich	AP Lab No.:	23-0275
Project Name:	UC Riverside - Phase 2 Development	Test Date:	03/13/23
Project Number:	0205990-000		

Boring No.	Sample No.	Depth (ft)	Percent Fines (%)
HA-19	MC-3	15-17	14.8

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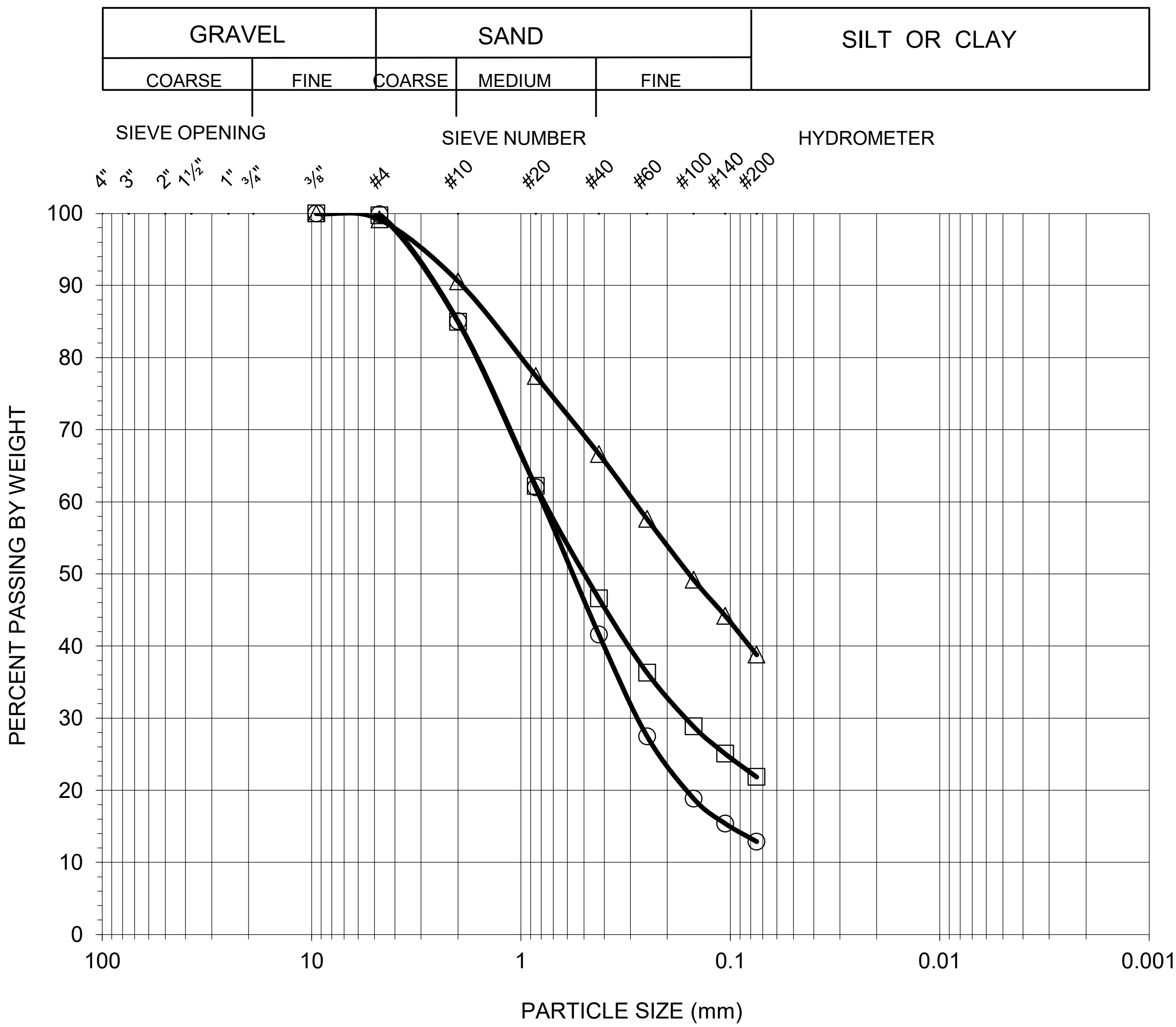
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913

Client Name:	Haley & Aldrich	Tested by:	SM	Date:	03/15/23
Project Name:	UC Riverside - Phase 2 Development	Computed by:	JP	Date:	03/15/23
Project No.:	0205990-000	Checked by:	AP	Date:	03/15/23



Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	HA-17	MC-4	10-12	0	87	13	N/A	SM
□	HA-18	MC-2	9-11	0	78	22	N/A	SM
△	HA-19	MC-2	10-12	1	60	39	N/A	SC*

**Note: Based on visual classification of sample*

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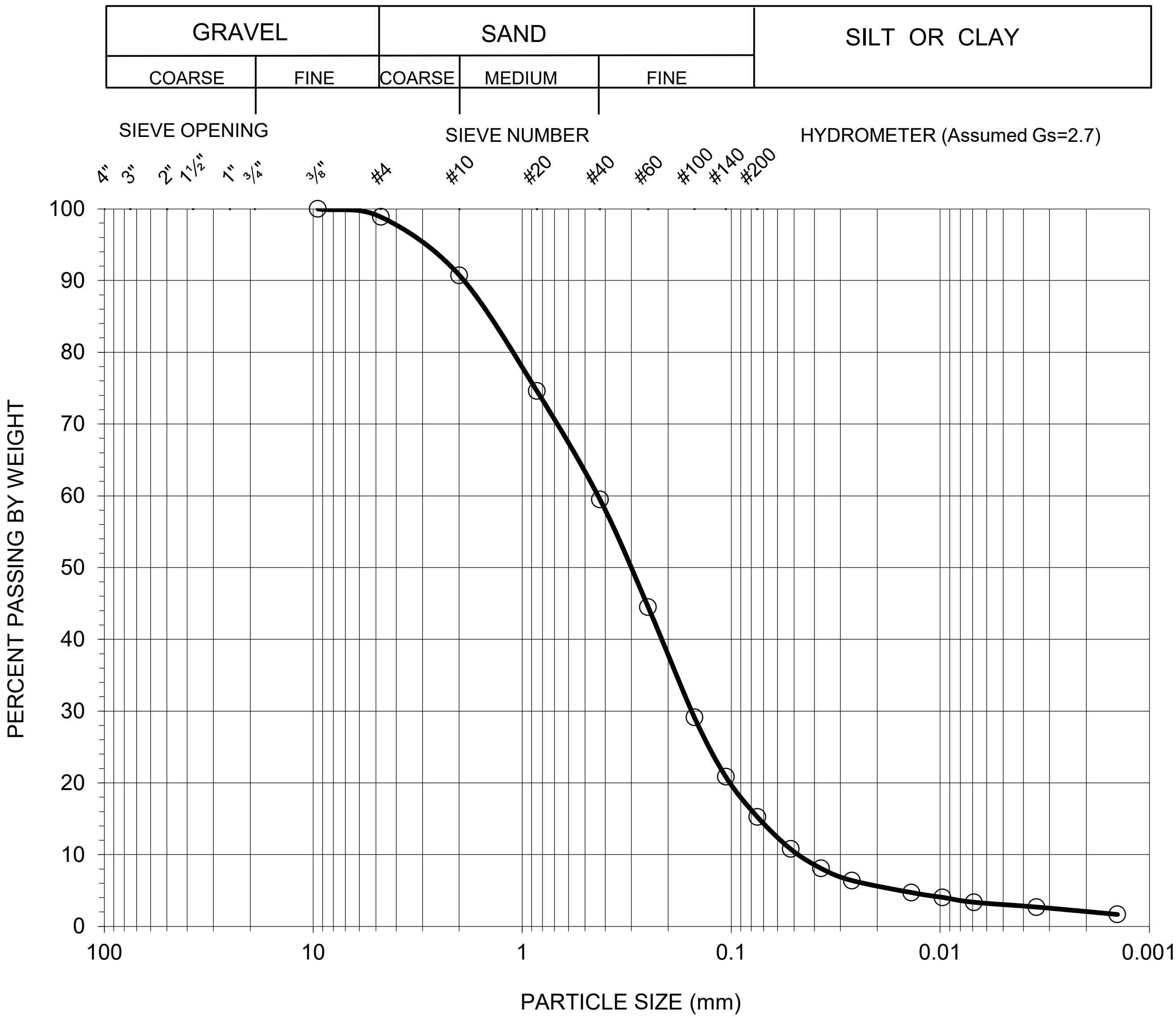
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913 & D 7928

Client Name:	Haley & Aldrich	Tested by:	SM	Date:	03/15/23
Project Name:	UC Riverside - Phase 2 Development	Computed by:	JP	Date:	03/15/23
Project No.:	0205990-000	Checked by:	AP	Date:	03/15/23



Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	HA-19	MC-5	25-27	1	84	15	N/A	SM

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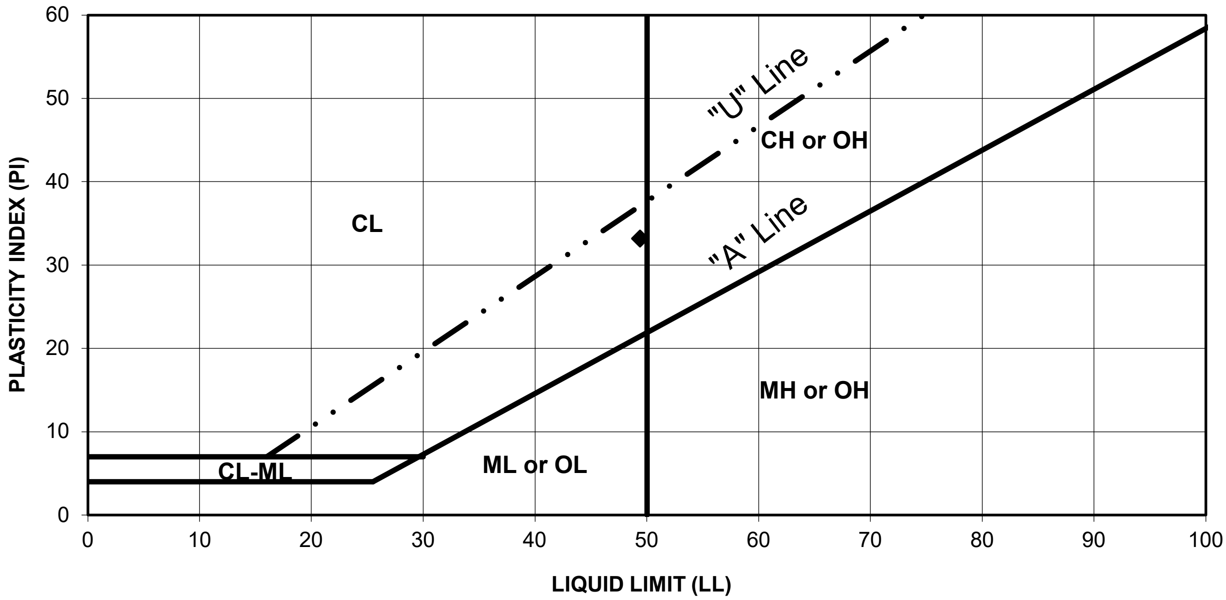
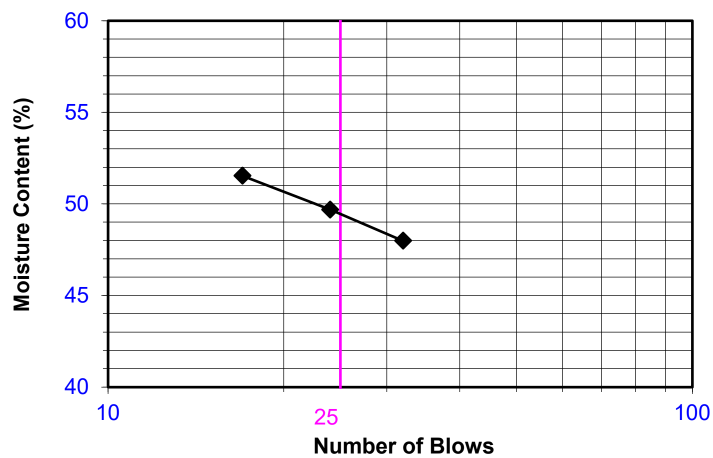
ATTERBERG LIMITS
ASTM D 4318

Client Name: Haley & Aldrich — Tested By: DK — Date: 03/14/23
Project Name: UC Riverside - Phase 2 Development — Computed By: NR — Date: 03/15/23
Project No.: 0205990-000 — Checked By: AP — Date: 03/15/23



PROCEDURE USED

- [ ] Wet Preparation
- [X] Dry Preparation
- [X] Procedure A Multipoint Test
- [ ] Procedure B One-point Test



Symbol	Boring Number	Sample Number	Depth (feet)	LL	PL	PI	Plasticity Chart Symbol
♦	HA-19	MC-1	5-7	49	16	33	CL

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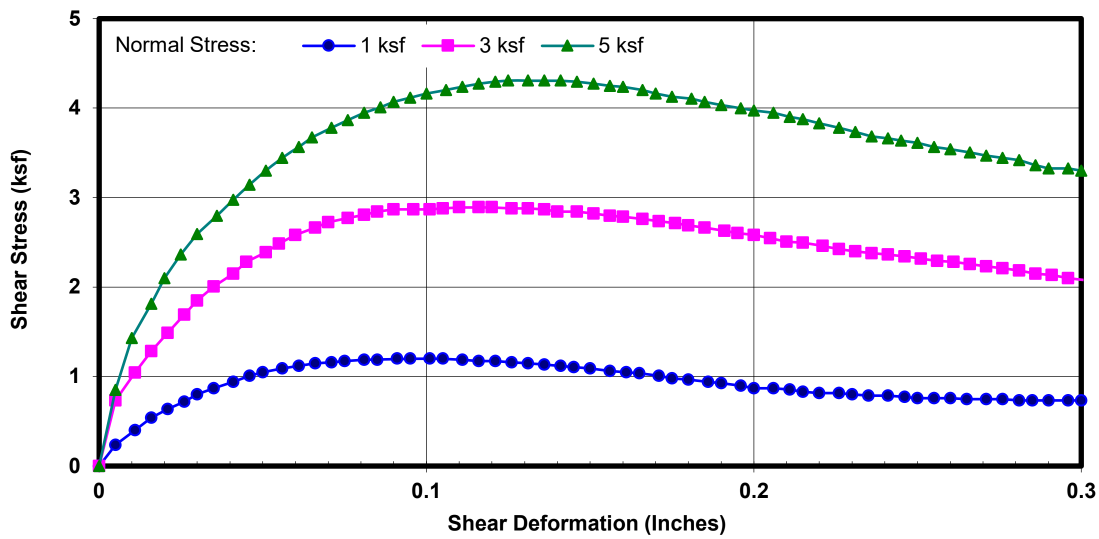
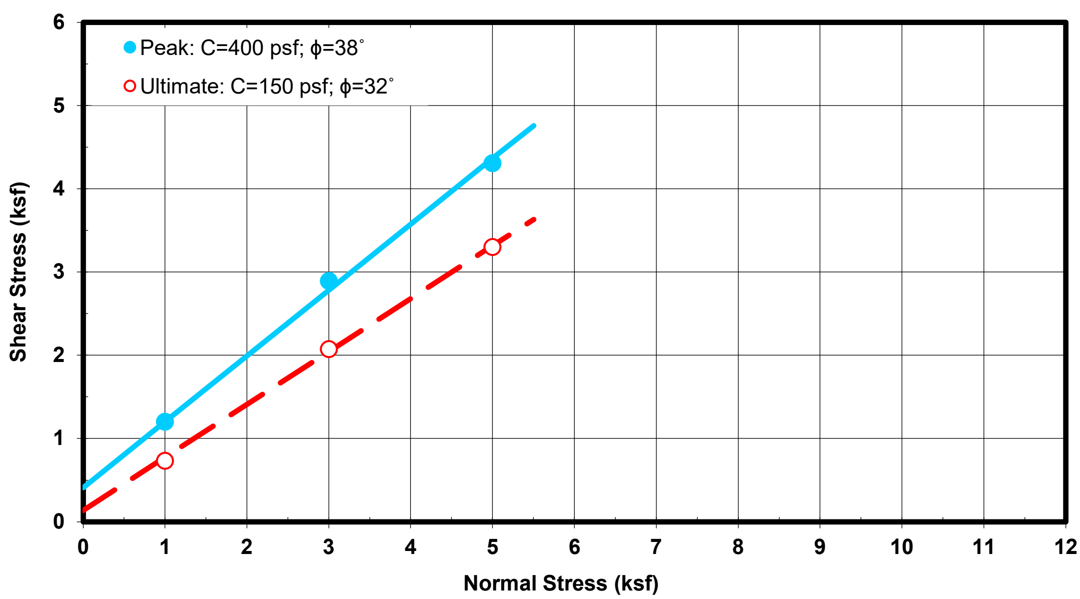
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name: UC Riverside - Phase 2 Development
Project No.: 0205990-000
Boring No.: HA-17
Sample No.: MC-1 **Depth (ft):** 5-7
Sample Type: Mod. Cal.
Soil Description: Clayey Sand
Test Condition: Inundated **Shear Type:** Regular

Tested By: LS **Date:** 03/15/23
Computed By: JP **Date:** 03/15/23
Checked by: AP **Date:** 03/15/23

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
134.1	125.4	6.9	12.6	54	99	1	1.201	0.731
						3	2.892	2.076
						5	4.308	3.300





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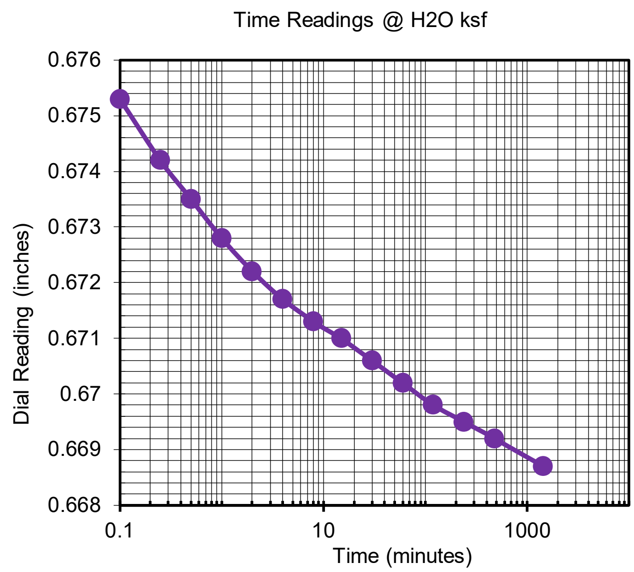

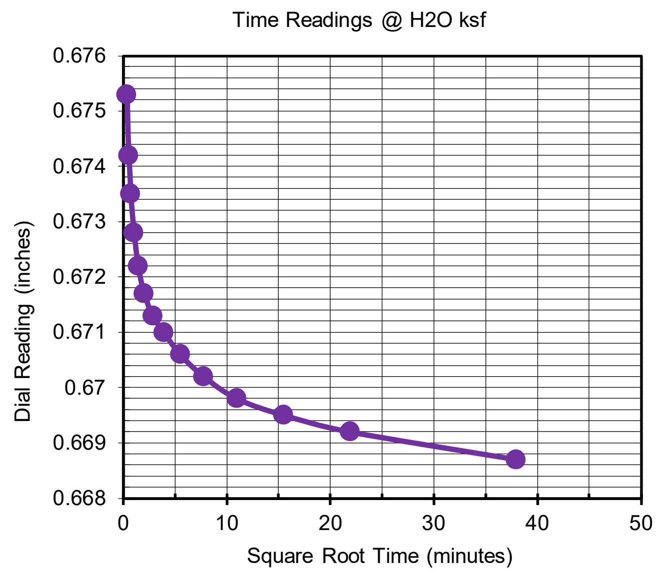

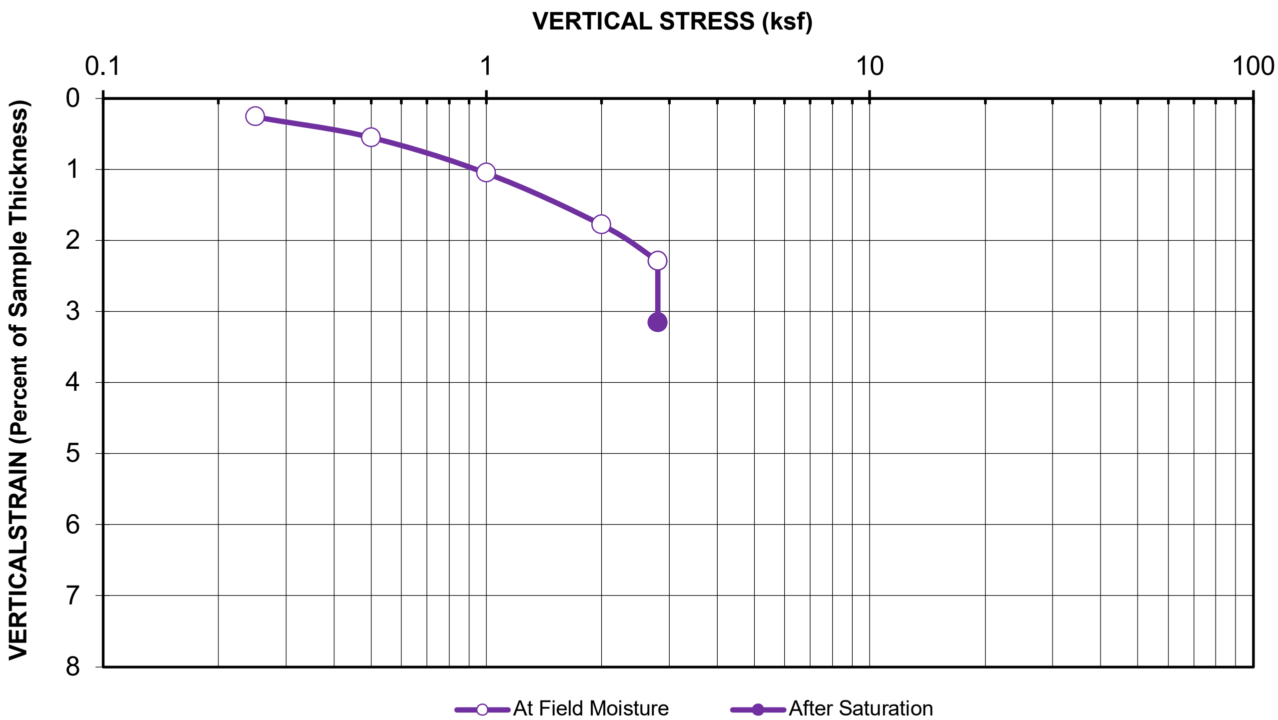

Boring No. :	HA-20	Initial Dry Unit Weight (pcf):	108.1
Sample No.:	MC-2	Initial Moisture Content (%):	4.1
Depth (feet):	10-12	Final Moisture Content (%):	15.1
Sample Type:	Mod Cal	Initial Void Ratio:	0.56
Soil Description:	Sand w/silt		
Remarks:	Collapse = 0.87% upon inundation		

1-D SWELL/COLLAPSE
ASTM D 4546-14, Method B

Project Name: UC Riverside - Phase 2 Development
Project No.: 0205990-000
Date: 3/11/23
AP No: 23-0275

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R-VALUE TEST DATA

ASTM D2844

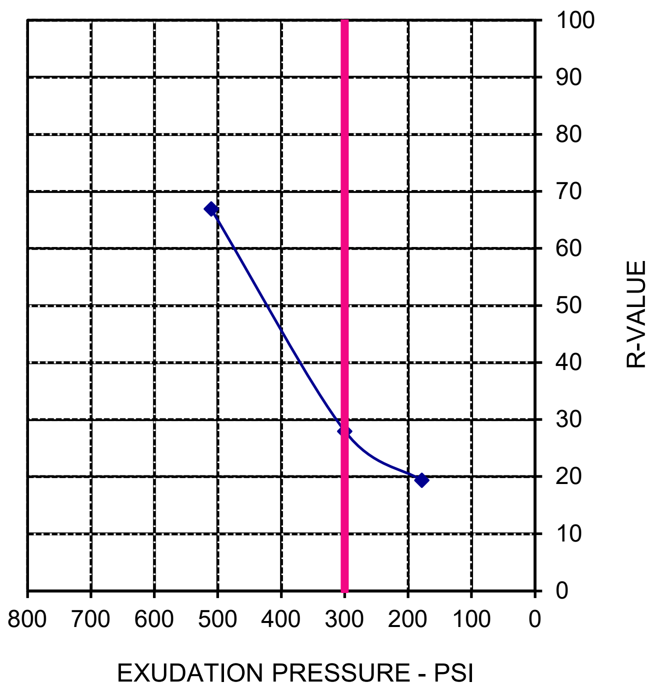
Project Name:	UC Riverside - Phase 2 Development	Tested By:	ST	Date:	03/20/23
Project Number:	0205990-000	Computed By:	KM	Date:	03/22/23
Boring No.:	HA-17	Checked By:	AP	Date:	03/23/23
Sample No.:	Bulk-1	Depth (ft.):	0-2		
Location:	N/A				
Soil Description:	Clayey Sand w/gravel				

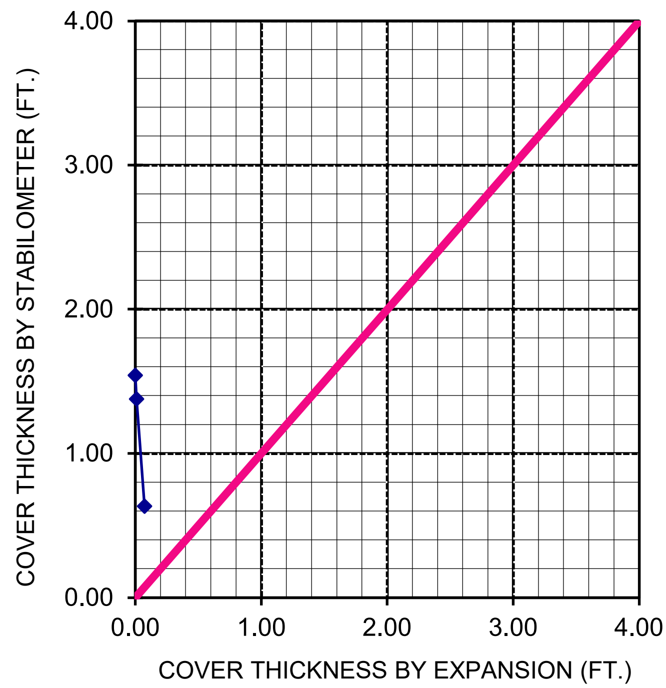
Mold Number	F	D	E	
Water Added, g	-9	0	11	
Compact Moisture(%)	10.5	11.3	12.5	
Compaction Gage Pressure, psi	250	150	75	
Exudation Pressure, psi	510	300	178	
Sample Height, Inches	2.4	2.5	2.5	
Gross Weight Mold, g	2965	3057	3067	
Tare Weight Mold, g	1868	1964	1954	
Net Sample Weight, g	1097	1093	1113	
Expansion, inchesx10^{-4}	22	3	0	
Stability 2,000 (160 psi)	15/36	36/96	47/112	
Turns Displacement	3.90	4.30	4.46	
R-Value Uncorrected	69	28	19	
R-Value Corrected	67	28	19	
Dry Density, pcf	125.4	119.0	119.9	
Traffic Index	8.0	8.0	8.0	
G.E. by Stability	0.63	1.38	1.54	
G.E. by Expansion	0.07	0.01	0.00	

R-VALUE		
	By Exudation:	28
	By Expansion:	*N/A
	At Equilibrium: (by Exudation)	28

Remarks

Gf = 1.34, and 2.0 % Retained on the ¾"
*Not Applicable





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CORROSION TEST RESULTS

Client Name: Haley & Aldrich
Project Name: UC Riverside - Phase 2 Development
Project No.: 0205990-000

AP Job No.: 23-0275
Date: 03/14/23

Boring No.	Sample No.	Depth (feet)	Soil Description	Minimum Resistivity (ohm-cm)	pH	Sulfate Content (ppm)	Chloride Content (ppm)
HA-17	MC-1	5-7	Clayey Sand	2,059	8.5	36	22
HA-20	MC-1	5-7	Clayey Sand	2,794	8.0	96	47

NOTES:
Resistivity Test and pH: California Test Method 643
Sulfate Content : California Test Method 417
Chloride Content : California Test Method 422
ND = Not Detectable
NA = Not Sufficient Sample
NR = Not Requested

APPENDIX E

Previous Boring Logs

GEOTECHNICAL TEST BORING REPORT

Boring No. HA-1

Project	UC Riverside, Riverside, CA
Client	UC Riverside
Contractor	Cascade Drilling, Inc.

File No.	128625
Sheet No.	1 of 3
Start	30 March 2017
Finish	30 March 2017
Driller	Jamie
H&A Rep.	K. Neill
Elevation	1039.0 (est.)
Datum	NGVD29
Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	8"	Rig Make & Model: CME-95
Hammer Type	Automatic Hammer	Bit Type: HSA
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: N/A
		Hoist/Hammer: Automatic Hammer
		PID Make & Model: N/A

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0				1038.8 / 0.2		ASPHALT PAVEMENT, 2 inches thick			
					SC	CLAYEY SAND, reddish brown, mostly fine sand, some fines, little medium sand, few coarse sand, heavy iron oxide staining, moist			
									1035
5	MCS	14	3 5 17			medium dense, strong brown, mostly fine to medium sand, little fines, coarse sand, few gravel, heavy iron oxide staining, moist Direct Shear Test (See Appendix C)	121	8	
									1030
10	SPT	18	6 10 8			yellowish brown		6	
									1025
15	MCS	18	9 14 15						
				1021.0 / 18.0	SP- SM	POORLY GRADED SAND WITH SILT, medium dense, brown, mostly fine sand, little medium sand, few fines and coarse sand, micaceous, moist			1020
20									

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-1

Field Tests: **Dilatancy** : R - Rapid S - Slow N - None **Toughness** : L - Low M - Medium H - High **Plasticity** : N - Nonplastic L - Low M - Medium H - High **Dry Strength** : N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

H&A BORING MDH 2016 SAMPLE HA-LIB07-1-WNC3.GLB G:\128685 UC RIVERSIDE\FIELD\INVESTIGATION\BORING LOGS\128685 LOGS.GPJ 25 Apr 17

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-1
File No. 128625
Sheet No. 2 of 3

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	SPT	18	5 12 10		SP- SM	POORLY GRADED SAND WITH SILT, as above Atterberg Limits: Non-Plastic			
				1016.0 23.0	SP	POORLY GRADED SAND, medium dense, yellowish brown, mostly fine to medium sand, little coarse sand (sub-rounded to rounded), trace fine gravel (rounded, granular)			1015
25	MCS	18	16 18 23				112	2	
				1011.0 28.0	SM	SILTY SAND, medium dense, dark yellowish brown, mostly fine sand, some fines, few medium sand, trace coarse sand, moist, micaceous			1010
30	SPT	18	5 11 11						
				1006.0 33.0	SP- SM	POORLY GRADED SAND WITH SILT, dense, yelllowish brown, mostly fine to medium sand, little coarse sand (sub-rounded), few fines, moist, micaceous			1005
35	MCS	18	14 24 30				111	4	
									1000
40	SPT	18	11 12 11					8	
				998.5 40.5	SC	CLAYEY SAND, medium dense, dark yellowish brown, mostly fine sand, little fines (low plasticity), few medium sand, trace coarse sand, moist			
				996.0 43.0	SM	SILTY SAND, dense, dark yellowish brown, mostly fine sand, some fines, trace medium to coarse sand, moist			995
45	MCS	18	14 26 34						
									990

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
50	SPT	18	10 10 10	987.5 51.5	SM	SILTY SAND, as above, medium dense, few medium and coarse sand		6	
						Boring Terminated at 51.5ft **No Groundwater Encountered** **Boring Backfilled with Soil Cuttings**			985
55									980
60									975
65									970
70									965
75									960

H&A BORING MDH 2016 SAMPLE HA-LIB07-1-WNC3.GLB G:\128685 UC RIVERSIDE\FIELD\INVESTIGATION\BORING LOGS\128685 LOGS.GPJ 25 Apr 17

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-2

Project	UC Riverside, Riverside, CA
Client	UC Riverside
Contractor	Cascade Drilling, Inc.

File No.	128625
Sheet No.	1 of 3
Start	28 March 2017
Finish	28 March 2017
Driller	Jamie
H&A Rep.	K. Neill
Elevation	1079.0 (est.)
Datum	NGVD29
Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	8"	Rig Make & Model: CME-95
Hammer Type	Automatic Hammer	Bit Type: HSA
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: N/A
		Hoist/Hammer: Automatic Hammer
		PID Make & Model: N/A

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK					SILTY SAND R-Value Test (See Appendix C)			
									1075
5	MCS	18	6 11 23		SM	SILTY SAND, medium dense, dark yellowish brown, gravel 1%, sand 72%, fines 27%, micaceous and organic debris, moist Direct Shear Test (See Appendix C)	114	10	
						increased fines with depth, decreased medium to coarse sand with depth			
									1070
10	SPT	18	5 13 24			dense, brown, mostly fine sand, some fines (non-plastic), little medium sand, few coarse sand, trace fine gravel (sub-angular), micaceous, moist		11	
				1066.0 13.0	SC	CLAYEY SAND, medium dense, brown, mostly fine sand, little fines (low plasticity), little medium sand, few coarse sand and fine gravel, moist			
									1065
15	MCS	18	4 9 11				112	8	
				1063.0 16.0	SM	SILTY SAND, medium dense, brown, mostly fine sand, little fines (non-plastic), little medium sand, trace coarse sand (sub-rounded) and fine gravel, moist			
									1060
20									

Water Level Data						Sampler Type Legend	Summary
Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water	SPT - Standard Penetration Test Sampler (1.38-in ID) MCS - Modified California Sampler (2.43-in ID) SHELBY TUBE - Thin-walled Sampler (3-in ID) GRAB - Grab Sample	Overburden (ft) Rock Cored (ft) Samples
							Boring No. HA-2

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-2
File No. 128625
Sheet No. 2 of 3

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	SPT	18	7 21 25		SM	SILTY SAND, dense, yellowish red, gravel 1%, sand 71%, fines 28%, moist, little mica flakes and Biotite flakes, micaceous			
									1055
25	MCS	18	5 14 24			medium dense, yellowish brown, mostly fine sand, little fines, few medium to coarse sand, trace fine gravel, moist	119	6	
									1050
30	SPT	18	10 20 20			dense, strong brown, mostly fine sand, some fines, little medium sand, few coarse sand and fine gravel, micaceous, moist			
				1046.0 33.0	SP- SM	POORLY GRADED SAND WITH SILT, very dense, brown, mostly fine to medium sand, little coarse sand (rounded), few fines and fine gravel (sub-rounded), mica flakes and biotite, iron oxide staining on gravels, micaceous, moist			
									1045
35	MCS	16	7 31 42						
									1040
40	SPT	18	3 10 19			medium dense, increase in fines, clay film on outside of sample			
				1036.0 43.0	SC	CLAYEY SAND, dense, yellowish brown, mostly fine sand, little fines (low plasticity), little medium and coarse sand (rounded), micaceous, moist			
									1035
45	MCS	14	14 23 25	1033.4 45.6	SM	SILTY SAND WITH GRAVEL, dense, mostly fine sand, little medium sand and fines, few coarse sand, trace fine gravel, moist	123	7	
									1030

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA-2

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
50	SPT	18	10 14 26	1027.5 51.5	SM	SILTY SAND WITH GRAVEL, as above			
						Boring Terminated at 51.5ft **No Groundwater Encountered** **Boring Backfilled with Soil Cuttings**			
									1025
55									
									1020
60									
									1015
65									
									1010
70									
									1005
75									
									1000

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

Boring No. HA-3

Project	UC Riverside, Riverside, CA
Client	UC Riverside
Contractor	Cascade Drilling, Inc.

File No.	128625
Sheet No.	1 of 2
Start	30 March 2017
Finish	30 March 2017
Driller	Jamie
H&A Rep.	K. Neill
Elevation	1052.0 (est.)
Datum	NGVD29
Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	8"	Rig Make & Model: CME-95
Hammer Type	Automatic Hammer	Bit Type: HSA
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: N/A
		Hoist/Hammer: Automatic Hammer
		PID Make & Model: N/A

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK				SM	SILTY SAND, dark brown, mostly fine sand, little fines, few medium to coarse sand (sub-rounded), trace organic debris, moist Corrosion Test, R-Value Test (See Appendix C)			1050
5	MCS	17	19 39 32			dense, strong brown, mostly fine sand, little medium sand, few fines and coarse sand, moist Collapse Test (See Appendix C)	126	5	1045
				1044.0 8.0	SP- SM	POORLY GRADED SAND WITH SILT, dense, dark yellowish brown, mostly fine sand, few fines and medium sand, trace coarse sand, moist			
10	SPT	18	7 18 18					7	1040
15	MCS	17	7 11 11			medium dense, strong brown, sand 94%, fines 6%	100	2	1035
20									

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-3

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	SPT	18	24 28 27		SP-SM	POORLY GRADED SAND WITH SILT, as above, very dense, 3/4" gravel in tip of sampler, increase in fines at bottom of sampler			1030
				1029.0 23.0	SM	SILTY SAND, very dense, brown, mostly fine sand, little fines, few medium sand, trace coarse sand (rounded), moist			
25	MCS	16	9 30 50						1025
				1024.0 28.0	SP- SC	POORLY GRADED SAND WITH CLAY, very dense, mostly fine sand, little medium sand, few fines (low plasticity) and coarse sand,			
30	SPT	18	11 23 27	1020.5 31.5					
						Boring Terminated at 31.5ft **No Groundwater Encountered** **Boring Backfilled with Soil Cuttings**			1020
35									1015
40									1010
45									1005

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-4

Project	UC Riverside, Riverside, CA
Client	UC Riverside
Contractor	Cascade Drilling, Inc.

File No.	128625
Sheet No.	1 of 2
Start	28 March 2017
Finish	28 March 2017
Driller	Jamie
H&A Rep.	K. Neill
Elevation	1043.0 (est.)
Datum	NGVD29
Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	8"	Rig Make & Model: CME-95
Hammer Type	Automatic Hammer	Bit Type: HSA
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: N/A
		Hoist/Hammer: Automatic Hammer
		PID Make & Model: N/A

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK				SM	SILTY SAND, dark yellowish brown, mostly fine sand, some fines, little medium sand, few coarse sand, moist			1040
5	MCS	18	11 25 40		SM	dense, some medium sand, little coarse sand, fines 18%, moist, micaceous	123	8	1035
10	SPT	18	6 10 12		SM	medium dense, mostly fine sand, little fines and medium sand, few coarse sand, trace fine gravel, moist		14	
				1030.0 13.0	SP- SC	POORLY GRADED SAND WITH CLAY, medium dense, mostly fine sand, little medium sand, few fines (low plasticity) and coarse sand, trace fine gravel (sub-rounded), moist			1030
15	MCS	18	5 12 26		SP- SC		117	7	
				1025.0 18.0	SM	SILTY SAND, dense, brown, mostly fine sand, some fines, few medium sand, trace coarse sand, moist, manganese oxide staining in core (20-26ft)			1025
20									

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-4

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	SPT	18	15 26 20		SM	SILTY SAND, as above			
				1020.0 23.0	SP- SM	POORLY GRADED SAND WITH SILT, dense, yellowish brown, moslty fine sand, little medium sand, few coarse sand and fines, moist, micaceous			1020
25	MCS	17	10 26 32				115	7	
									1015
30	SPT	18	9 12 19	1011.5 31.5		same as above, concentration of coarse and medium sand has increased			
						Boring Terminated at 31.5ft **No Groundwater Encountered** **Boring Backfilled with Soil Cuttings**			1010
35									
									1005
40									
									1000
45									
									995

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

Boring No. HA-5

Project	UC Riverside, Riverside, CA
Client	UC Riverside
Contractor	Cascade Drilling, Inc.

File No. 128625
Sheet No. 1 of 3
Start 29 March 2017
Finish 29 March 2017
Driller Jamie
H&A Rep. K. Neill
Elevation 1063.0 (est.)
Datum NGVD29
Location See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	8"	Rig Make & Model: CME-95
Hammer Type	Automatic Hammer	Bit Type: HSA
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: N/A
		Hoist/Hammer: Automatic Hammer
		PID Make & Model: N/A

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK				SC	CLAYEY SAND, medium dense, dark brown, mostly fine sand, some fines (low plasticity), little medium sand, trace coarse sand, moist			1060
5	MCS	18	5 13 44	1058.0 5.0	SM	SILTY SAND, dense, strong brown, mostly fine sand, little fines and medium sand, few coarse sand, moist, iron oxide staining	122	8	1055
10	SPT	18	7 8 8			medium dense, trace coarse sand		13	1050
				1049.0 14.0	SP	POORLY GRADED SAND, medium dense, yellowish brown, mostly fine to medium sand, some coarse sand, few fines, trace fine gravel, moist			
15	MCS	18	8 12 13				117	8	
				1046.0 17.0	SM	SILTY SAND, medium dense, dark yellowish brown, mostly fine sand, some fines, trace medium sand, moist, micaceous			1045
20									

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-5

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY ALDRICH

GEOTECHNICAL TEST BORING REPORT

Boring No. HA-5
File No. 128625
Sheet No. 2 of 3

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	SPT	18	5 8 12		SM	SILTY SAND, as above			
				1041.0 22.0	SP	POORLY GRADED SAND, dense, yellowish brown, mostly fine to medium sand, some coarse sand, few fines, trace fine gravel, moist			1040
25	MCS	18	9 26 35				115	5	
				1036.0 27.0	SP- SM	POORLY GRADED SAND WITH SILT, dense, yellowish brown, mostly fine sand, little medium sand, few coarse sand and fines, moist			1035
30	SPT	18	5 16 19						
				1031.0 32.0	SM	SILTY SAND, dense, mostly fine sand, little fines and medium sand, few coarse sand and fine gravels (sub-rounded), moist			1030
35	MCS	18	11 25 27						
				1026.0 37.0	SP	POORLY GRADED SAND, dense, pale brown, mostly fine to medium sand, little coarse sand, few fines, trace fine gravels, moist			1025
40	SPT	18	9 15 17						
				1021.0 42.0	SM	SILTY SAND, very dense, dark yellowish brown, mostly fine sand, little medium sand and fines, few coarse sand, moist, micaceous			1020
45	MCS	16	15 30 50/4"				117	11	
									1015

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA-5

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
50	SPT	18	7 13 29	1011.5 51.5	SM	SILTY SAND, dense, mostly fine sand, some fines, few medium sand, moist, micaceous			
						Boring Terminated at 51.5ft **No Groundwater Encountered** **Boring Backfilled with Soil Cuttings**			1010
55									1005
60									1000
65									995
70									990
75									985

GEOTECHNICAL TEST BORING REPORT

Boring No. HA-6

Project	UC Riverside, Riverside, CA
Client	UC Riverside
Contractor	Cascade Drilling, Inc.

File No.	128625
Sheet No.	1 of 2
Start	28 March 2017
Finish	28 March 2017
Driller	Jamie
H&A Rep.	K. Neill
Elevation	1095.0 (est.)
Datum	NGVD29
Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	8"	Rig Make & Model: CME-95
Hammer Type	Automatic Hammer	Bit Type: HSA
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: N/A
		Hoist/Hammer: Automatic Hammer
		PID Make & Model: N/A

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0				1094.8 0.2		ASPHALT, 2 inches thick			1095
	BULK				SC	CLAYEY SAND, strong brown, mostly fine sand, little medium sand, few coarse sand and fine gravel, fines 38.7%, biotite flakes and iron oxide staining on coarse grains			
5	MCS	16	5 40 50/4"			very dense, reddish brown, some fines, little medium and coarse sand, trace fine gravels, iron oxide staining, moist, asphalt slough on top of sample	120	13	1090
				1087.0 8.0	SM	SILTY SAND, dense, strong brown, mostly fine sand, some fines, little medium sand, few coarse sand, micaceous, flakes of mica, iron staining on coarse grains, moist			
10	SPT	18	5 12 20					9	1085
15	MCS	17	5 14 18			medium dense, dark yellowish brown, mostly fine sand, little fines and medium sand, few coarse sand and fine gravel (sub- angular granite), micaceous, moist			1080
20									1075

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-6

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY ALDRICH

GEOTECHNICAL TEST BORING REPORT

Boring No. HA-6
File No. 128625
Sheet No. 2 of 2

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	SPT	18	4 14 20		SM	SILTY SAND, as above, dense			1075
25	MCS	18	5 19 23			medium dense	106	11	1070
				1069.0 26.0	SP- SM	POORLY GRADED SAND WITH SILT, medium dense, yellowish brown, mostly fine sand, little medium sand, few coarse sand and fine gravel, few fines			
30	SPT	18	6 10 12						1065
				1063.5 31.5		**Boring Terminated at 31.5ft** **No Groundwater Encountered** **Boring Backfilled with Soil Cuttings**			
35									1060
40									1055
45									1050

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA-6

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-7

Project	UC Riverside, Riverside, CA	File No.	128625
Client	UC Riverside	Sheet No.	1 of 3
Contractor	Cascade Drilling, Inc.	Start	29 March 2017
		Finish	29 March 2017
		Driller	Jamie
		H&A Rep.	K. Neill

Drilling Equipment and Procedures

Boring Diameter (in.)	8"	Rig Make & Model:	CME-95
Hammer Type	Automatic Hammer	Bit Type:	HSA
Hammer Weight (lb)	140	Drill Mud:	None
Hammer Fall (in.)	30	Casing:	N/A
		Hoist/Hammer:	Automatic Hammer
		PID Make & Model:	N/A

Elevation	1047.0 (est.)
Datum	NGVD29
Location	See Plan

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK					SILTY SAND, dark yellowish brown, mostly fine sand, little fines and medium sand, few coarse sand and fine gravels, trace organics			
									1045
5	MCS	18	3 10 13			medium dense, dark brown, gravel 1%, sand 71%, fines 28%, moist, roots Direct Shear Test (See Appendix C)	120	10	
									1040
10	SPT	18	5 10 12		SM	dark yellowish brown, mostly fine sand, little fines, few medium sand, trace coarse sand, moist, roots Corrosion Test (See Appendix C)		14	
									1035
15	MCS	18	3 10 13			strong brown, fines 44% Direct Shear Test (See Appendix C)	111	15	
							109	15	
									1030
20									

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-7

Field Tests: **Dilatancy** : R - Rapid S - Slow N - None **Plasticity** : N - Nonplastic L - Low M - Medium H - High
Toughness : L - Low M - Medium H - High **Dry Strength** : N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY ALDRICH

GEOTECHNICAL TEST BORING REPORT

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	SPT	13	13 50/6"			SILTY SAND, as above, very dense, strong brown, mostly fine sand, some fines, few medium sand, moist			
									1025
25	MCS	12	4 50/6"			trace coarse sand			
									1020
					SM				
30	SPT	18	10 15 16			dense, brown			
									1015
35	MCS	18	10 24 28				115	7	
									1010
				1009.0 38.0		POORLY GRADED SAND WITH SILT, dense, brown, mostly fine sand, little medium sand, few fines, trace coarse sand, moist			
40	SPT	16	5 16 18		SP- SM				
									1005
				1004.0 43.0		SILTY SAND, dense, brown, mostly fine sand, some fines, few medium to coarse sand, micaceous, mosit			
45	MCS	18	10 16 36		SM				
									1000

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-7
File No. 128625
Sheet No. 3 of 3

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
50	SPT	17	10 16 20	995.5 51.5	SM	SILTY SAND, as above			
						Boring Terminated at 51.5ft **No Groundwater Encountered** **Boring Backfilled with Soil Cuttings**			995
55									990
60									985
65									980
70									975
75									970

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY ALDRICH — GEOTECHNICAL TEST BORING REPORT

Boring No. HA-8

Project	UC Riverside, Riverside, CA	File No.	128625
Client	UC Riverside	Sheet No.	1 of 2
Contractor	Cascade Drilling, Inc.	Start	28 March 2017
		Finish	28 March 2017
		Driller	Jamie
		H&A Rep.	K. Neill
		Elevation	1067.0 (est.)
		Datum	NGVD29
		Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	8"	Rig Make & Model: CME-95
Hammer Type	Automatic Hammer	Bit Type: HSA
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: N/A
		Hoist/Hammer: Automatic Hammer
		PID Make & Model: N/A

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0					SC	CLAYEY SAND, strong brown, mostly fine sand, little fines (low plasticity) and medium sand, few coarse sand, trace roots			1065
5	MCS	16	7 19 20	1062.0 5.0	SM	SILTY SAND, medium dense, dark yellowish brown, mostly fine sand, little fines, few medium to coarse sand and roots	122	9	1060
10	SPT	18	10 20 20		SM	dense, yellowish brown, mostly fine sand, some fines, few medium sand, sand stringers 1/8" thick		9	1055
15	MCS	17	5 16 24		SM	medium dense, dark yellowish brown, mostly fine sand, some fines, trace medium sand, moist			1050
				1049.0 18.0	SP- SM	POORLY GRADED SAND WITH SILT AND GRAVEL, medium dense, strong brown, mostly fine sand, little medium sand, few fines and coarse sand, few fine gravel, moist			
20									

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-8

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Plasticity**: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	SPT	18	5 13 12		SP-SM	POORLY GRADED SAND WITH SILT AND GRAVEL, as above			1045
				1044.0 23.0	SP	POORLY GRADED SAND WITH GRAVEL, medium dense, yellowish brown, mostly fine to medium sand, some coarse sand, little fine gravel (sub-angular), few fines			
25	MCS	16	8 16 25				123	6	1040
				1039.0 28.0	SC	CLAYEY SAND, dense, dark yellowish brown, mostly fine sand, little medium sand and fines (low plasticity), trace coarse sand, moist			
30	SPT		8 11 19	1035.5 31.5		**Boring Terminated at 31.5ft** **No Groundwater Encountered** **Boring Backfilled with Soil Cuttings**			1035
35									1030
40									1025
45									1020

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-9

Project	UC Riverside, Riverside, CA	File No.	128625
Client	UC Riverside	Sheet No.	1 of 3
Contractor	Cascade Drilling, Inc.	Start	29 March 2017
		Finish	29 March 2017
		Driller	Jamie
		H&A Rep.	K. Neill
		Elevation	1090.0 (est.)
		Datum	NGVD29
		Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	8"	Rig Make & Model: CME-95
Hammer Type	Automatic Hammer	Bit Type: HSA
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: N/A
		Hoist/Hammer: Automatic Hammer
		PID Make & Model: N/A

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK				SM	SILTY SAND, yellowish brown, gravel 1%, sand 75%, fines 24%, moist Corrosion Test, R-Value Test (See Appendix C)			1090
5	MCS	18	5 7 9	1085.0 5.0	SP- SM	POORLY GRADED SAND WITH SILT, medium dense, yellowish brown, mostly fine sand, little medium to coarse sand, few fines and fine gravel, dry			1085
				1082.0 8.0	SM	SILTY SAND, medium dense, yellowish brown, mostly fine sand, little fines and medium sand, few coarse sand, trace organic debris and roots			
10	SPT	18	5 6 10					2	1080
				1077.0 13.0	SP- SC	POORLY GRADED SAND WITH CLAY, dense, dark yellowish brown, mostly fine sand, little to few fines, few medium sand, trace coarse sand, moist			
15	MCS	18	5 29 34				128	9	1075
				1072.0 18.0	SM	SILTY SAND, dense, yellowish brown, mostly fine sand, some fines, few medium sand, moist			
20									1070

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-9

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	SPT	18	10 14 16		SM	SILTY SAND, as above			1070
				1067.0 23.0	SP	POORLY GRADED SAND, medium dense, light yellowish brown, mostly fine to medium sand, little coarse sand, few fines, trace fine gravel, moist			
25	MCS	18	6 16 25				103	2	1065
30	SPT	18	7 12 16			same as above			1060
				1057.0 33.0	SP- SM	POORLY GRADED SAND WITH SILT, medium dense, yellowish brown, mostly fine sand, little medium to coarse sand, few fines, moist			
35	MCS	18	10 16 25						1055
				1052.0 38.0	SM	SILTY SAND, medium dense, pale brown, mostly fine sand, little fines and medium sand, few coarse sand, trace fine gravel, moist			
40	SPT	18	12 15 13						1050
				1047.0 43.0	SP	POORLY GRADED SAND, very dense, yellowish brown, mostly fine to medium sand, little coarse sand, few fine gravels and fines, moist			
45	MCS	18	10 32 46				114	3	1045
				1042.0 48.0	SM	SILTY SAND, dense, dark yellowish brown, mostly fine sand, some fines, little medium sand, trace coarse sand, moist			

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

Boring No.	HA-9
File No.	128625
Sheet No.	3 of 3

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
50	SPT	18	11 29 19	1038.5 51.5	SM	SILTY SAND, as above			1040
						Boring Terminated at 51.5ft **No Groundwater Encountered** **Boring Backfilled with Soil Cuttings**			
55									1035
60									1030
65									1025
70									1020
75									1015

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-10

Project	UC Riverside - North District, Linden Street at Canyon Crest Drive, Riverside, California
Client	American Campus Communities
Contractor	Cascade Drilling, Inc.

File No.	131648-003
Sheet No.	1 of 1
Start	26 March 2018
Finish	26 March 2018
Driller	Benjamin
H&A Rep.	R. Leeper
Elevation	1076.0
Datum	
Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	4	Rig Make & Model: CME
Hammer Type	N/A	Bit Type:
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: Hand Auger
		Hoist/Hammer: N/A
		PID Make & Model: MiniRAE 2000

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK				SM	SILTY SAND, reddish brown, fine to coarse sand, moist R-Value = 69 (See Appendix B)			1075
5				1071.0 5.0		**Total depth of boring 5.0 feet** **Groundwater not encountered** **Backfilled with cuttings 3/26/2018**			1070
10									1065
15									1060
20									

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-10

Field Tests:
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**
Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY ALDRICH

GEOTECHNICAL TEST BORING REPORT

Boring No. HA-11

Project	UC Riverside - North District, Linden Street at Canyon Crest Drive, Riverside, California
Client	American Campus Communities
Contractor	Cascade Drilling, Inc.

File No.	131648-003
Sheet No.	1 of 1
Start	26 March 2018
Finish	26 March 2018
Driller	Benjamin
H&A Rep.	R. Leeper
Elevation	1098.0
Datum	
Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	4	Rig Make & Model: CME
Hammer Type	N/A	Bit Type:
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: Hand Auger
		Hoist/Hammer: N/A
		PID Make & Model: MiniRAE 2000

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK				SM	SILTY SAND, dark reddish brown, fine to coarse sand, moist R-Value = 70 (See Appendix B)			1095
5				1093.0 5.0		**Total depth of boring 5.0 feet** **Groundwater not encountered** **Backfilled with cuttings 3/26/2018**			1090
10									1085
15									1080
20									

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-11

Field Tests: **Dilatancy** : R - Rapid S - Slow N - None **Plasticity** : N - Nonplastic L - Low M - Medium H - High
Toughness : L - Low M - Medium H - High **Dry Strength** : N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

H&A BORING MDH 2016 SAMPLE HA-LIB07-1-WNC3.GLB \\HALEYALDRICH.COM\SHARE\COS_COMMON\131648 UCR NORTH DISTRICT AMERICAN CAMPUS\003 PHASE 1B NORTH DISTRICT\FIELD\BORING LOGS\131648 PHASE 1B 2018.GPJ 17 Aug 18

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-12

Project	UC Riverside - North District, Linden Street at Canyon Crest Drive, Riverside, California
Client	American Campus Communities
Contractor	Cascade Drilling, Inc.

File No.	131648-003
Sheet No.	1 of 3
Start	26 March 2018
Finish	26 March 2018
Driller	Benjamin
H&A Rep.	R. Leeper
Elevation	1077.0
Datum	
Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	8	Rig Make & Model: CME
Hammer Type	Automatic Hammer	Bit Type:
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: HSA
		Hoist/Hammer: Automatic Hammer
		PID Make & Model: MiniRAE 2000

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK					CLAYEY SAND, reddish brown, fine to coarse sand, trace fine gravel, moist Corrosion Test (See Appendix B)			
									1075
5	SPT	14	3 3 4		SC	loose, brown sand 54%, fines 46%			
									1070
10	MCS	13	34 50/6"	1067.0 10.0	SM	SILTY SAND, very dense, reddish brown, fine to coarse sand, trace fine gravel, moist Direct Shear Test (See Appendix B)	119	7.8	
									1065
				1063.0 14.0		POORLY GRADED SAND WITH SILT, medium dense, light brown, fine to coarse sand, moist			
15	SPT	18	11 16 20		SP-SM	fines content 12.8% (See Appendix B)			
									1060
20									

Water Level Data						
Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-12

Field Tests:
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	MCS	18	16 23 43		SM	SILTY SAND, dense, light brown, fine to coarse sand, moist			
						Direct Shear Test (See Appendix B)			1055
25	SPT	18	13 23 28	1051.5 / 25.5	SP	POORLY GRADED SAND, dense, tan, fine to coarse sand			
				1051.0 / 26.0	SP-SM	POORLY GRADED SAND WITH SILT, very dense, brown			1050
30	MCE	18	43 43 50/3"			light brown			
						fines content 21.1% (See Appendix B)	116 121	9.3 4.9	1045
				1044.0 / 33.0	SP-SC	POORLY GRADED SAND WITH CLAY, medium dense, dark brown, fine to medium sand, moist			
35	SPT	18	4 13 20						1040
				1039.0 / 38.0	SP-SM	POORLY GRADED SAND WITH SILT, medium dense, tan, fine to medium sand, moist			
40	MCS	18	16 36 36	1036.2 / 40.8	SP	POORLY GRADED SAND, dense, brown, medium to coarse sand, moist	123	4.3	1035
				1034.0 / 43.0	SM	SILTY SAND, dense, brown, fine to coarse sand, trace quartz and granitic gravel			
45	SPT	18	18 28 26			sand 81%, fines 19%			
						fine to medium sand			1030

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
50	MCS	18	19 26 54	1025.5 51.5	SP-SM	POORLY GRADED SAND WITH SILT AND GRAVEL, as above, very dense, fine to coarse sand	117	12.6	
						Total depth of boring 51.5 feet **Groundwater not encountered** **Backfilled with cuttings 3/26/2018**			1025
55									1020
60									1015
65									1010
70									1005
75									1000

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-13

Project	UC Riverside - North District, Linden Street at Canyon Crest Drive, Riverside, California
Client	American Campus Communities
Contractor	Cascade Drilling, Inc.

File No.	131648-003
Sheet No.	1 of 1
Start	26 March 2018
Finish	26 March 2018
Driller	Benjamin
H&A Rep.	R. Leeper
Elevation	1087.0
Datum	
Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	4	Rig Make & Model: CME
Hammer Type	N/A	Bit Type:
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: Hand Auger
		Hoist/Hammer: N/A
		PID Make & Model: MiniRAE 2000

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0					SM	SILTY SAND, reddish brown, fine to coarse sand, moist			
									1085
				1084.5 2.5		**Total depth of boring 2.5 feet (Refusal)** **Refusal encountered at three attempted locations** **Groundwater not encountered** **Backfilled with cuttings 3/26/2018**			
5									
									1080
10									
									1075
15									
									1070
20									

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-13

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-14

Project	UC Riverside - North District, Linden Street at Canyon Crest Drive, Riverside, California
Client	American Campus Communities
Contractor	Cascade Drilling, Inc.

File No.	131648-003
Sheet No.	1 of 2
Start	26 March 2018
Finish	26 March 2018
Driller	Benjamin
H&A Rep.	R. Leeper
Elevation	1083.0
Datum	
Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	8	Rig Make & Model: CME
Hammer Type	Automatic Hammer	Bit Type:
		Drill Mud: None
Hammer Weight (lb)	140	Casing: HSA
Hammer Fall (in.)	30	Hoist/Hammer: Automatic Hammer
		PID Make & Model: MiniRAE 2000

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK				SM	SILTY SAND, fine to coarse sand, moist			
									1080
5	SPT	18	3 4 5			loose, brown gravel 1%, sand 73%, fines 26%			
				1075.0 8.0	SP	POORLY GRADED SAND WITH GRAVEL, medium dense, tan, moist			1075
10	MCS	18	7 9 12						
				1072.0 11.0	SM	SILTY SAND, medium dense, reddish brown, fine to coarse sand Corrosion Test (See Appendix B)	108	3.6	
									1070
15	SPT	18	7 10 10						
									1065
20									

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-14

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	MCS	18	8 13 18		SM	SILTY SAND, as above			
				1061.7 21.3		Pocket Penetrometer = 3.25 tons per square foot	117	7.2	
					SP-SM	POORLY GRADED SAND WITH SILT, medium dense, light brown, fine to coarse sand, moist			1060
25	SPT	18	4 7 11			brown			
				1056.7 26.3	SP	POORLY GRADED SAND, medium dense, brown, fine to coarse, very moist			1055
				1054.0 29.0	SP-SM	POORLY GRADED SAND WITH SILT, very dense, brown, fine to coarse sand			
30	MCS	18	26 46 50/4"	1051.5 31.5			120	13.3	
						Total depth of boring 31.5 feet **Groundwater not encountered** **Backfilled with cuttings 3/26/2018**			1050
35									1045
40									1040
45									1035

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

Boring No. HA-15

Project	UC Riverside - North District, Linden Street at Canyon Crest Drive, Riverside, California
Client	American Campus Communities
Contractor	Cascade Drilling, Inc.

File No.	131648-003
Sheet No.	1 of 3
Start	26 March 2018
Finish	26 March 2018
Driller	Benjamin
H&A Rep.	R. Leeper
Elevation	1079.0
Datum	
Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	8	Rig Make & Model: CME
Hammer Type	Automatic Hammer	Bit Type:
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: HSA
		Hoist/Hammer: Automatic Hammer
		PID Make & Model: MiniRAE 2000

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK				SM	SILTY SAND, brown, fine to coarse sand, some fine gravel, dry, fines content 32.0% (See Appendix B)			1075
5	SPT	17	6 10 11	1074.0 5.0	SC	CLAYEY SAND, medium dense, reddish brown, fine to coarse sand, moist			
				1071.0 8.0	SM	SILTY SAND, medium dense, yellowish brown, fine to coarse sand, moist			1070
10	MCS	18	9 22 37			Direct Shear Test (See Appendix B)	117	6.9	
				1066.0 13.0	SC	CLAYEY SAND, medium dense, brown, fine to medium sand, moist			1065
15	SPT	17	17 25 29						
				1062.7 16.3	SP	POORLY GRADED SAND, medium dense, fine to medium sand, dry			1060
20				1059.0					

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sampler Type Legend

SPT - Standard Penetration Test Sampler (1.38-in ID)
MCS - Modified California Sampler (2.43-in ID)
SHELBY TUBE - Thin-walled Sampler (3-in ID)
GRAB - Grab Sample

Summary

Overburden (ft)
Rock Cored (ft)
Samples

Boring No. HA-15

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
20	MCS	18	33 50/6"	20.0	SP-SM	POORLY GRADED SAND WITH SILT, dense, brown, moist			
						Pocket Penetrometer = 4.25 tons per square foot	111	4.2	
						loose, tan, dry			1055
25	SPT	18	7 19 19	1053.0 26.0	SC	CLAYEY SAND, loose, dark brown, fine to medium sand, moist			
				1050.0 29.0	SP	POORLY GRADED SAND, dense, brown, fine to coarse sand, moist			1050
30	MCE	18	21 30 50			Pocket Penetrometer = >4.5 tons per square foot with fine granitic gravel	113	2.1	
				1046.0 33.0	SC	CLAYEY SAND, medium dense, brown, fine to coarse sand, trace granitic gravel, moist			1045
35	SPT	18	13 19 23			fines content 19.8% (See Appendix B)			
									1040
40	MCS	18	26 50/6"			very dense	119	6.5	
									1035
45	SPT	18	11 26 36						
									1030

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

HALEY ALDRICH

Boring No. HA-15
File No. 131648-003
Sheet No. 3 of 3

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
50	MCS	18	16 30 50	1027.5 51.5	SC	CLAYEY SAND, very dense, reddish brown, fine to coarse sand, moist	121	11.3	
						Total depth of boring 51.5 feet **Groundwater not encountered** **Backfilled with cuttings 3/26/2018**			
55									1025
60									1020
65									1015
70									1010
75									1005
									1000

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

GEOTECHNICAL TEST BORING REPORT

Boring No. HA-16

Project	UC Riverside - North District, Linden Street at Canyon Crest Drive, Riverside, California	File No.	131648-003
Client	American Campus Communities	Sheet No.	1 of 1
Contractor	Cascade Drilling, Inc.	Start	26 March 2018
		Finish	26 March 2018
		Driller	Benjamin
		H&A Rep.	R. Leeper
		Elevation	1088.0
		Datum	
		Location	See Plan

		Drilling Equipment and Procedures
Boring Diameter (in.)	4	Rig Make & Model: CME
Hammer Type	N/A	Bit Type:
Hammer Weight (lb)	140	Drill Mud: None
Hammer Fall (in.)	30	Casing: Hand Auger
		Hoist/Hammer: N/A
		PID Make & Model: MiniRAE 2000

Depth (ft)	Sample Type	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Elevation (ft)
0	BULK				SM	SILTY SAND, reddish brown, fine to coarse sand, dry, some roots and organics R-Value = 75 (See Appendix B)			1085
5				1083.0 5.0		**Total depth of boring 5.0 feet** **Groundwater not encountered** **Backfilled with cuttings 3/26/2018**			1080
10									1075
15									1070
20									

Water Level Data						Sampler Type Legend	Summary
Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water	SPT - Standard Penetration Test Sampler (1.38-in ID) MCS - Modified California Sampler (2.43-in ID) SHELBY TUBE - Thin-walled Sampler (3-in ID) GRAB - Grab Sample	Overburden (ft) Rock Cored (ft) Samples

Boring No. HA-16

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

APPENDIX F

Previous Cone Penetration Test Logs

GREGG

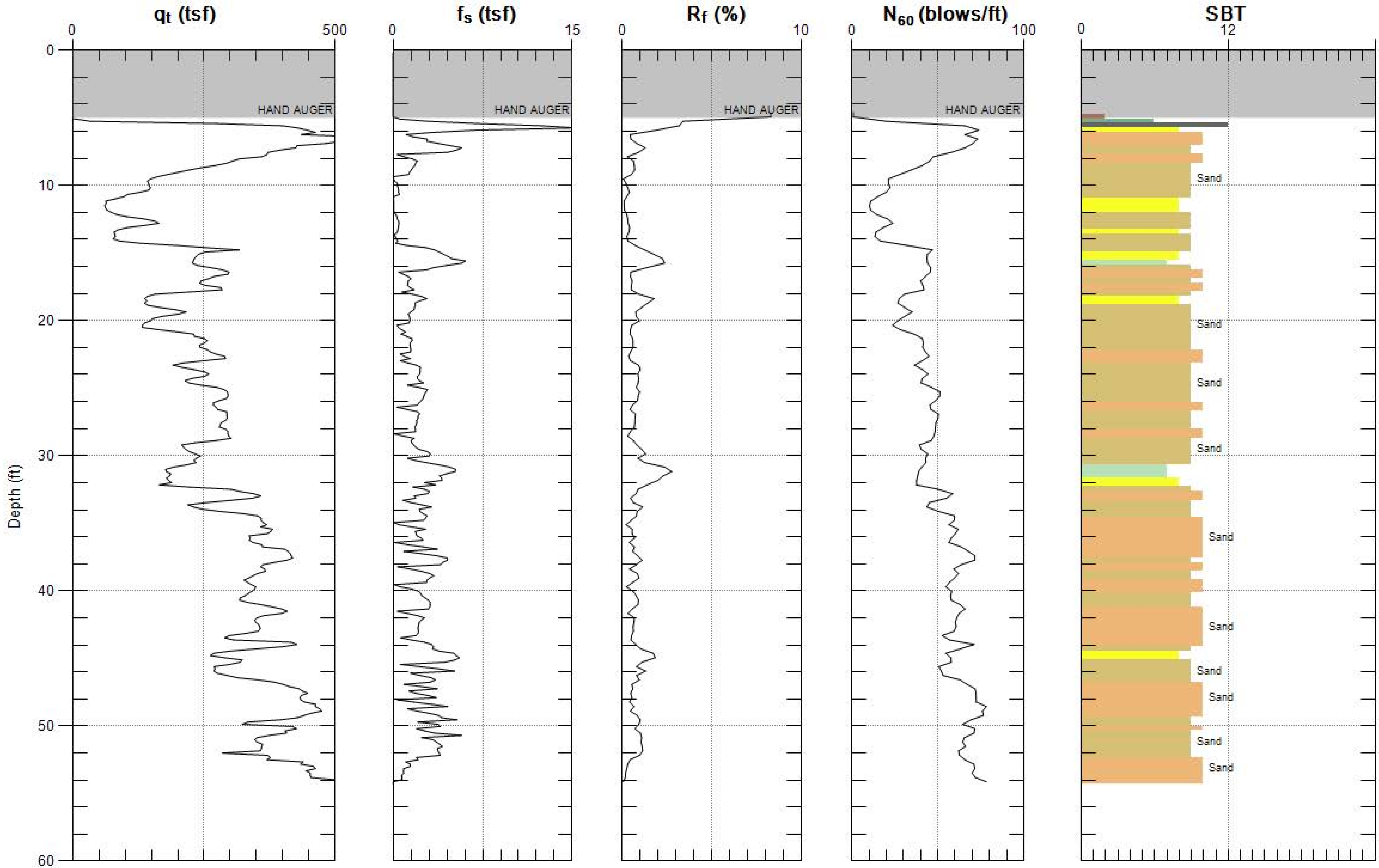
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-01

Engineer: K.NEIL

Date: 3/30/17 09:13



Max. Depth: 54.298 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

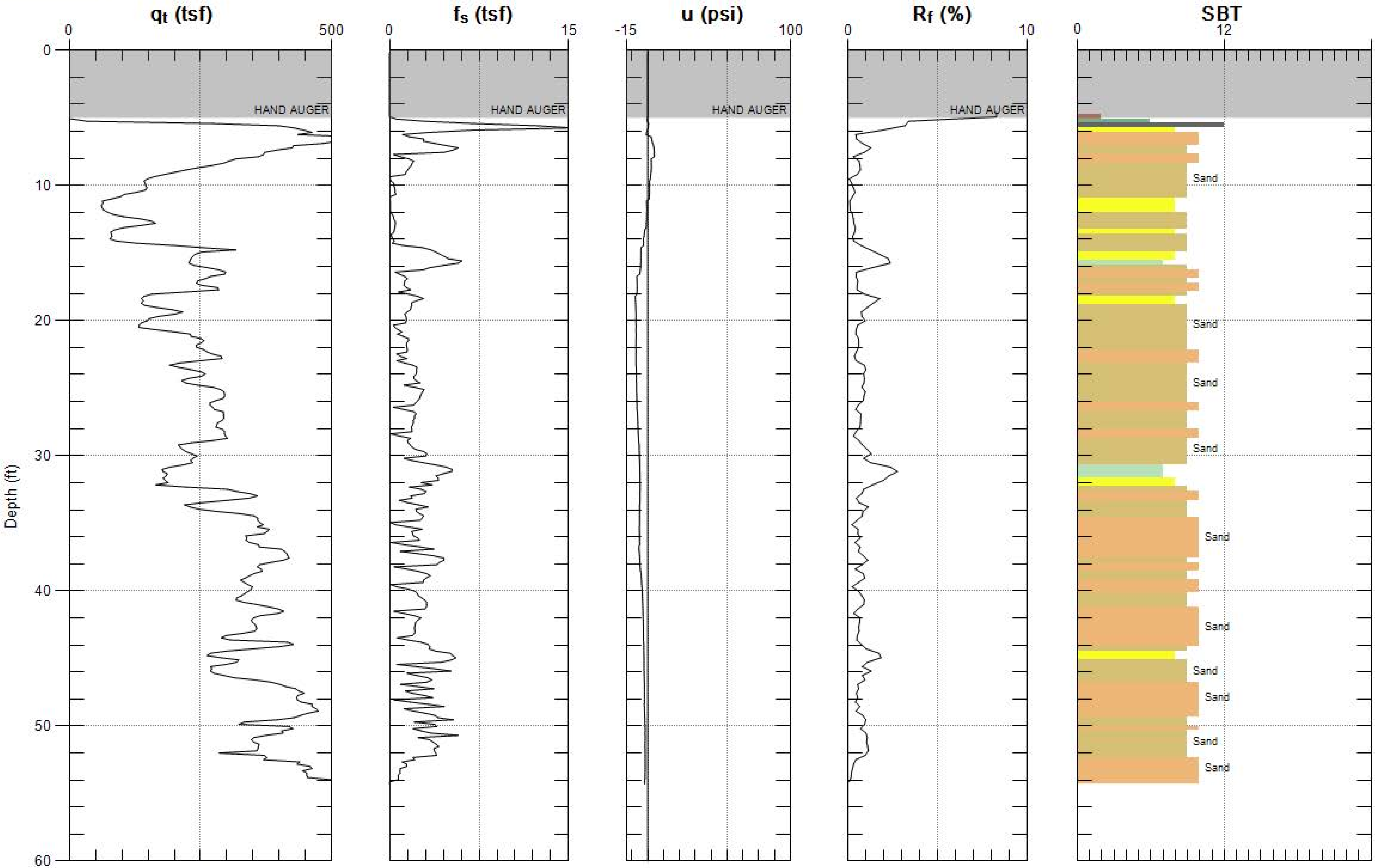
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-01

Engineer: K.NEIL

Date: 3/30/17 09:13



Max. Depth: 54.298 (ft)
Avg. Interval: 0.328 (ft)

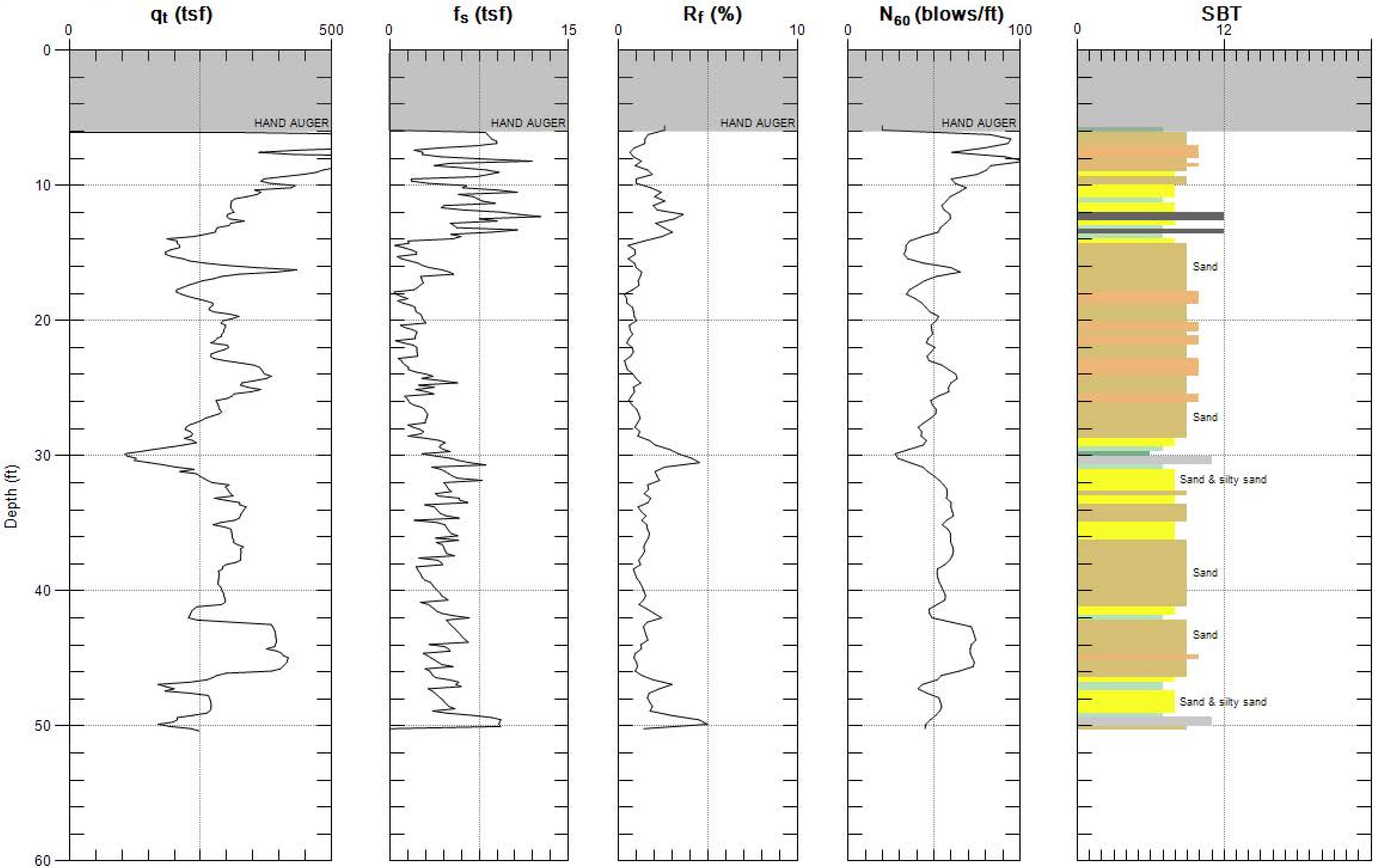
SBT: Soil Behavior Type (Robertson 1990)

GREGG

HALEY & ALDRICH

Site: UC RIVERSIDE
Sounding: CPT-02

Engineer: K.NEIL
Date: 3/30/17 10:48



Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

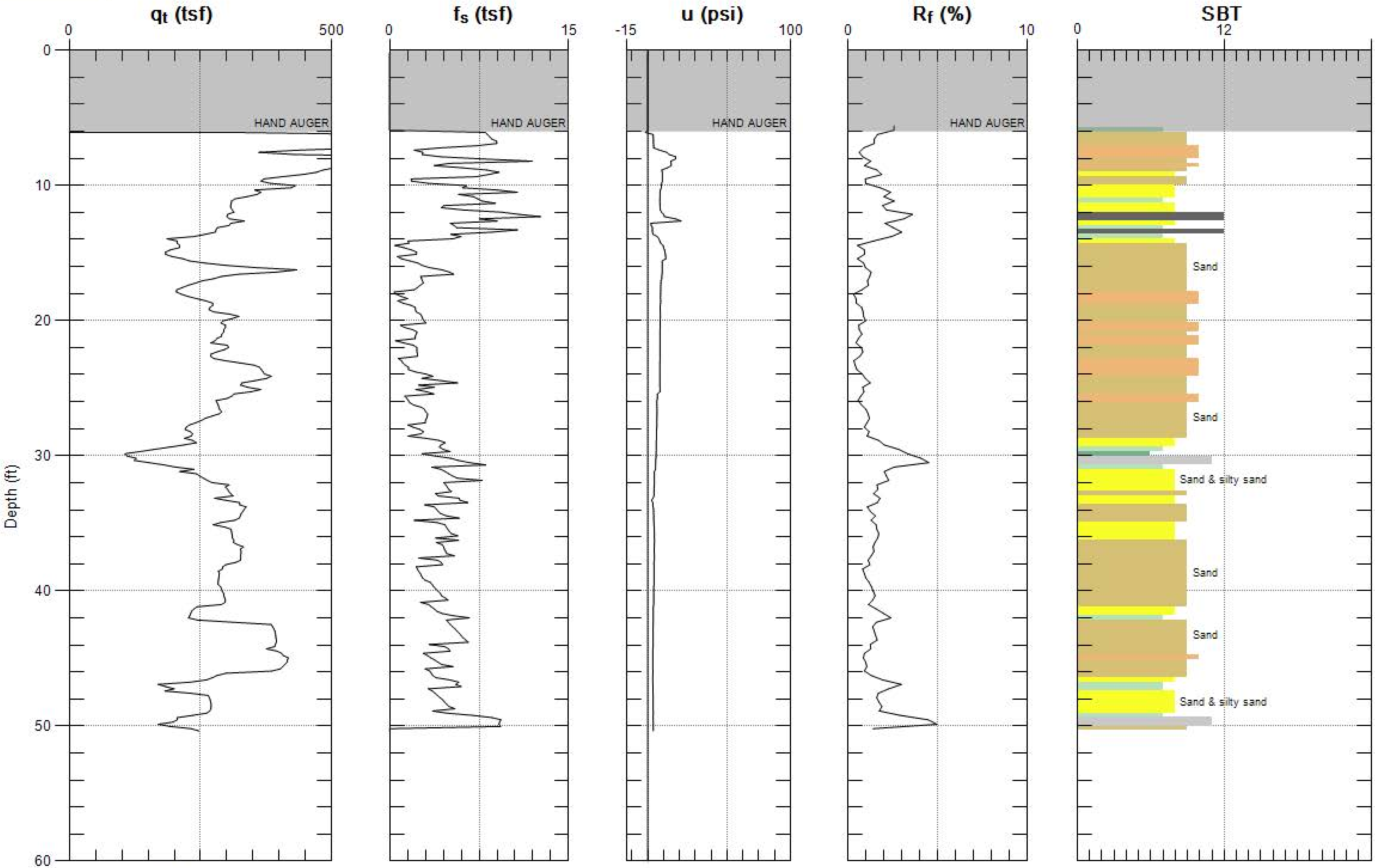
SBT: Soil Behavior Type (Robertson 1990)

GREGG

HALEY & ALDRICH

Site: UC RIVERSIDE
Sounding: CPT-02

Engineer: K.NEIL
Date: 3/30/17 10:48



Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

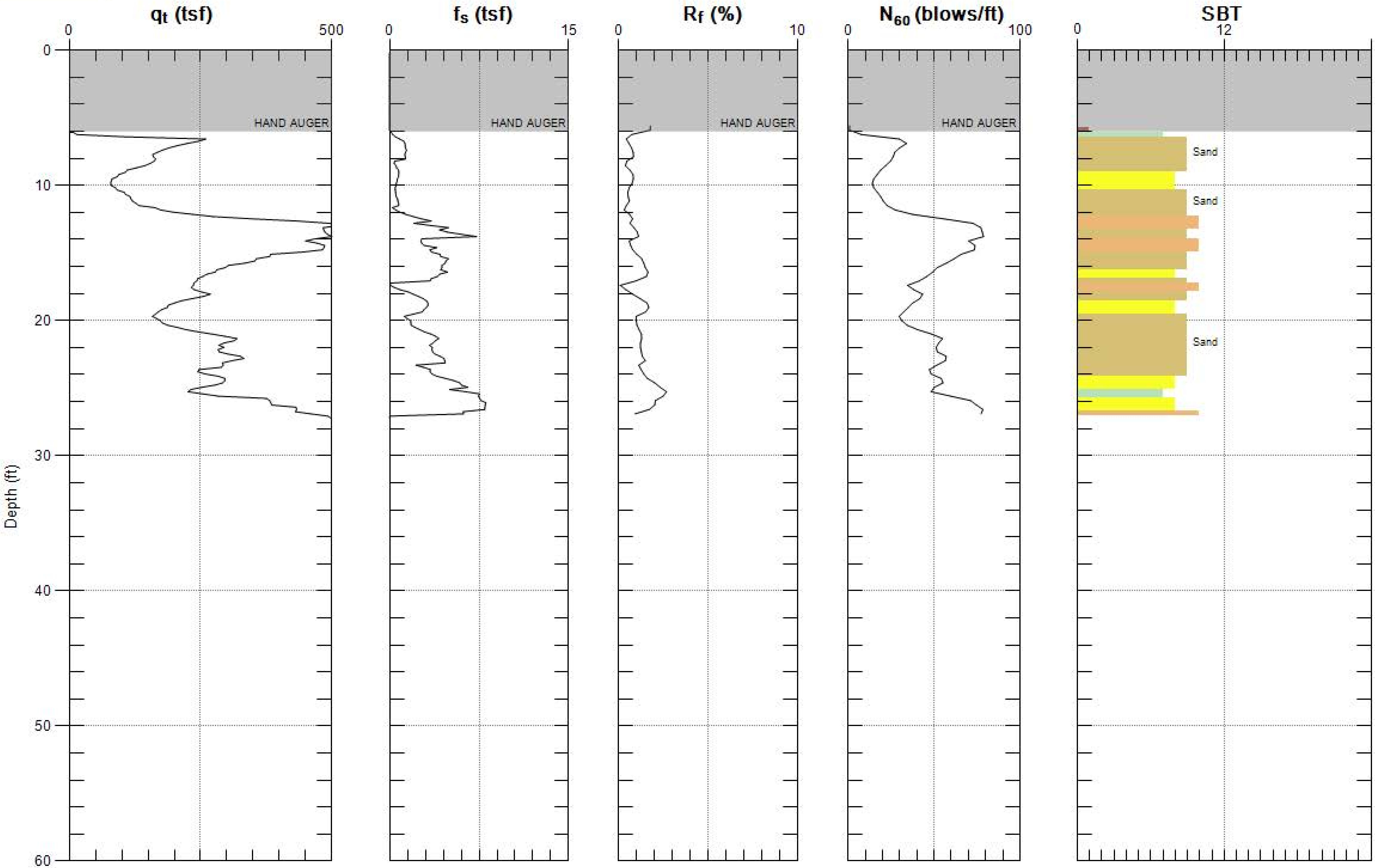
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-03

Engineer: K.NEIL

Date: 3/30/17 01:39



Max. Depth: 27.231 (ft)
Avg. Interval: 0.328 (ft)

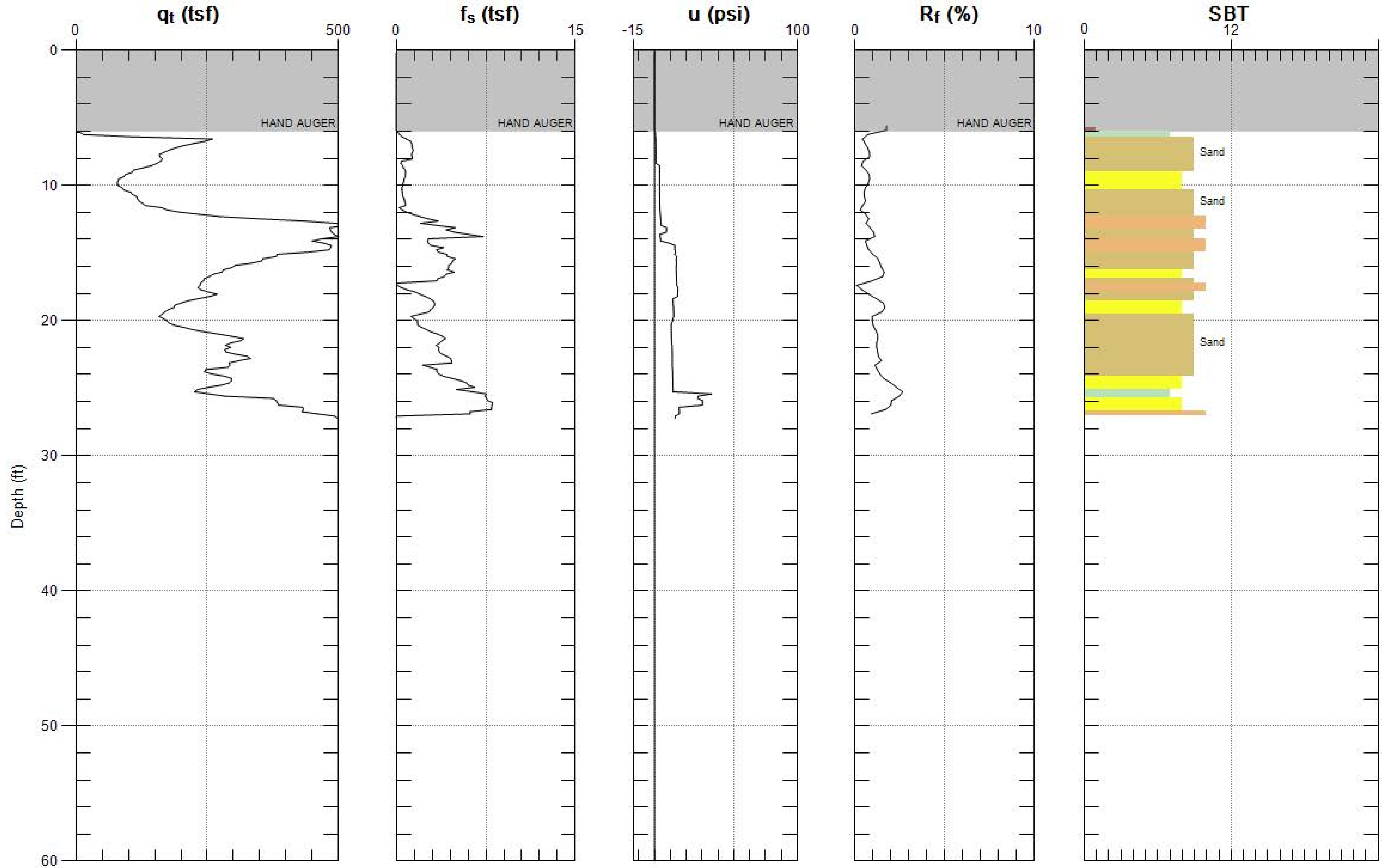
SBT: Soil Behavior Type (Robertson 1990)

GREGG

HALEY & ALDRICH

Site: UC RIVERSIDE
Sounding: CPT-03

Engineer: K.NEIL
Date: 3/30/17 01:39



Max. Depth: 27.231 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

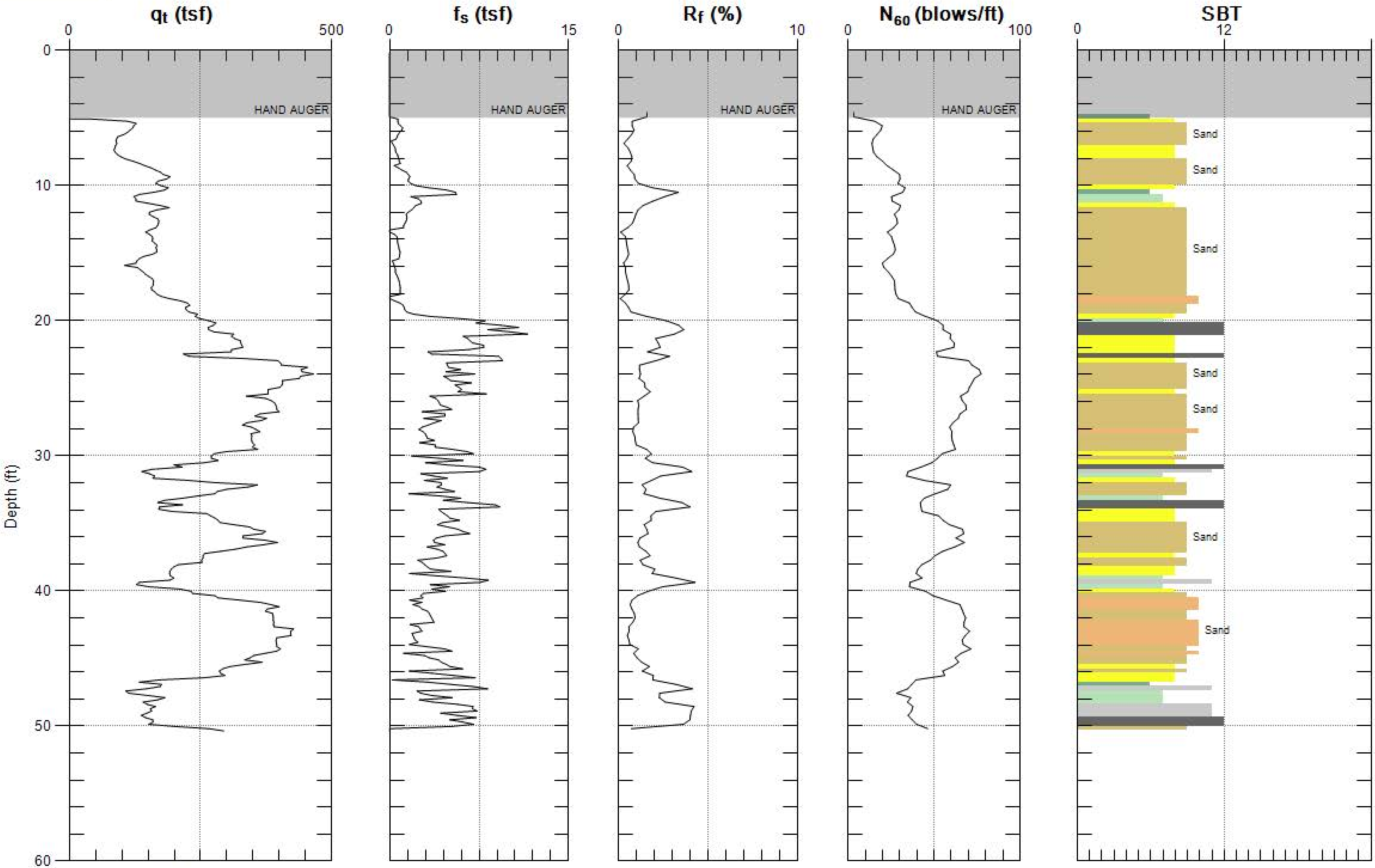
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-04

Engineer: K.NEIL

Date: 3/30/17 12:18



Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

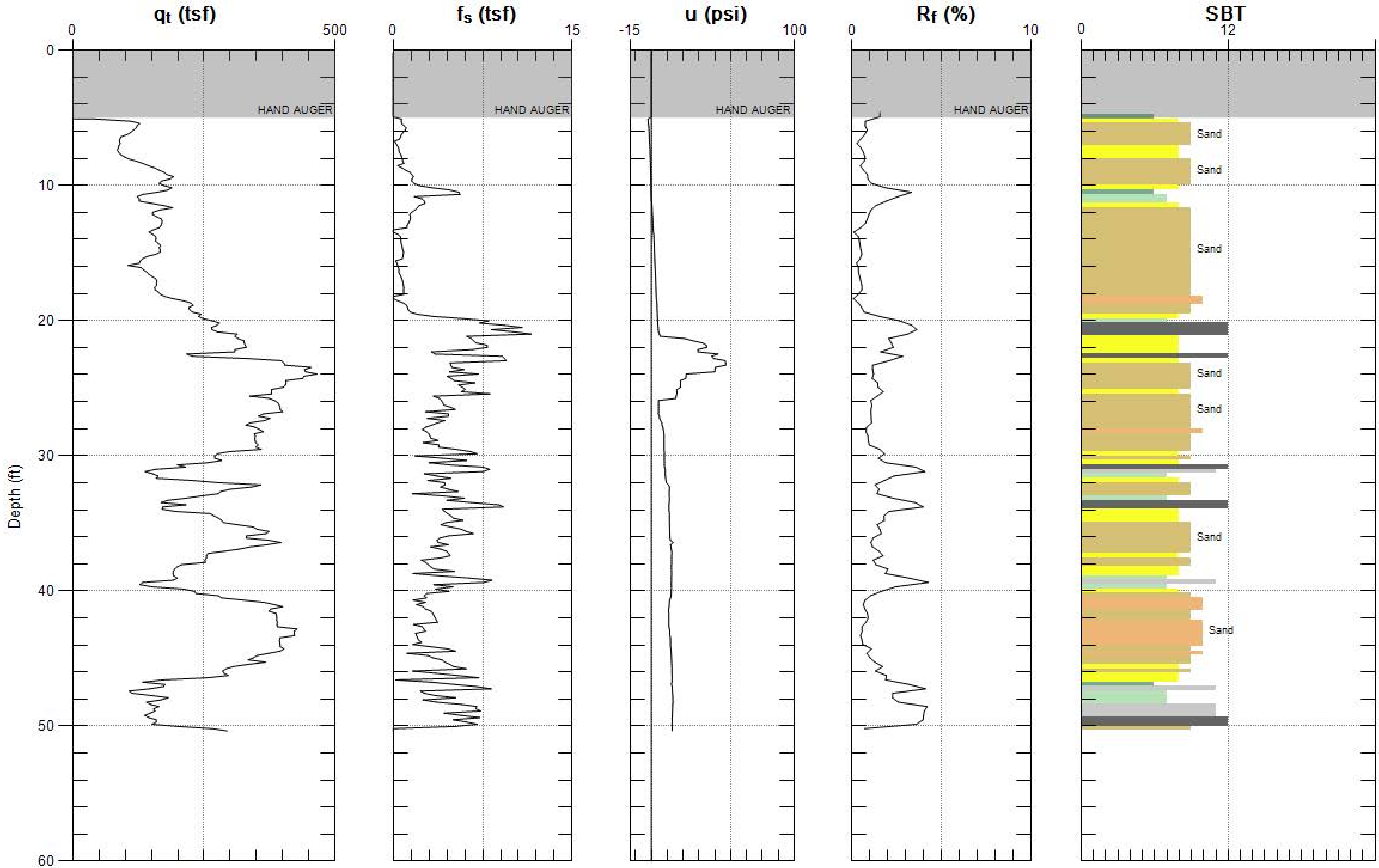
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-04

Engineer: K.NEIL

Date: 3/30/17 12:18

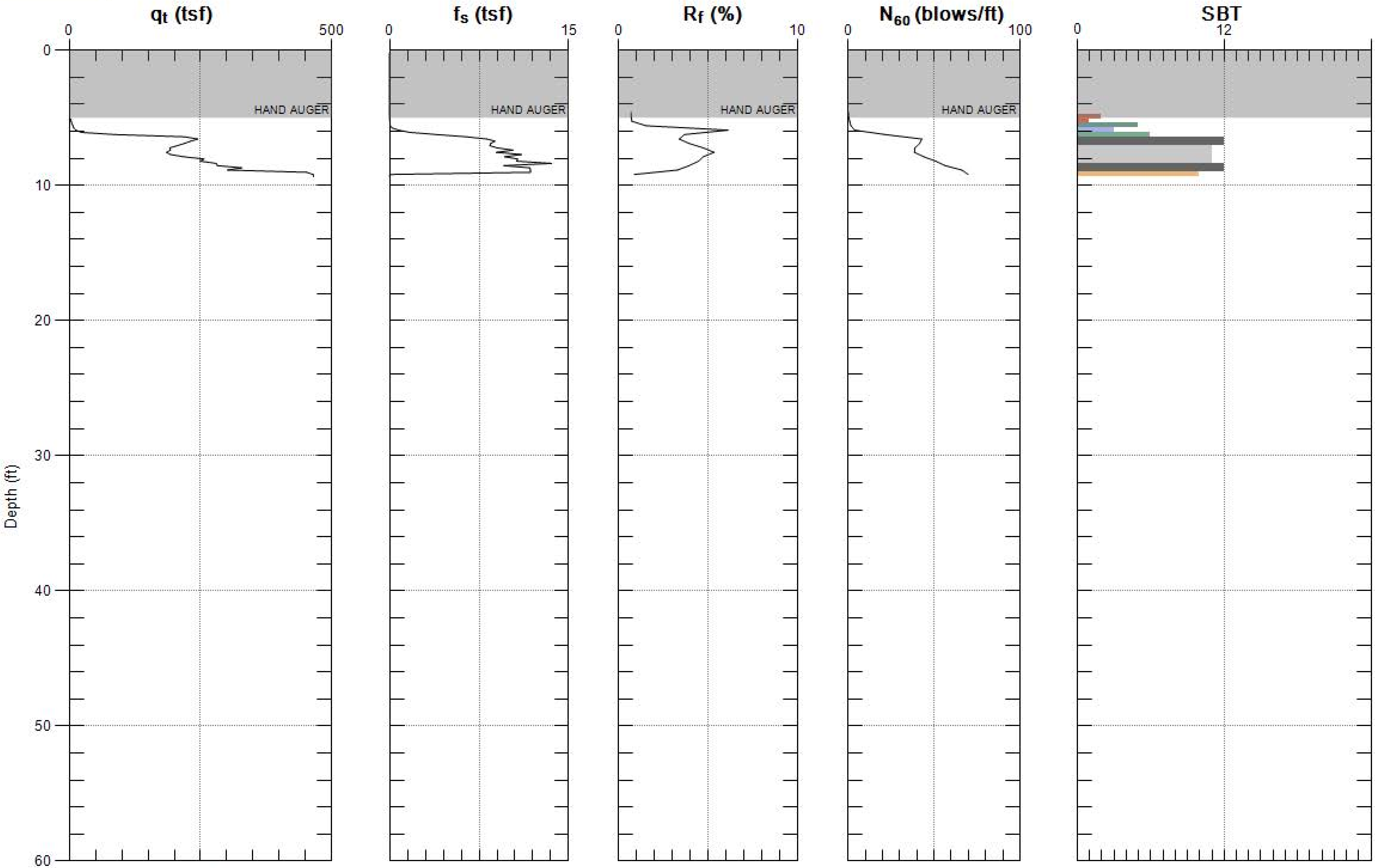


Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

HALEY & ALDRICH

Site: UC RIVERSIDE
Engineer: K.NEIL
Sounding: CPT-05
Date: 3/31/17 02:09



Max. Depth: 9.350 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

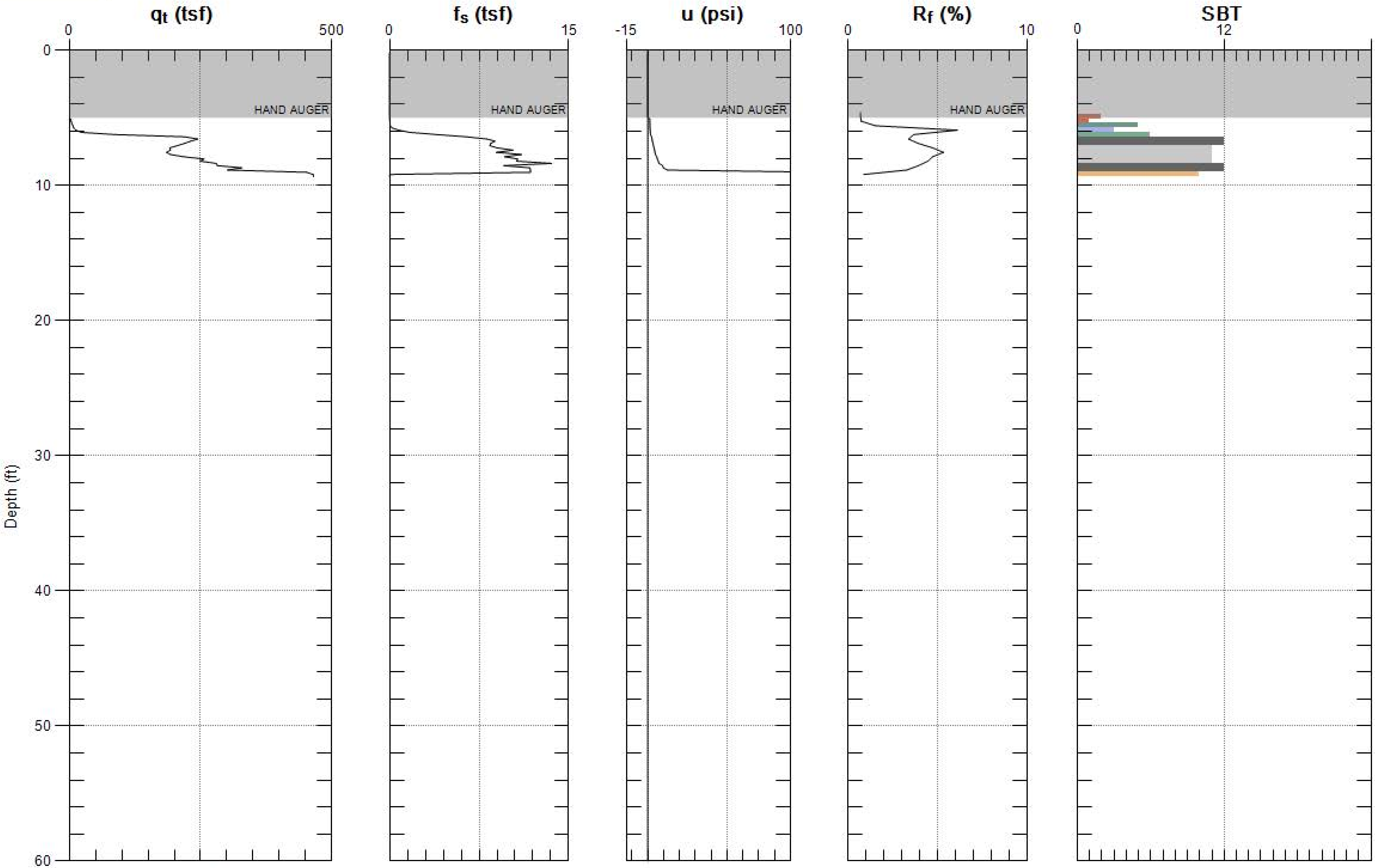
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-05

Engineer: K.NEIL

Date: 3/31/17 02:09



Max. Depth: 9.350 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

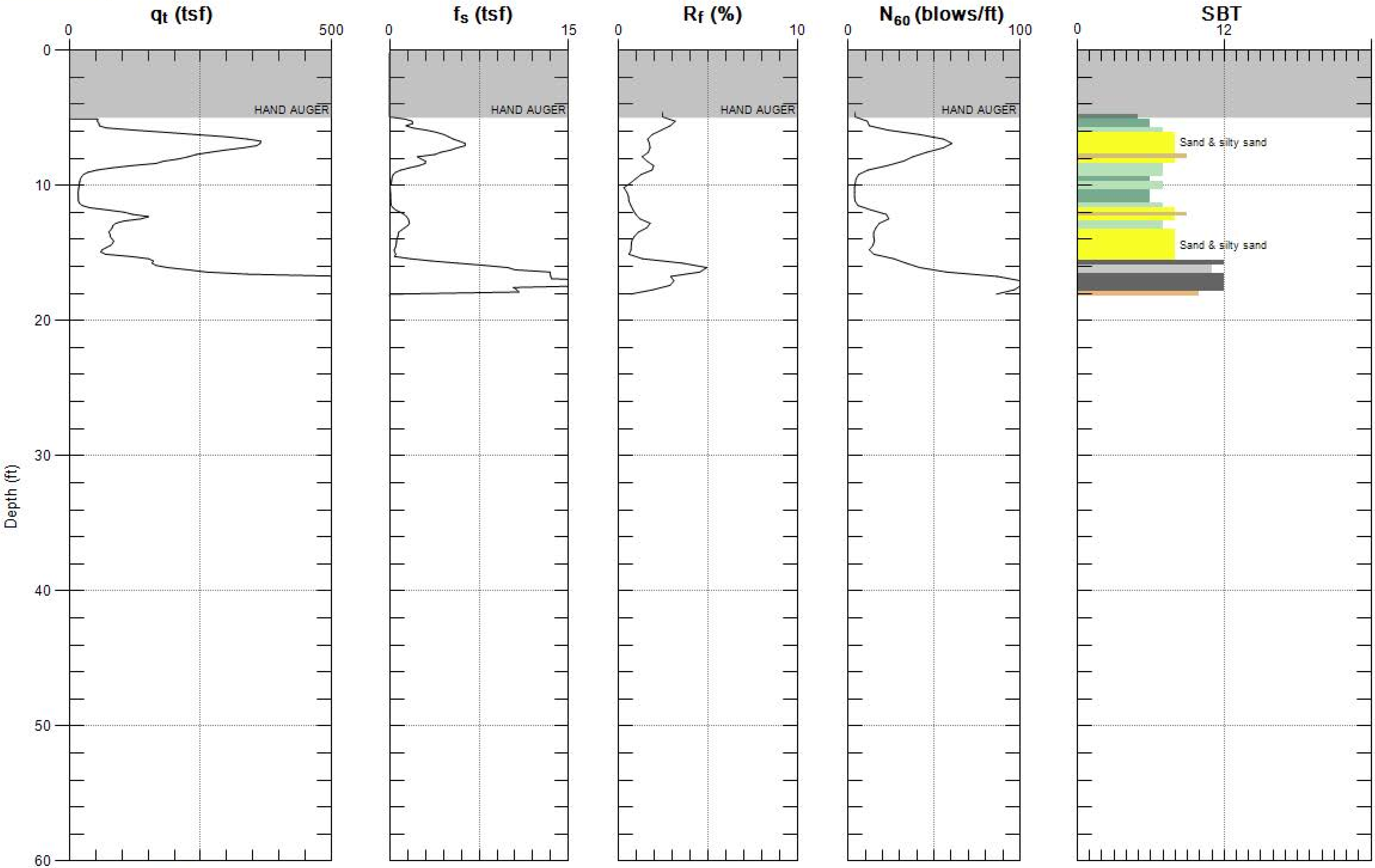
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-06

Engineer: K.NEIL

Date: 3/30/17 03:03



Max. Depth: 18.209 (ft)
Avg. Interval: 0.328 (ft)

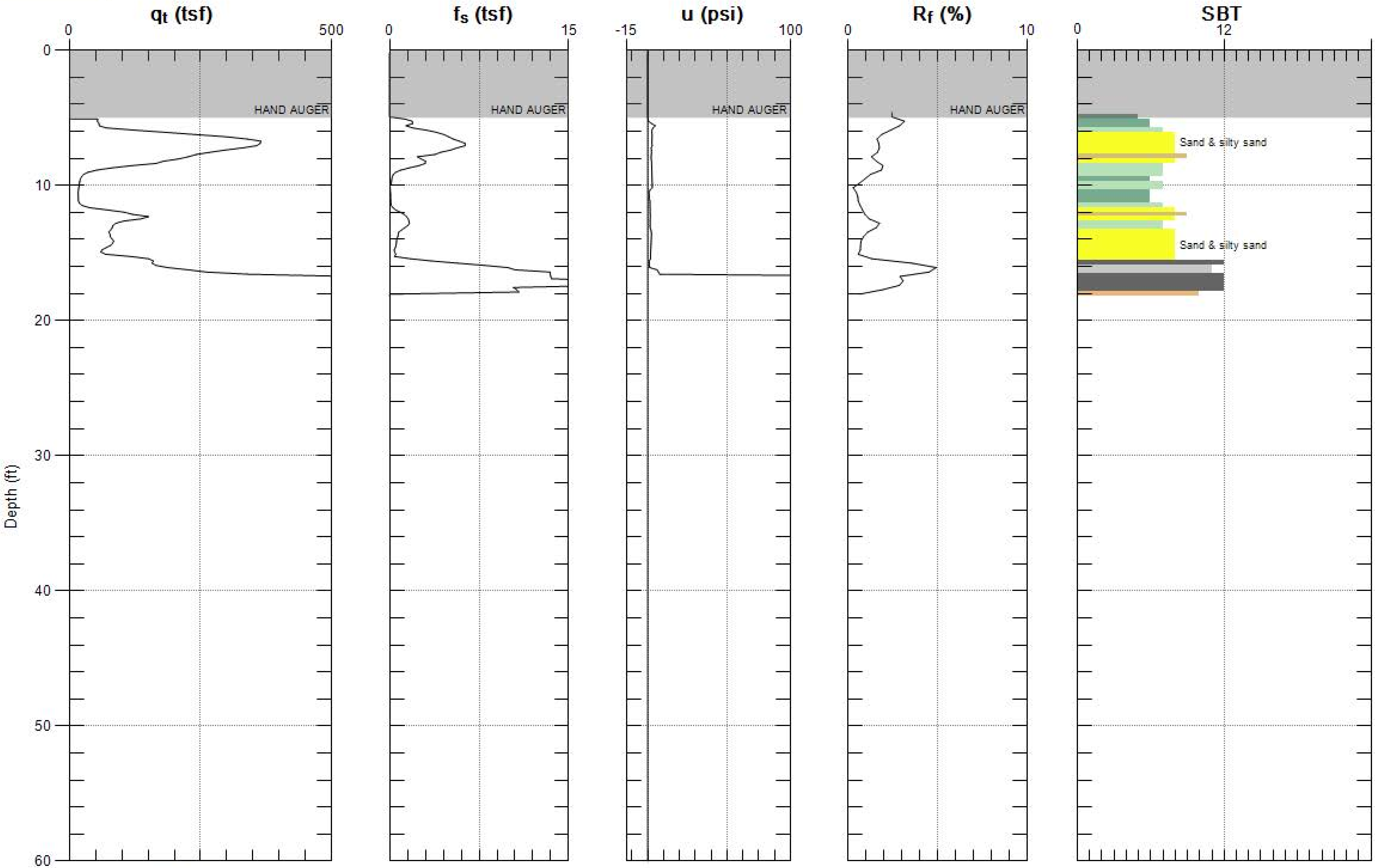
SBT: Soil Behavior Type (Robertson 1990)

GREGG

HALEY & ALDRICH

Site: UC RIVERSIDE
Sounding: CPT-06

Engineer: K.NEIL
Date: 3/30/17 03:03



Max. Depth: 18.209 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

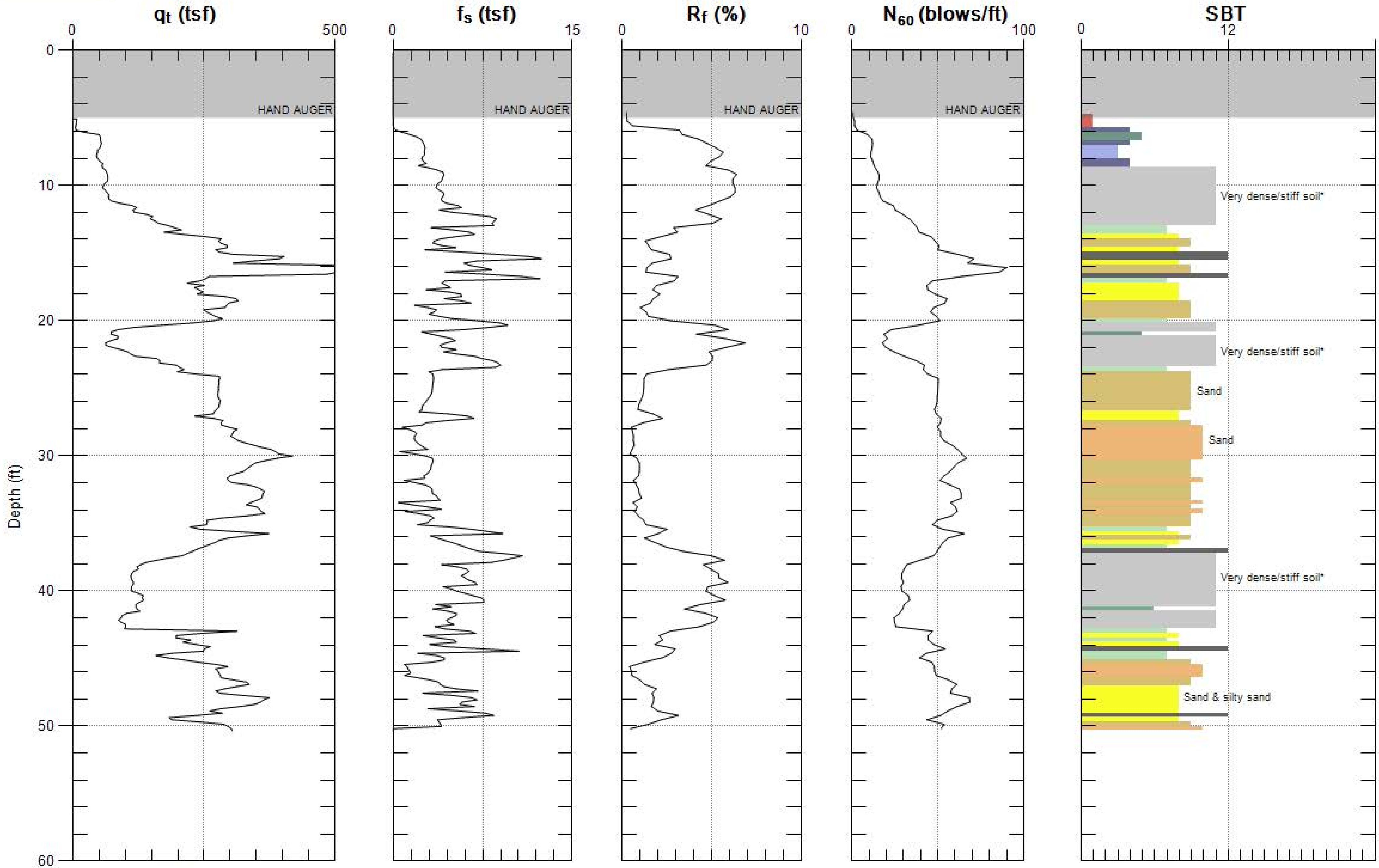
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-07

Engineer: K.NEIL

Date: 3/31/17 12:55



Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

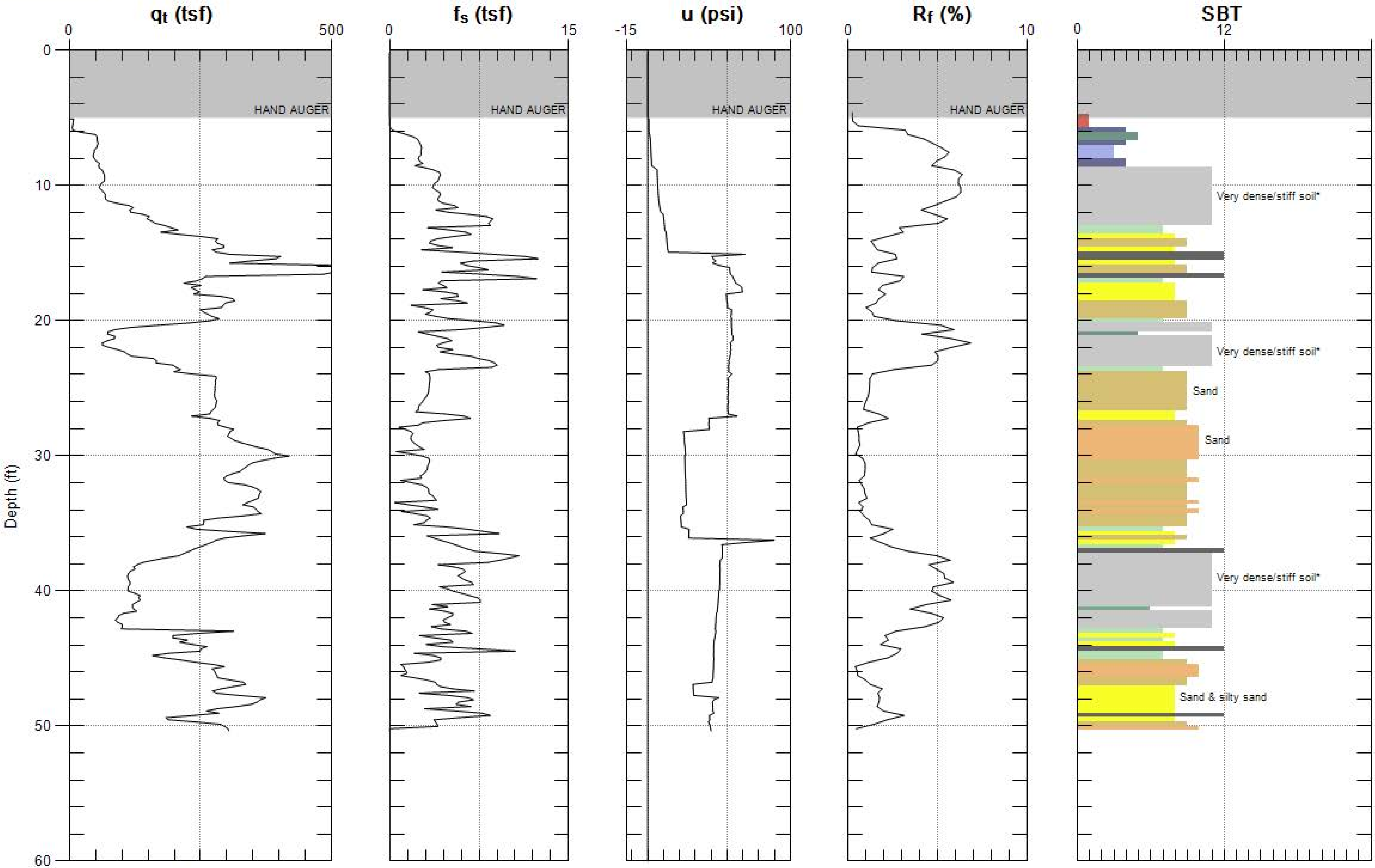
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-07

Engineer: K.NEIL

Date: 3/31/17 12:55



Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

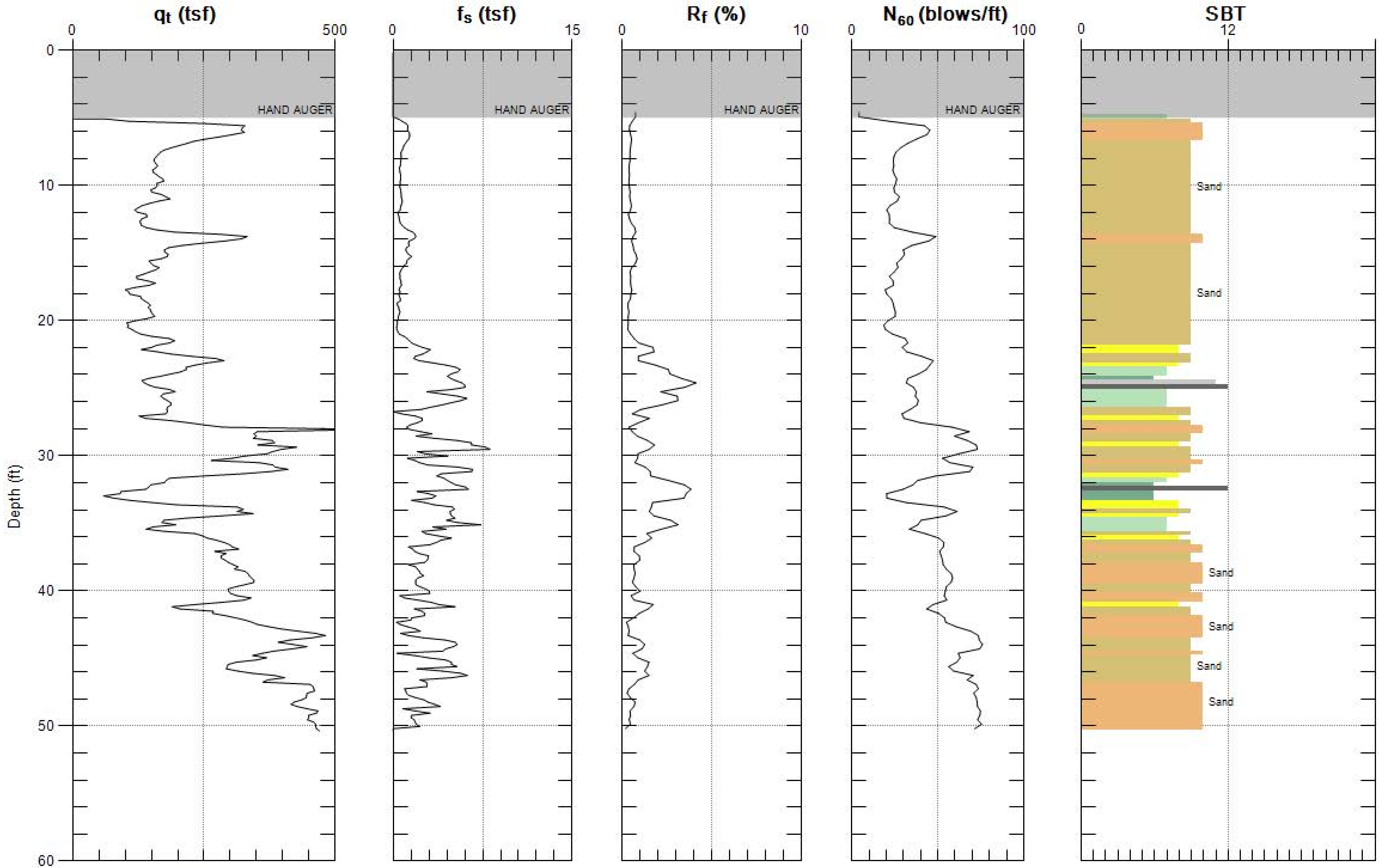
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-08

Engineer: K.NEIL

Date: 3/31/17 08:18



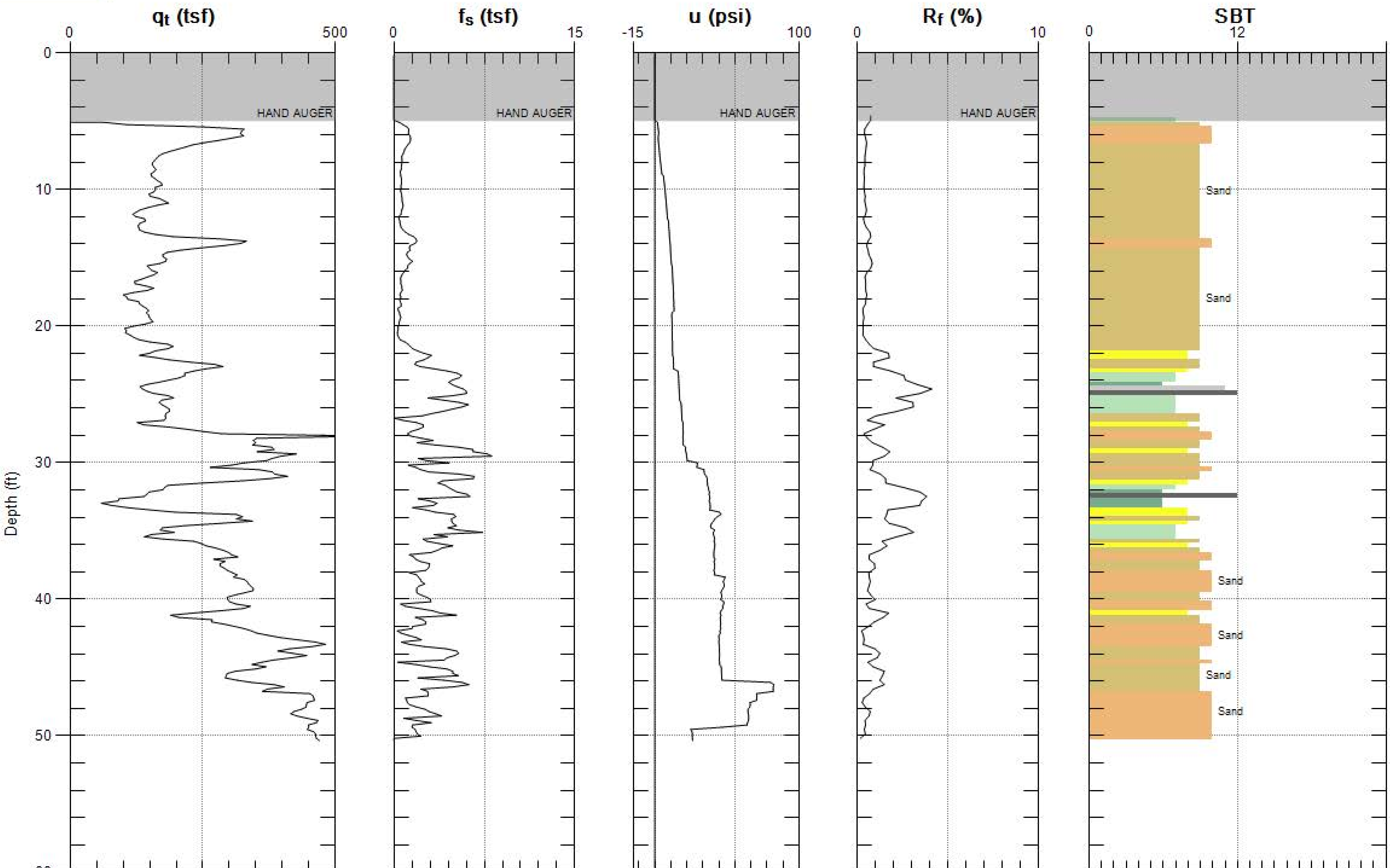
Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG **HALEY & ALDRICH**

Site: UC RIVERSIDE
Sounding: CPT-08

Engineer: K.NEIL
Date: 3/31/17 08:18



Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

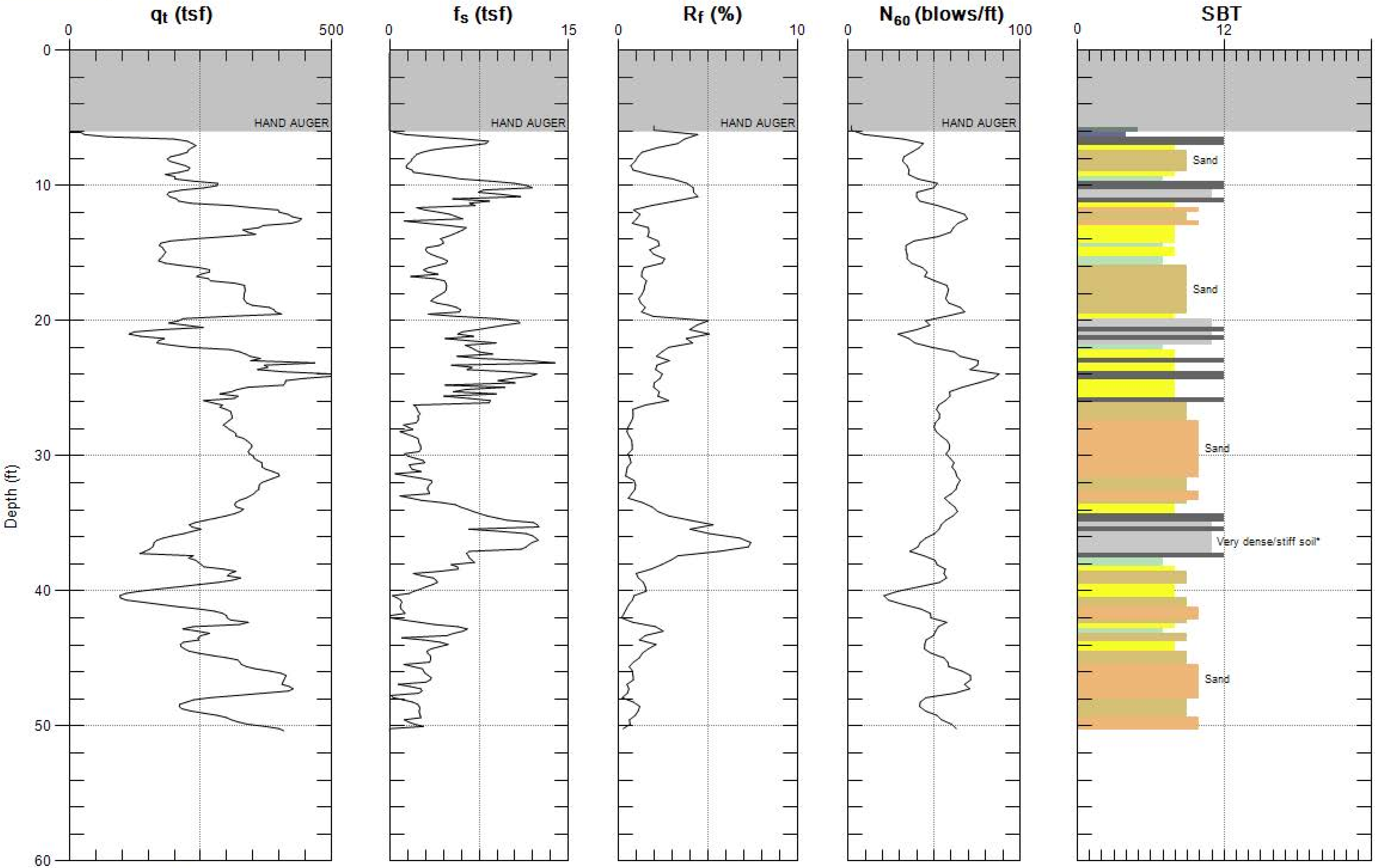
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-09

Engineer: K.NEIL

Date: 3/31/17 10:36



Max. Depth: 50.361 (ft)

Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

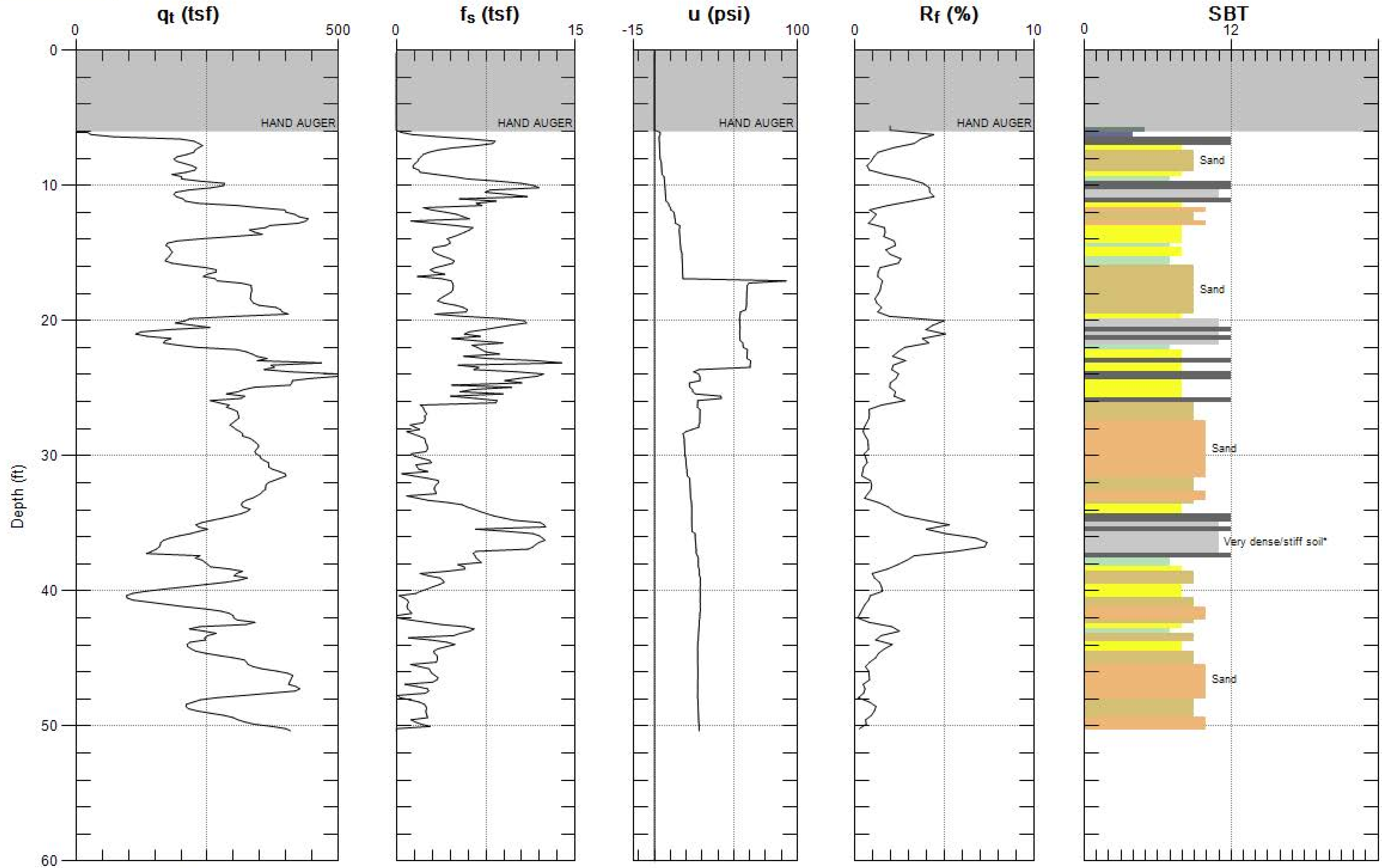
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-09

Engineer: K.NEIL

Date: 3/31/17 10:36



Max. Depth: 50.361 (ft)

Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

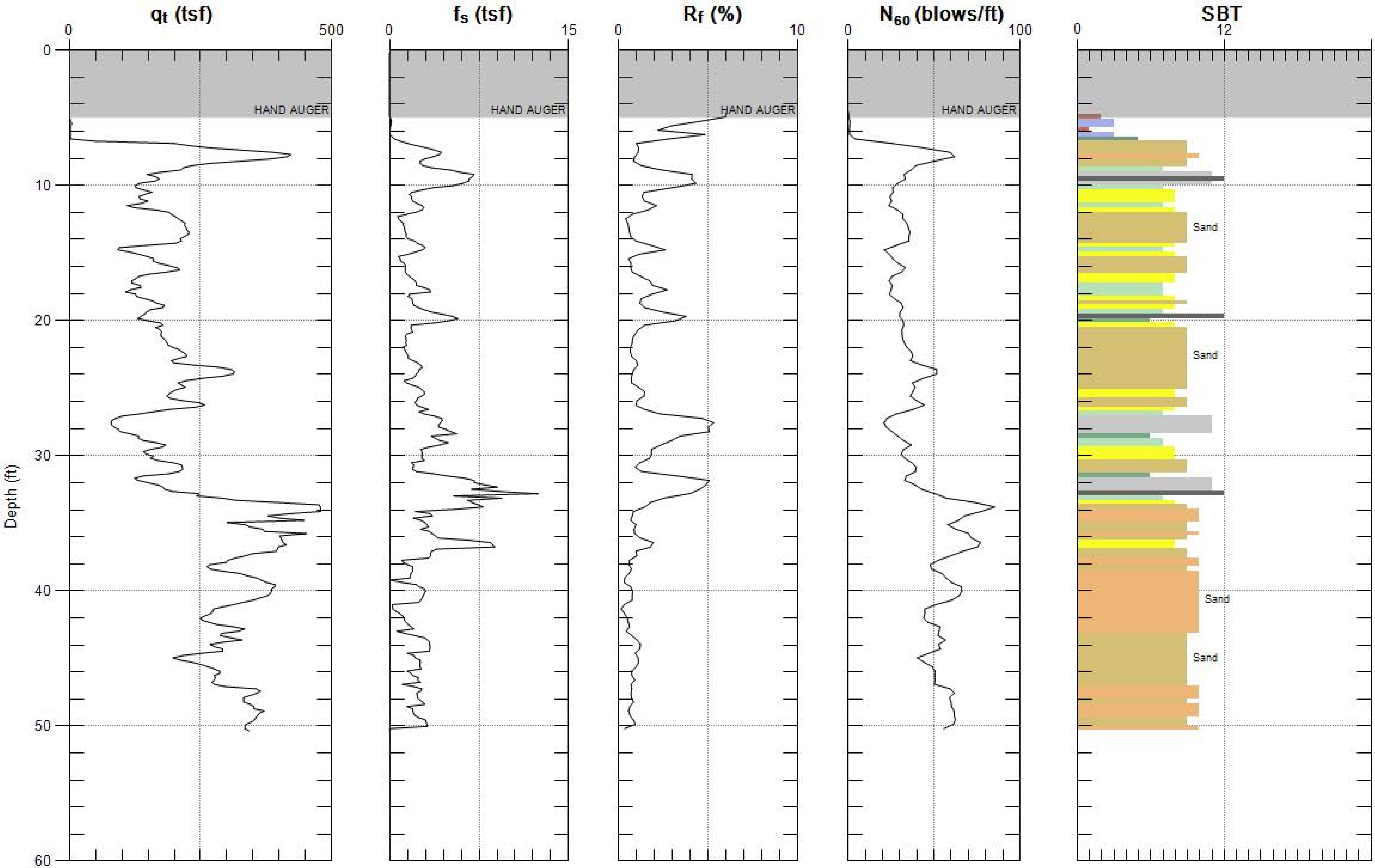
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-10

Engineer: K.NEIL

Date: 3/31/17 09:20



Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

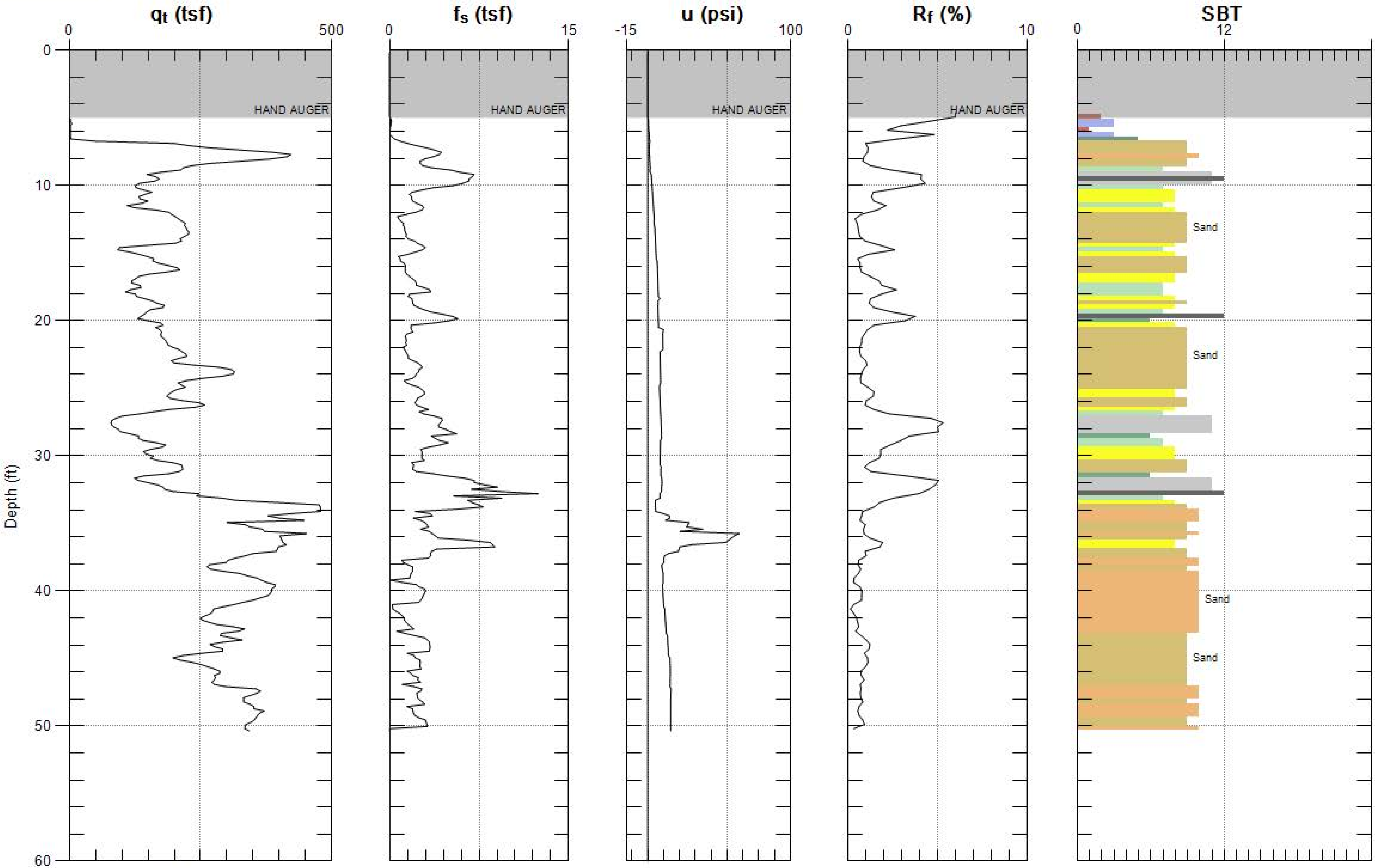
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-10

Engineer: K.NEIL

Date: 3/31/17 09:20



Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

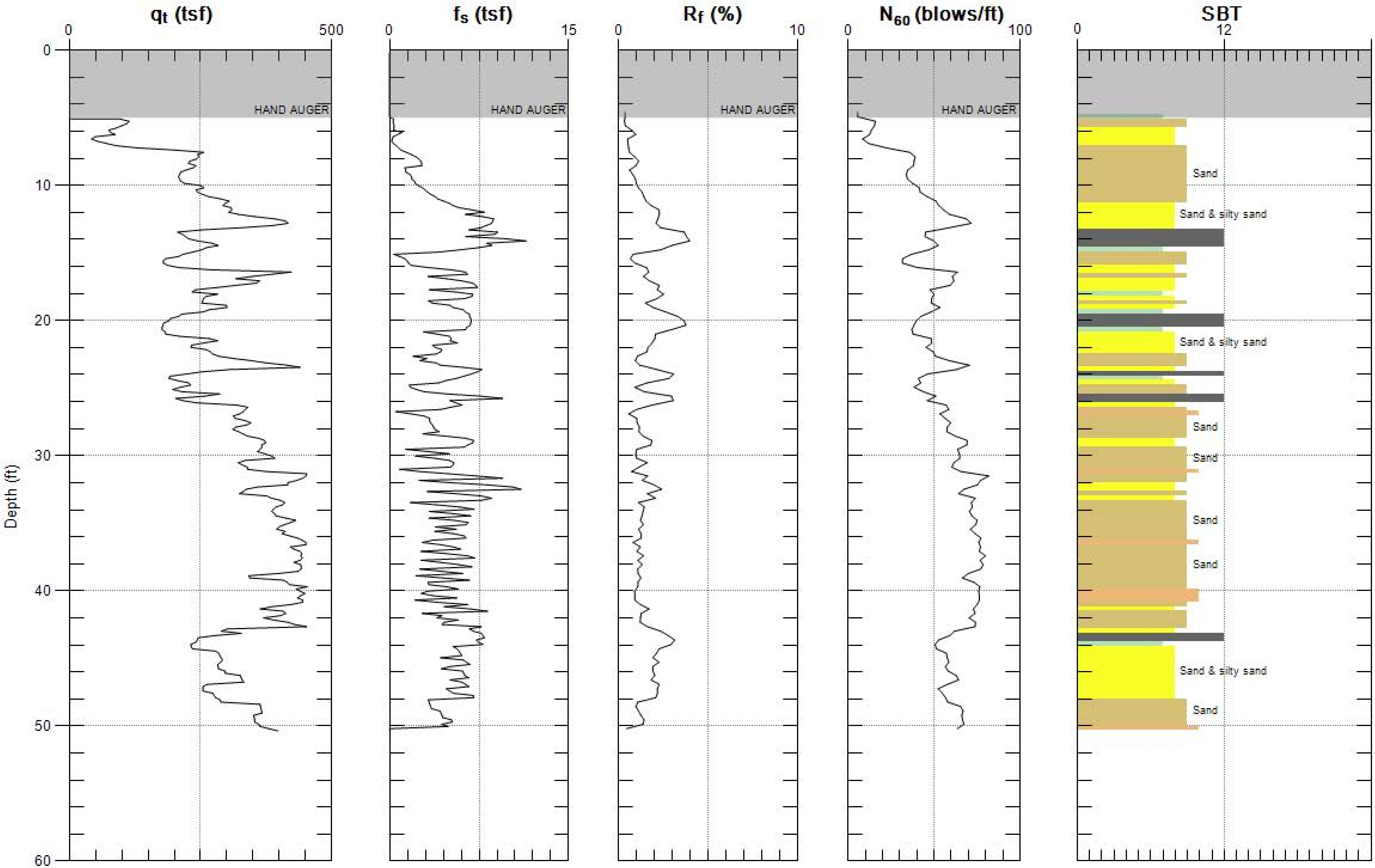
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-11

Engineer: K.NEIL

Date: 3/31/17 03:25



Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

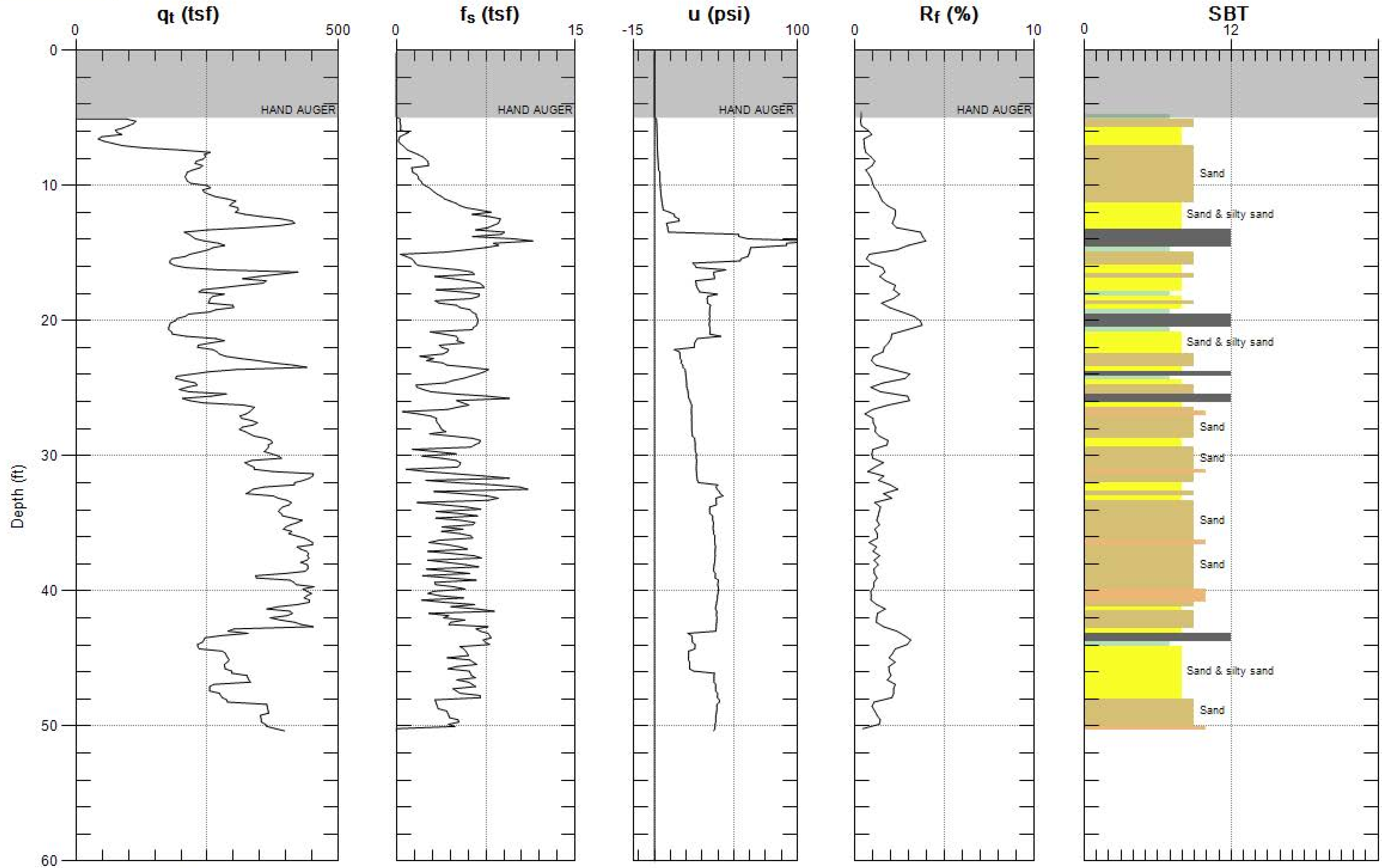
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-11

Engineer: K.NEIL

Date: 3/31/17 03:25



Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

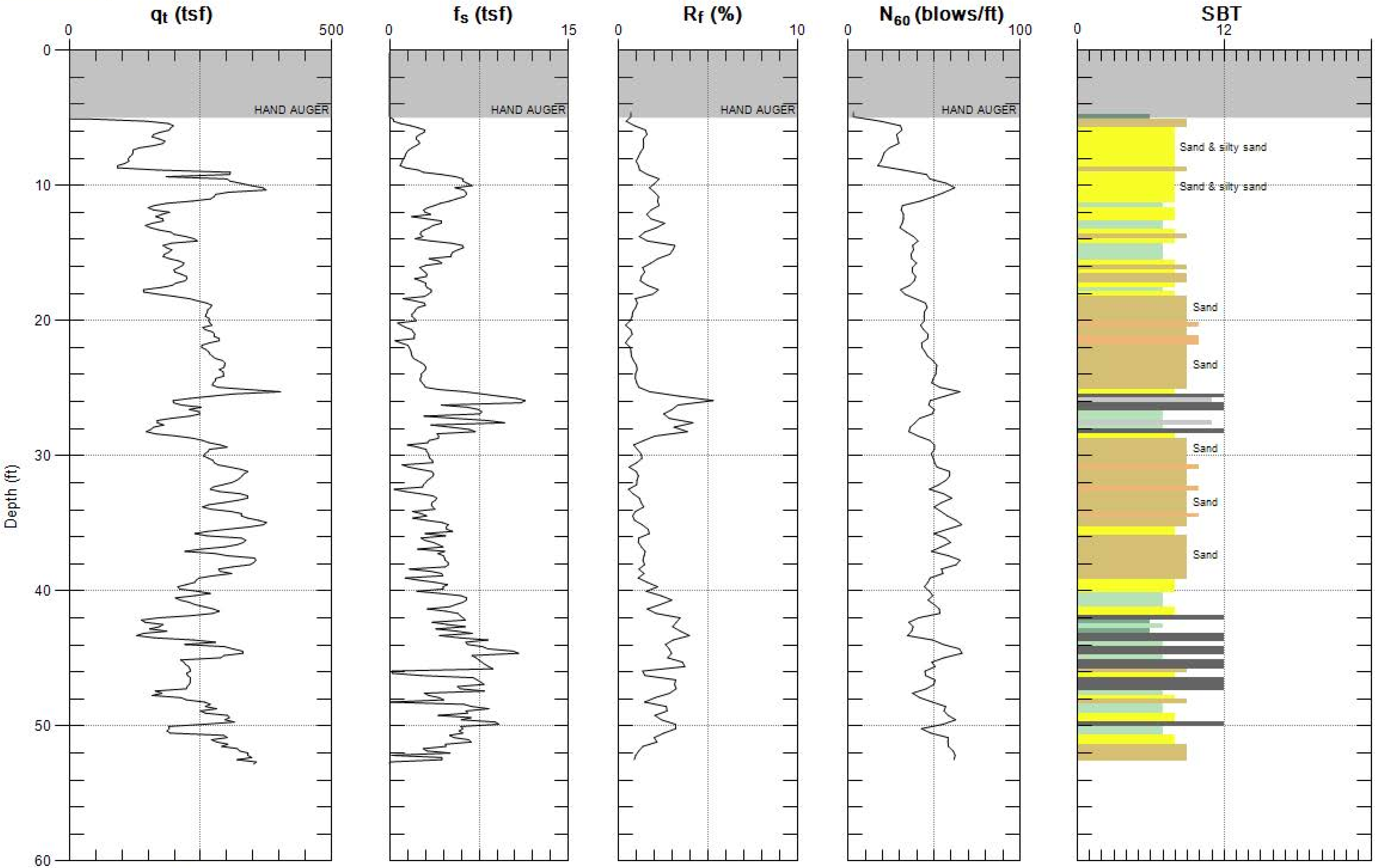
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-12

Engineer: K.NEIL

Date: 3/30/17 04:15



Max. Depth: 52.822 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

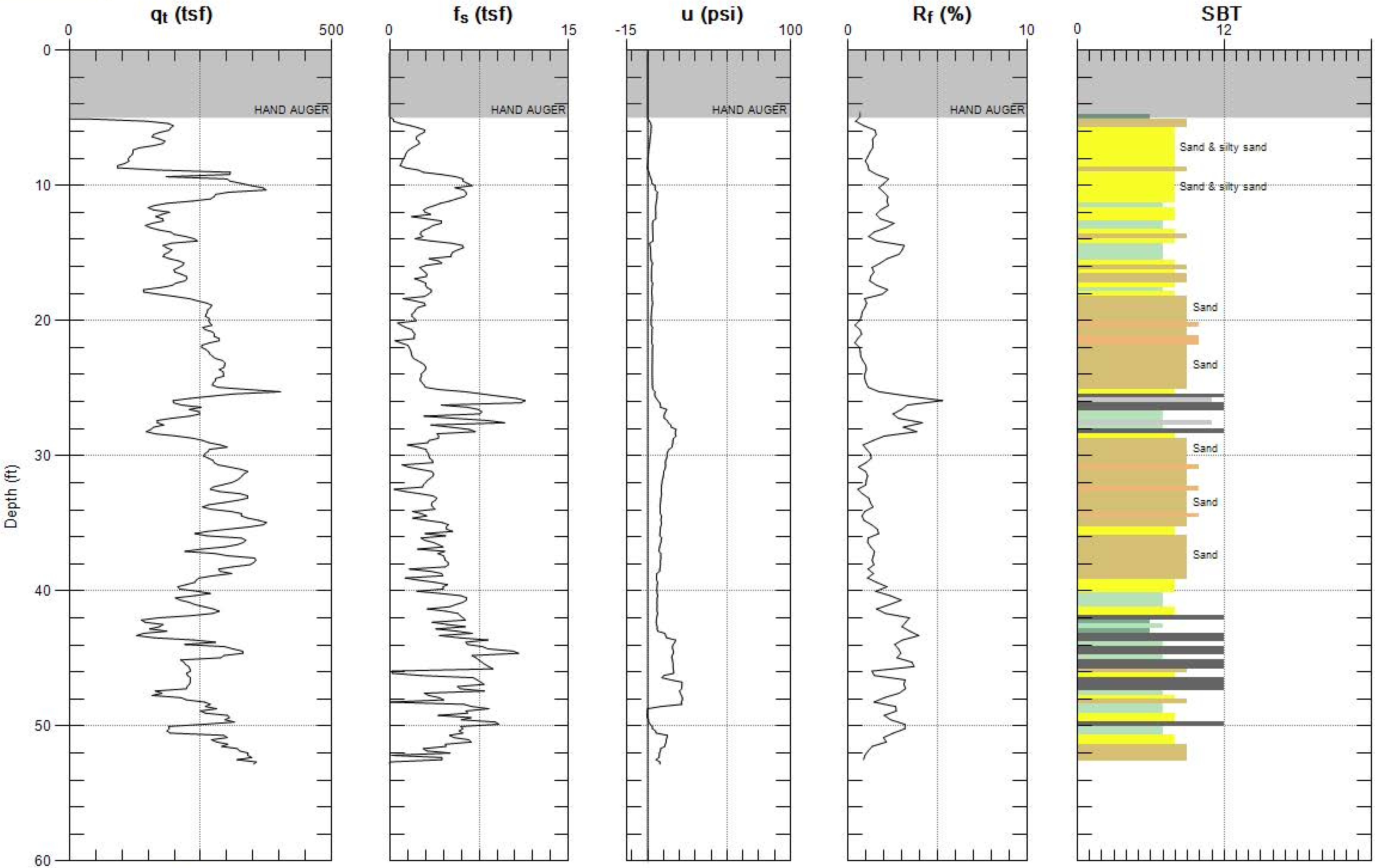
HALEY & ALDRICH

Site: UC RIVERSIDE

Sounding: CPT-12

Engineer: K.NEIL

Date: 3/30/17 04:15



Max. Depth: 52.822 (ft)
Avg. Interval: 0.328 (ft)

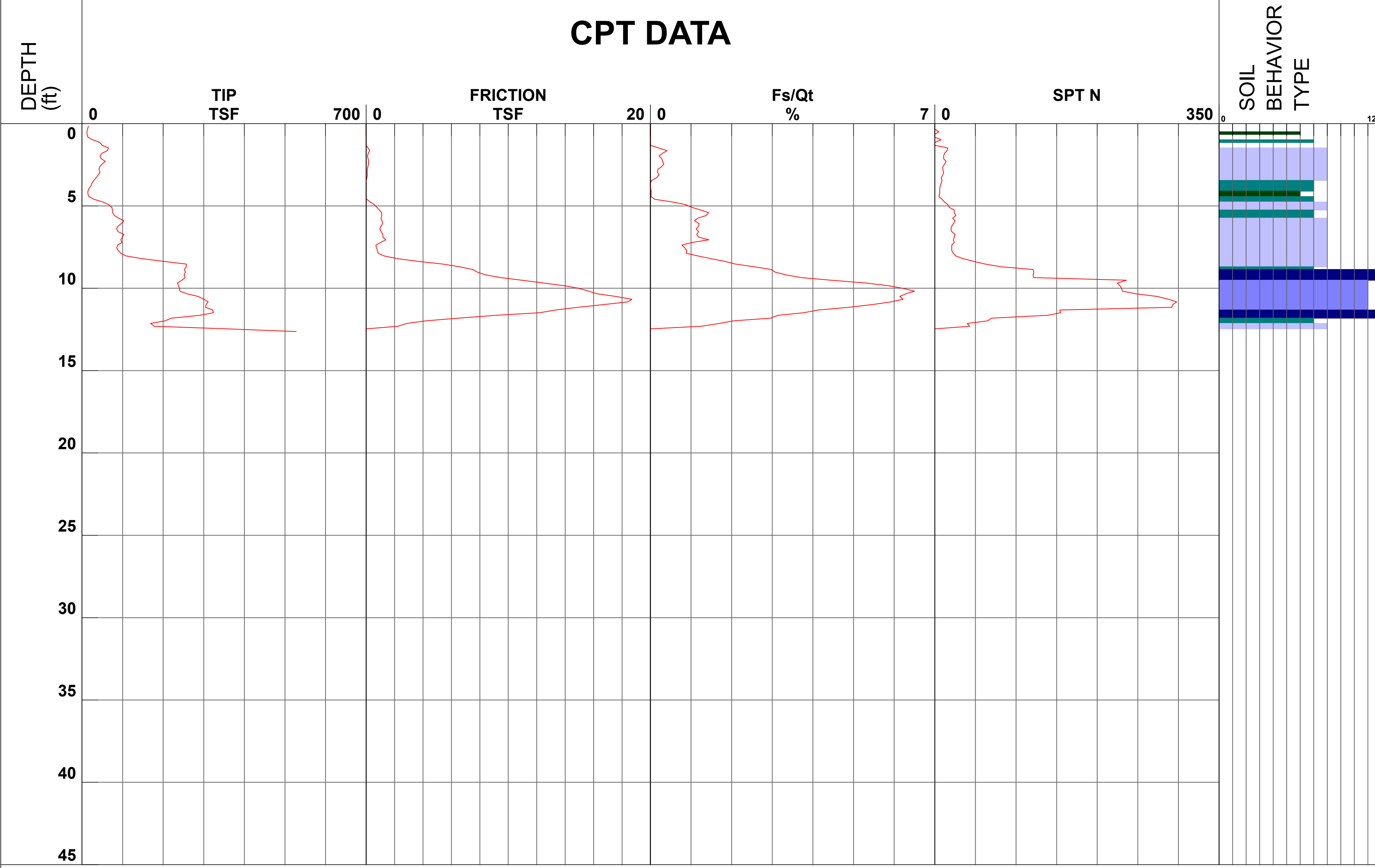
SBT: Soil Behavior Type (Robertson 1990)

Haley & Aldrich, Inc.

Project	UCR North District Phase 1	Operator	RC AS	Filename	SDF(633).cpt
Job Number	131648-003	Cone Number	DDG1281	GPS	
Hole Number	CPT-13	Date and Time	3/27/2018 10:11:20 AM	Maximum Depth	12.63 ft
EST GW Depth During Test		>12.63 ft		Ground Elevation : 1086 feet	

Net Area Ratio .8

CPT DATA



REMARKS

Hand Auger to 5'

No GW

1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

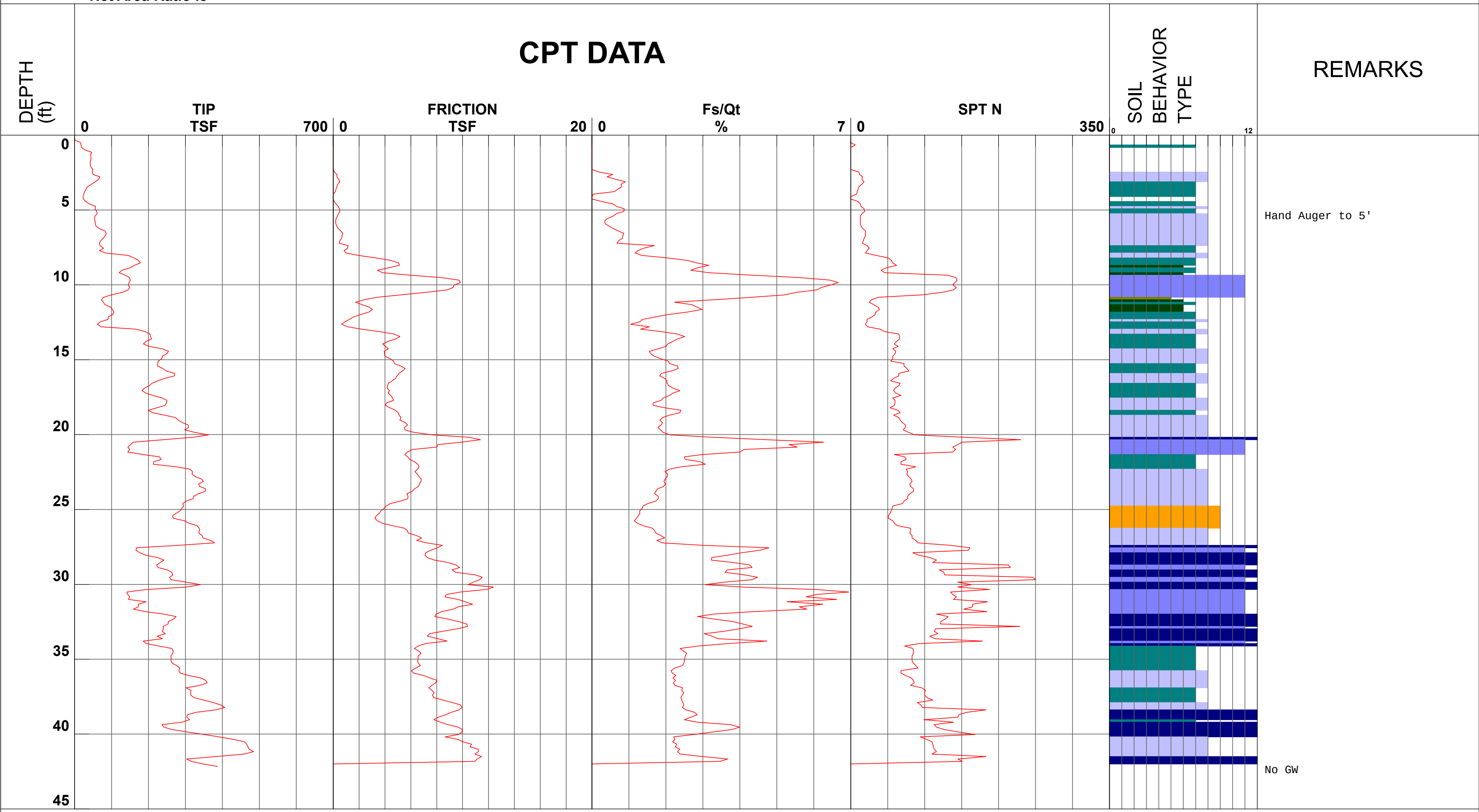
Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

Haley & Aldrich, Inc.

Project	UCR North District Phase 1	Operator	RC AS	Filename	SDF(634).cpt
Job Number	131648-003	Cone Number	DDG1281	GPS	
Hole Number	CPT-13A	Date and Time	3/27/2018 10:44:28 AM	Maximum Depth	42.16 ft
EST GW Depth During Test		>42.16 ft		Ground Elevation : 1086 feet	

Net Area Ratio .8



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

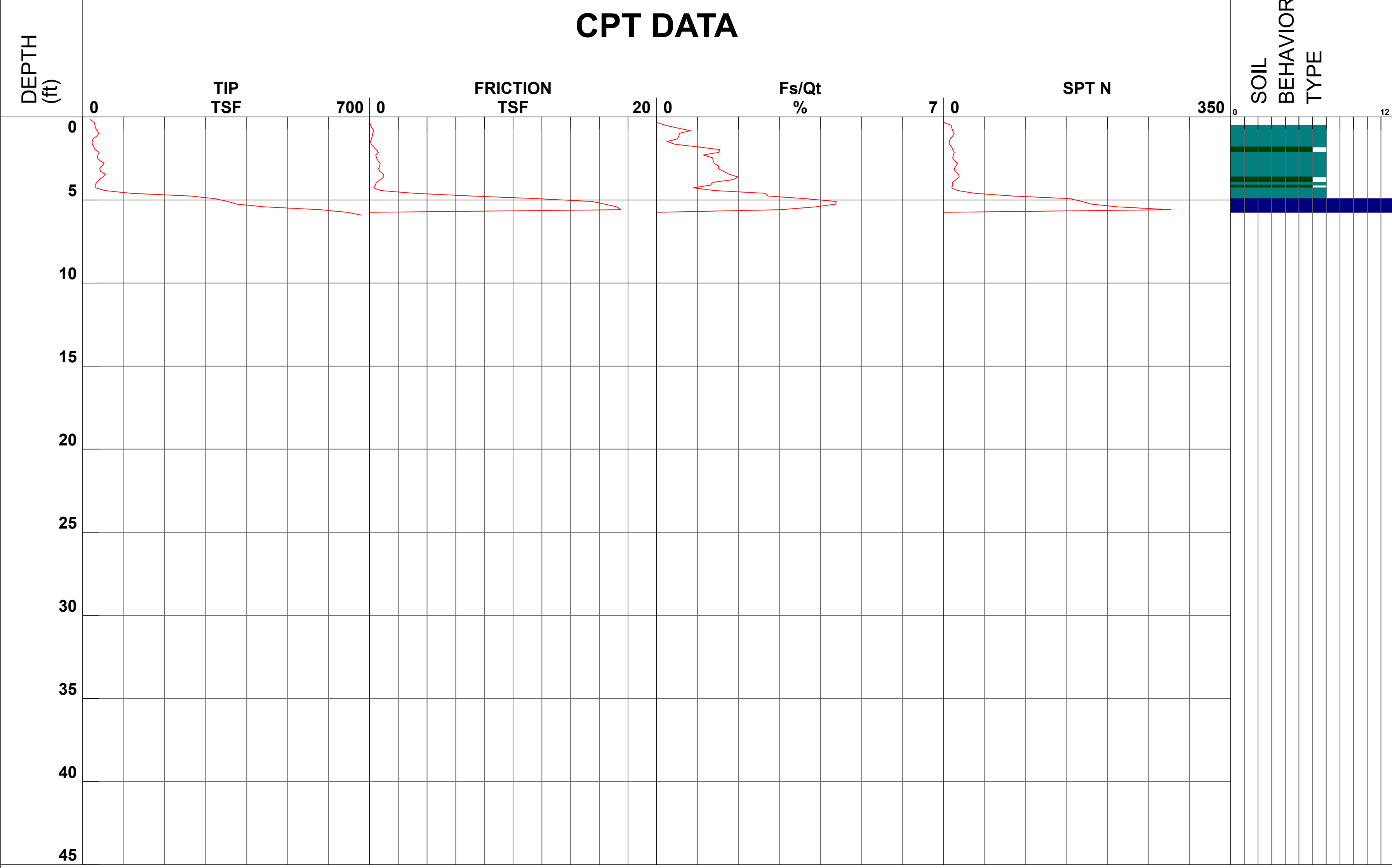
Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

Haley & Aldrich, Inc.

Project	UCR North District Phase 1	Operator	RC AS	Filename	SDF(636).cpt
Job Number	131648-003	Cone Number	DDG1281	GPS	
Hole Number	CPT-14	Date and Time	3/27/2018 11:49:23 AM	Maximum Depth	5.91 ft
EST GW Depth During Test		>5.91 ft		Ground Elevation : 1072 feet	

Net Area Ratio .8



REMARKS

Hand Auger to 5'
No GW

1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

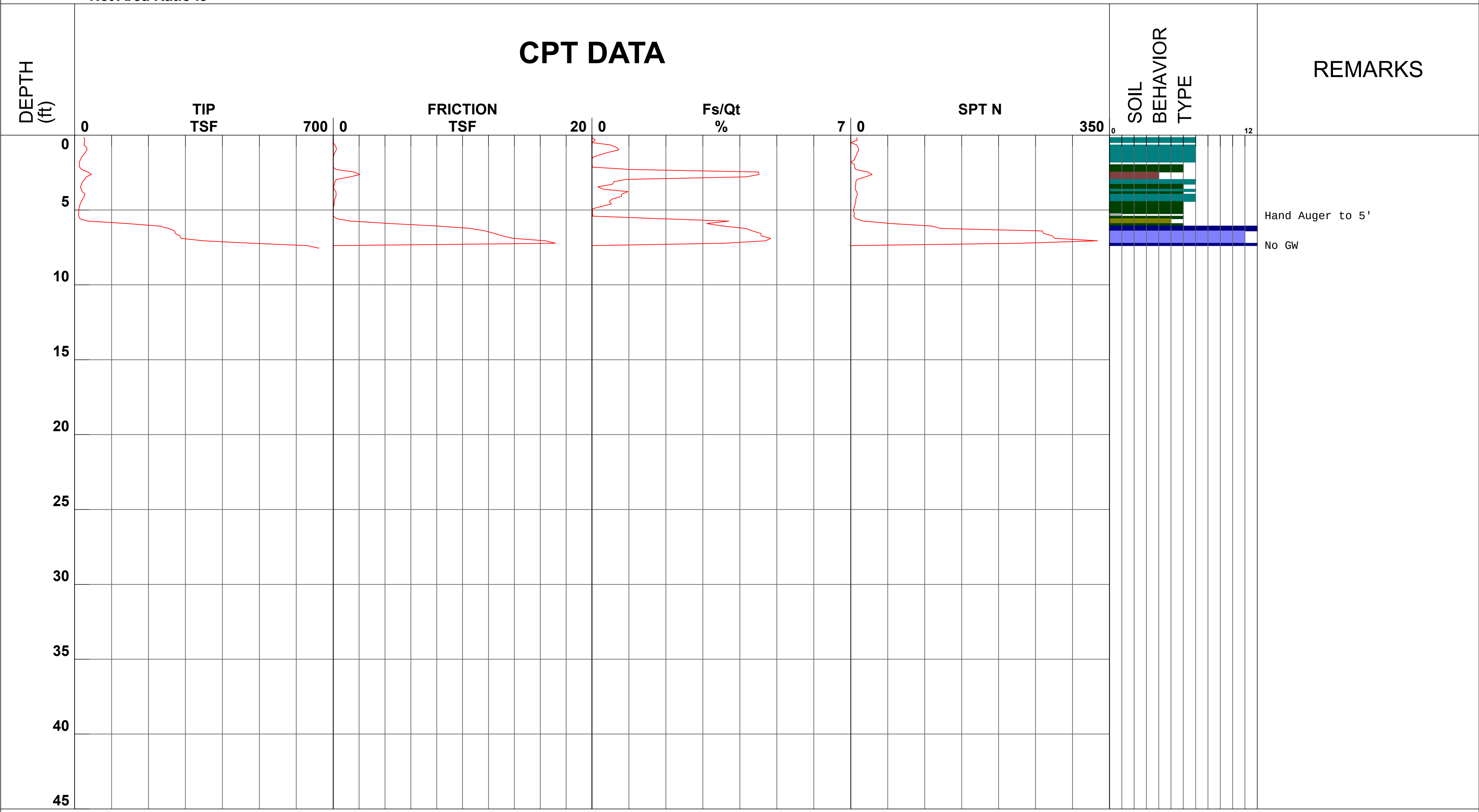
Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

Haley & Aldrich, Inc.

Project	UCR North District Phase 1	Operator	RC AS	Filename	SDF(637).cpt
Job Number	131648-003	Cone Number	DDG1281	GPS	
Hole Number	CPT-14A	Date and Time	3/27/2018 12:32:27 PM	Maximum Depth	7.55 ft
EST GW Depth During Test		>7.55 ft		Ground Elevation : 1072 feet	

Net Area Ratio .8



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

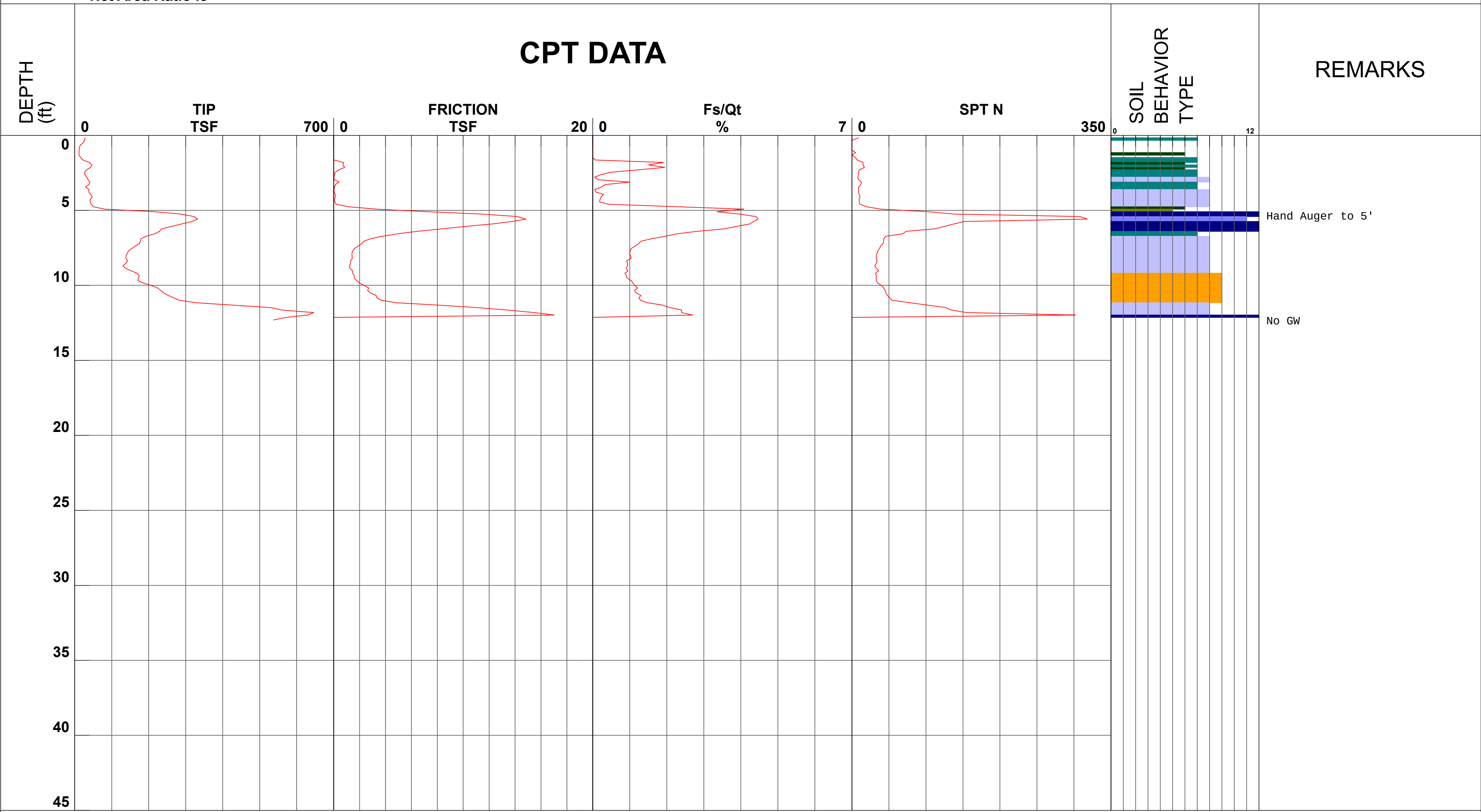
Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

Haley & Aldrich, Inc.

Project	UCR North District Phase 1	Operator	RC AS	Filename	SDF(638).cpt
Job Number	131648-003	Cone Number	DDG1281	GPS	
Hole Number	CPT-15	Date and Time	3/27/2018 1:33:33 PM	Maximum Depth	12.30 ft
EST GW Depth During Test		>12.30 ft		Ground Elevation : 1076 feet	

Net Area Ratio .8



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

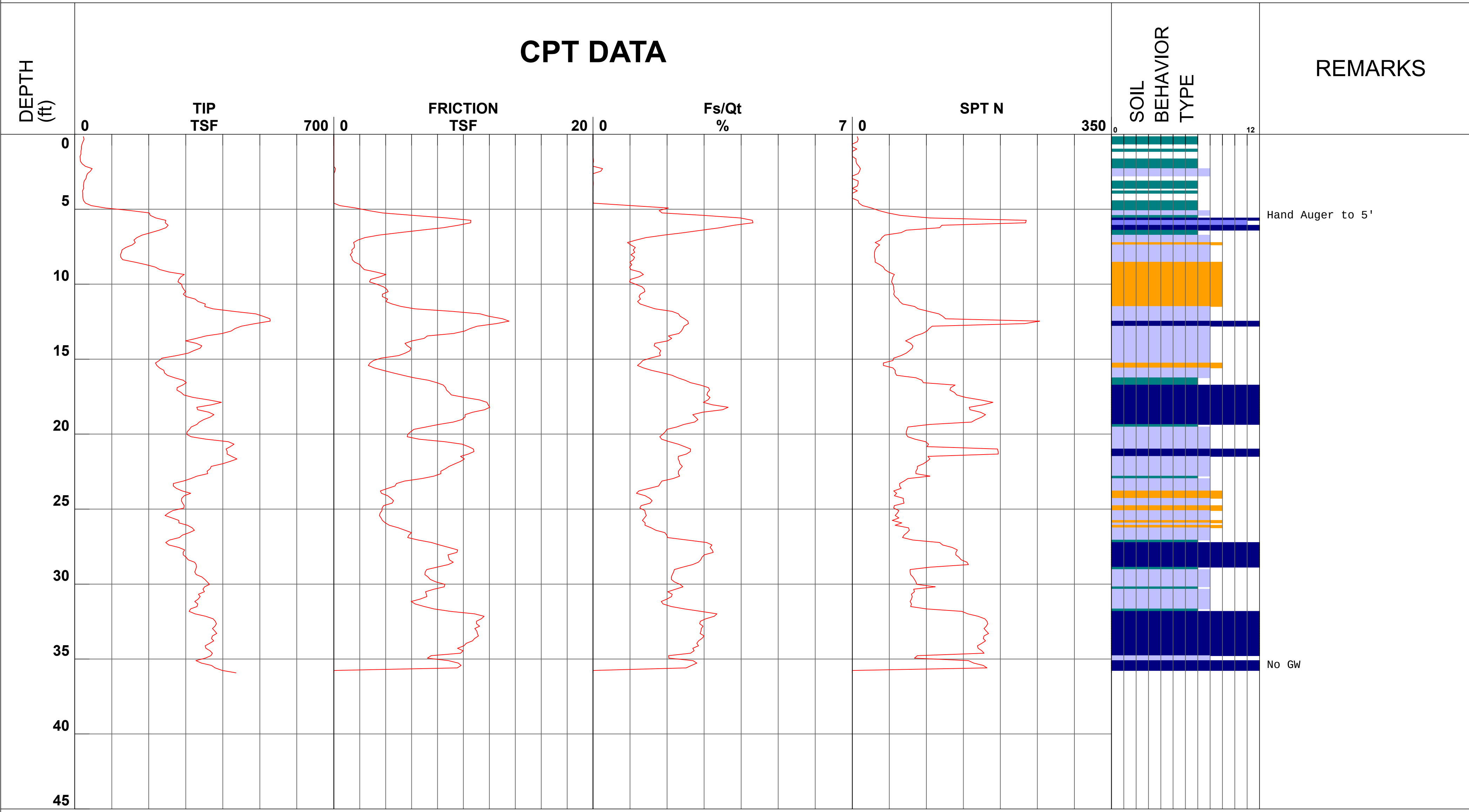
Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

Haley & Aldrich, Inc.

Project	UCR North District Phase 1	Operator	RC AS	Filename	SDF(639).cpt
Job Number	131648-003	Cone Number	DDG1281	GPS	
Hole Number	CPT-15A	Date and Time	3/27/2018 2:13:05 PM	Maximum Depth	35.92 ft
EST GW Depth During Test		>35.92 ft		Ground Elevation : 1076 feet	

Net Area Ratio .8



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 10cm squared

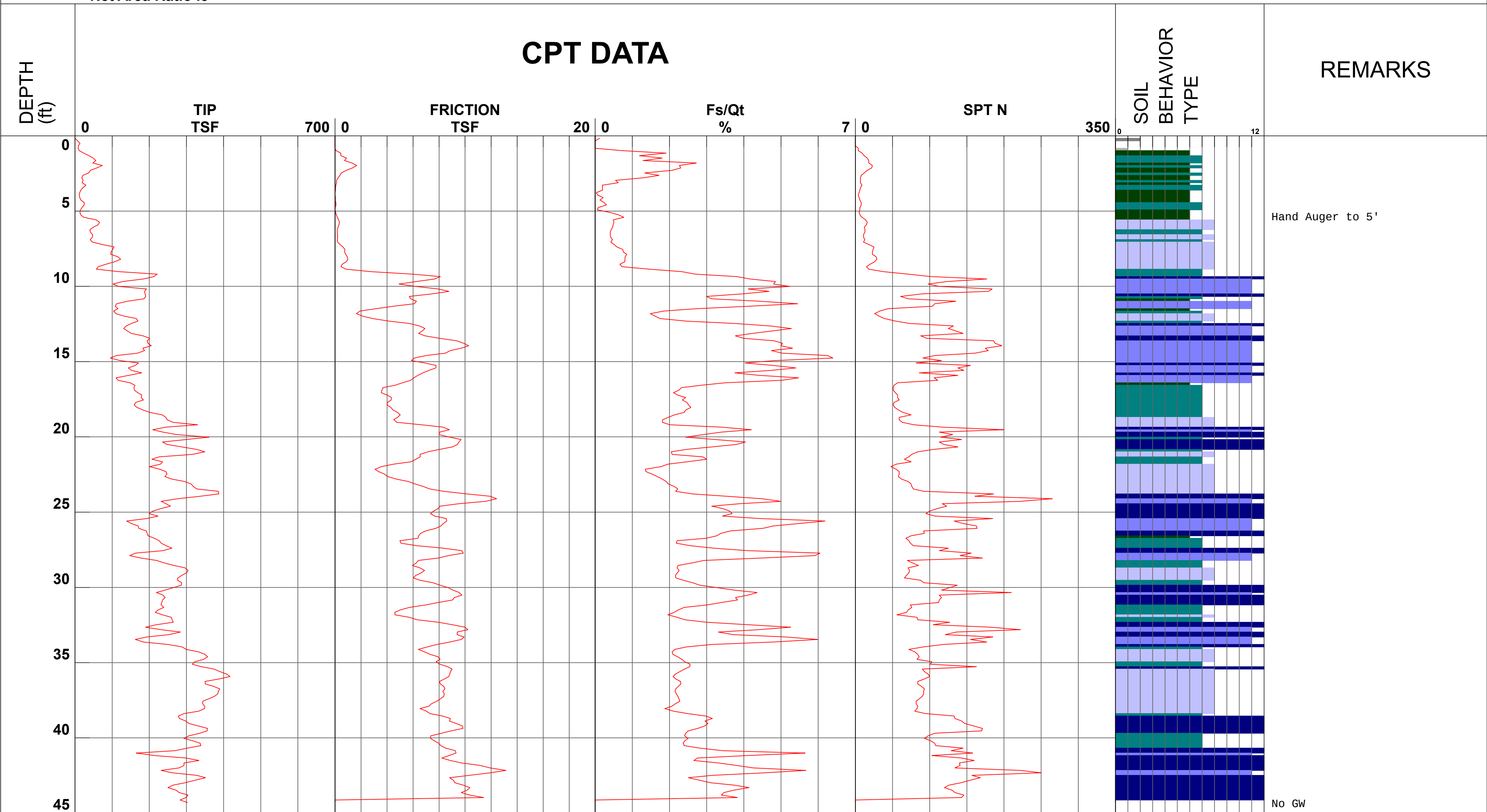
S*Soil behavior type and SPT based on data from UBC-1983

Haley & Aldrich, Inc.

Project	UCR North District Phase 1	Operator	RC AS	Filename	SDF(632).cpt
Job Number	131648-003	Cone Number	DDG1281	GPS	
Hole Number	CPT-16	Date and Time	3/27/2018 8:54:33 AM	Maximum Depth	44.29 ft
EST GW Depth During Test		>44.29 ft			

Ground Elevation : 1086 feet

Net Area Ratio .8



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

APPENDIX G

Previous Laboratory Test Results

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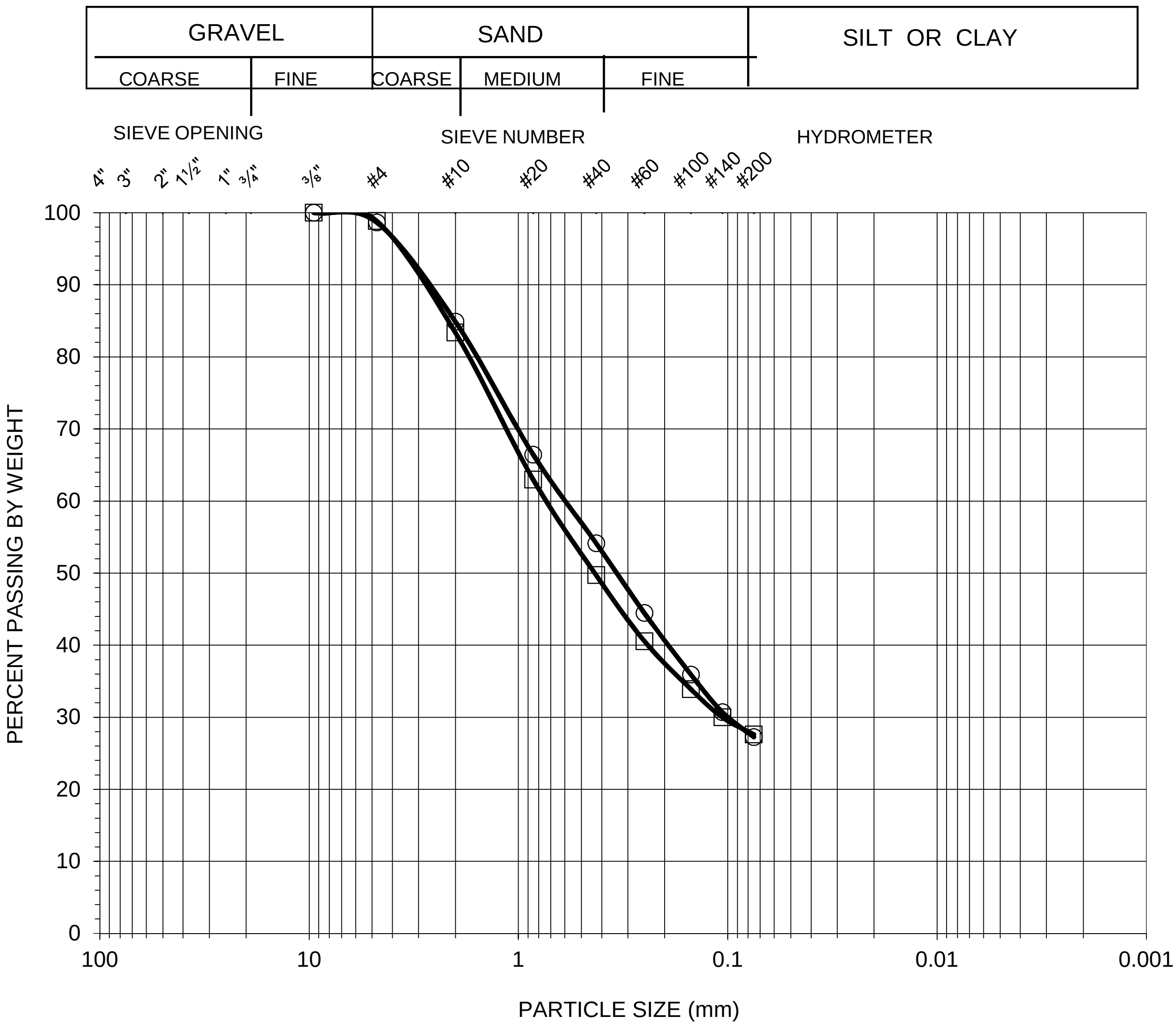
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913

Client Name:	Haley & Aldrich, Inc.	Tested by:	NG	Date:	04/14/17
Project Name:	UCR North District	Computed by:	LS	Date:	04/17/17
Project Number:	128685	Checked by:	AP	Date:	04/18/17



Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	HA-2	-	5	1	72	27	N/A	SM
□	HA-2	-	20	1	71	28	N/A	SM

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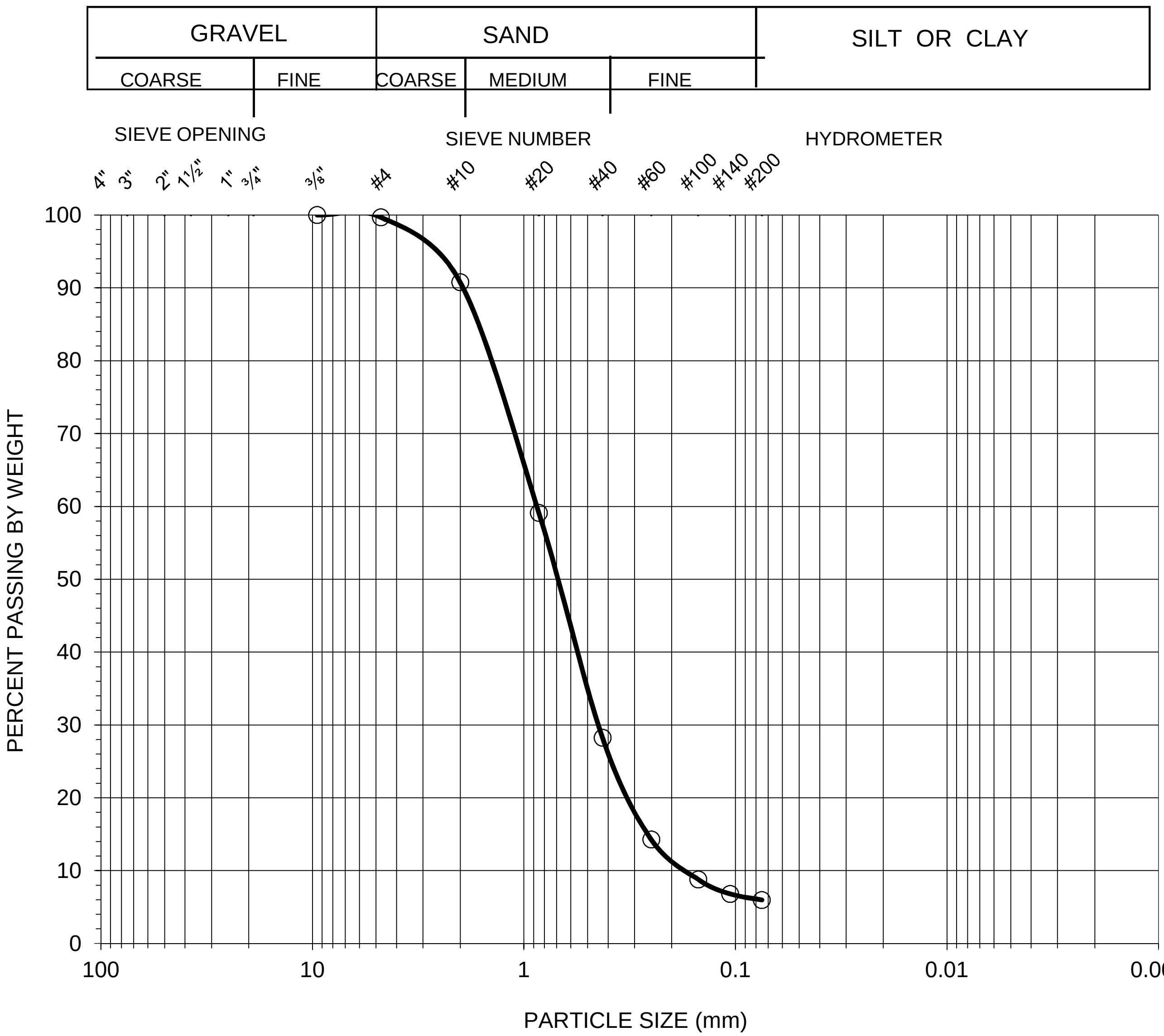
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913

Client Name:	Haley & Aldrich, Inc.	Tested by:	NG	Date:	04/14/17
Project Name:	UCR North District	Computed by:	LS	Date:	04/17/17
Project Number:	128685	Checked by:	AP	Date:	04/18/17



Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	HA-3	-	15	0	94	6	N/A	SP-SM

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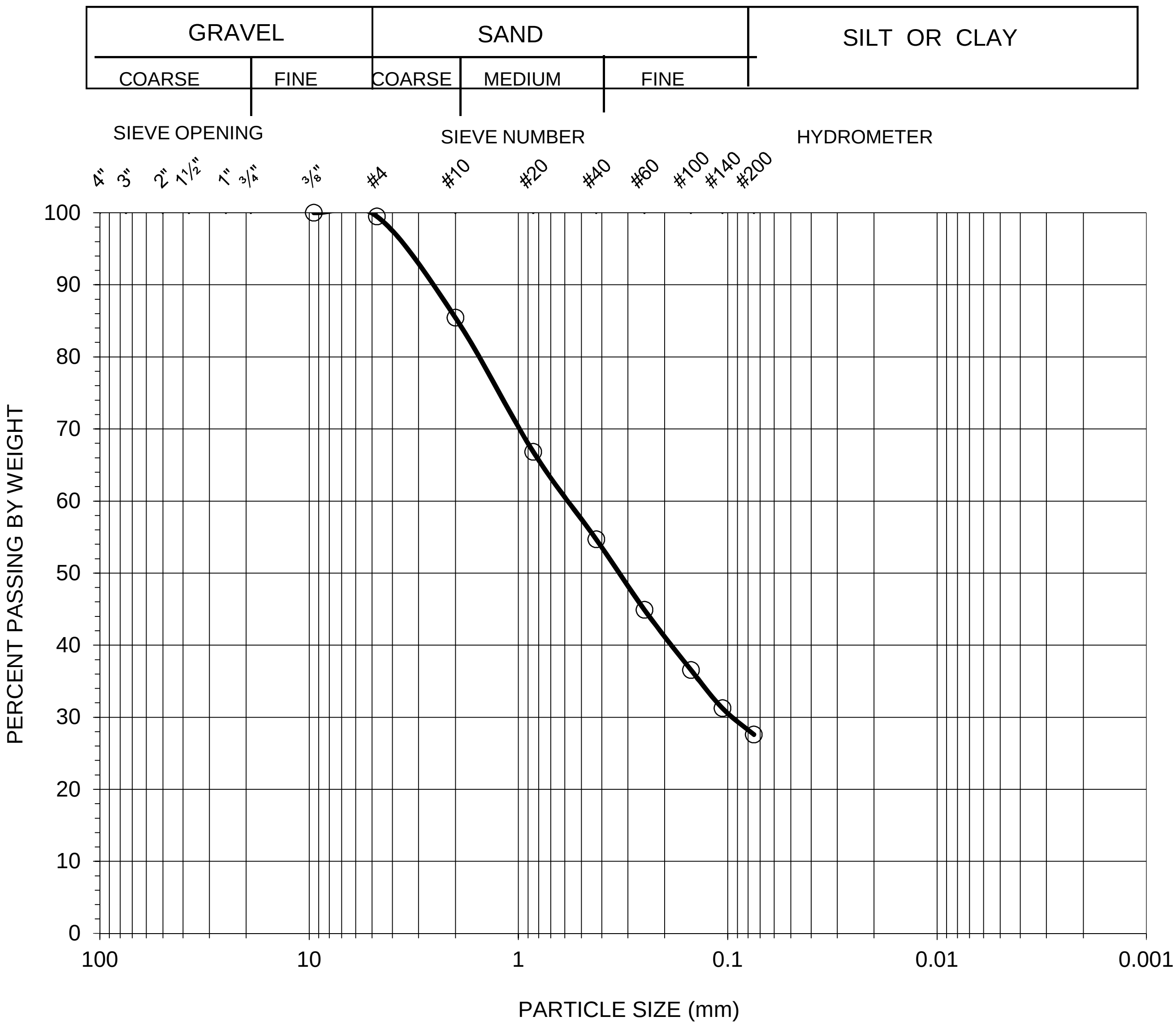
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913

Client Name:	Haley & Aldrich, Inc.	Tested by:	NG	Date:	04/14/17
Project Name:	UCR North District	Computed by:	LS	Date:	04/17/17
Project Number:	128685	Checked by:	AP	Date:	04/18/17



Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	HA-7	-	5	1	71	28	N/A	SM

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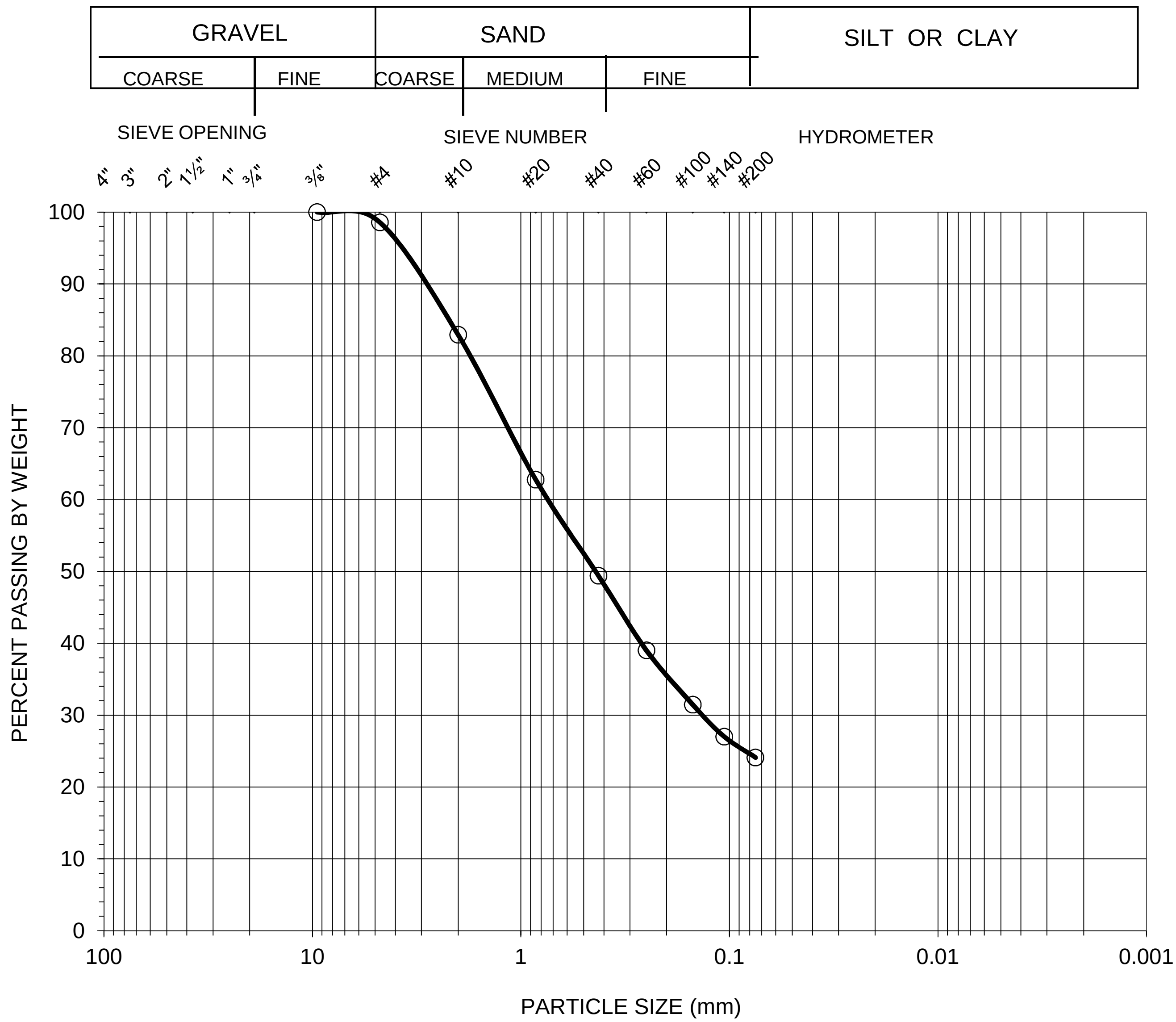
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913

Client Name:	Haley & Aldrich, Inc.	Tested by:	NG	Date:	04/14/17
Project Name:	UCR North District	Computed by:	LS	Date:	04/17/17
Project Number:	128685	Checked by:	AP	Date:	04/18/17



Symbol	Boring No.	Sample Type	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	HA-9	Bulk	0-5	1	75	24	N/A	SM

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PERCENT PASSING NO. 200 SIEVE

ASTM D1140

Client: Haley & Aldrich, Inc.
AP Lab No.: 17-0412
Project Name: UCR North District
Test Date: 04/14/17
Project Number: 128685

Boring No.	Sample No.	Depth (ft)	Percent Fines (%)
HA-4	-	5	18.0

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PERCENT PASSING NO. 200 SIEVE

ASTM D1140

Client: Haley & Aldrich, Inc. AP Lab No.: 17-0412
Project Name: UCR North District Test Date: 04/14/17
Project Number: 128685

Boring No.	Sample Type	Depth (ft)	Percent Fines (%)
HA-6	Bulk	0-5	38.7

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PERCENT PASSING NO. 200 SIEVE

ASTM D1140

Client: Haley & Aldrich, Inc. | AP Lab No.: 17-0412

Project Name: UCR North District | Test Date: 04/14/17

Project Number: 128685

Boring No.	Sample No.	Depth (ft)	Percent Fines (%)
HA-7	-	15	44.0

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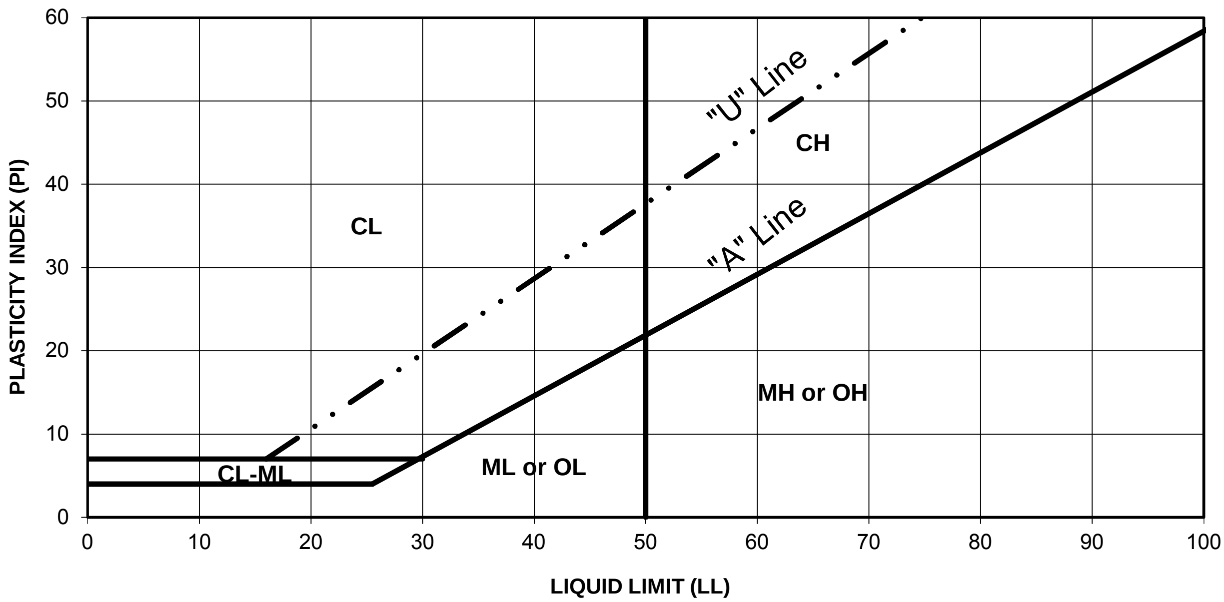
ATTERBERG LIMITS
ASTM D 4318

Project Name: UCR North District **Tested By:** LS Date: 04/14/17
Project No.: 128685 **Checked By:** AP Date: 04/18/17



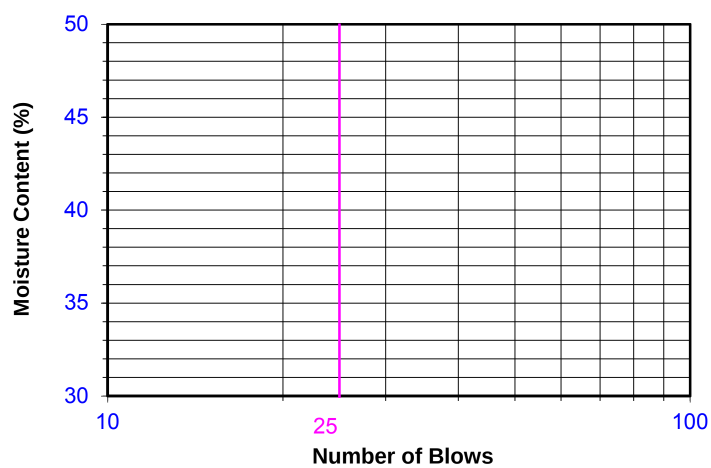
PROCEDURE USED

☐ Wet Preparation

☒ Dry Preparation

☒ Procedure A
Multipoint Test

☐ Procedure B
One-point Test



Symbol	Boring Number	Sample Number	Depth (feet)	LL	PL	PI	Plasticity Chart Symbol
	HA-1	-	20	NP	NP	NP	

* NP denotes "non-plastic"

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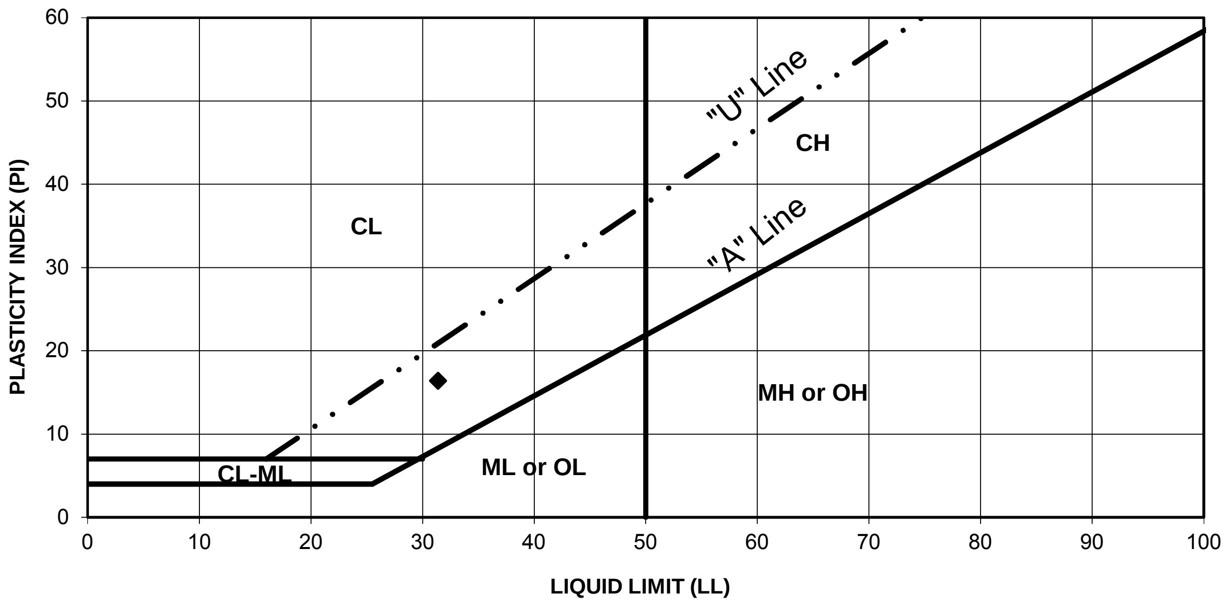
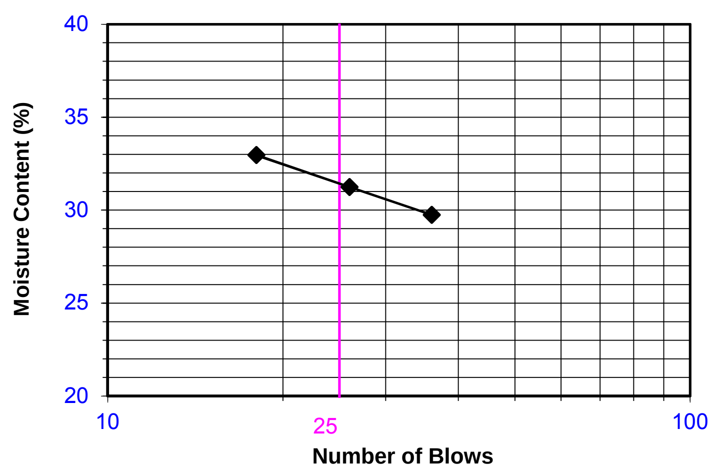
ATTERBERG LIMITS
ASTM D 4318

Project Name: UCR North District **Tested By:** LS Date: 04/14/17
Project No.: 128685 **Checked By:** AP Date: 04/18/17



PROCEDURE USED

- [ ] Wet Preparation
- [X] Dry Preparation
- [X] Procedure A Multipoint Test
- [ ] Procedure B One-point Test



Symbol	Boring Number	Sample Type	Depth (feet)	LL	PL	PI	Plasticity Chart Symbol
♦	HA-6	Bulk	0-5	31	15	16	CL

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R-VALUE TEST DATA

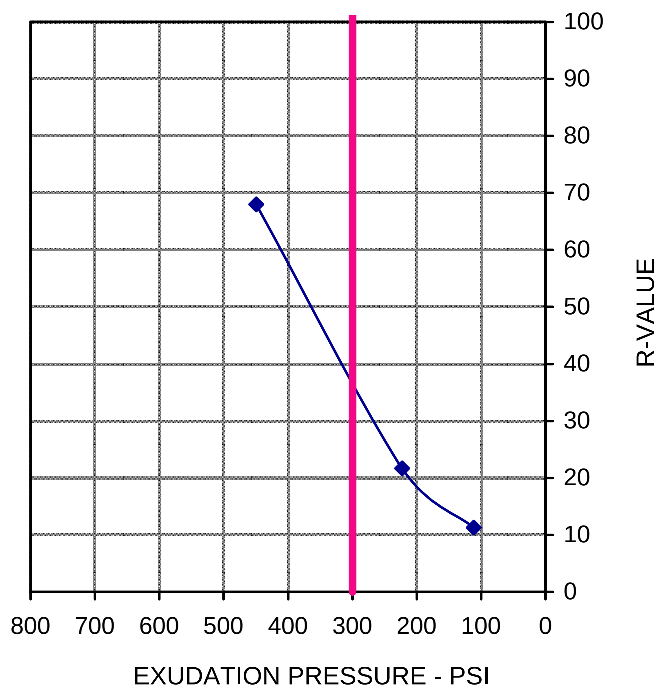
ASTM D2844

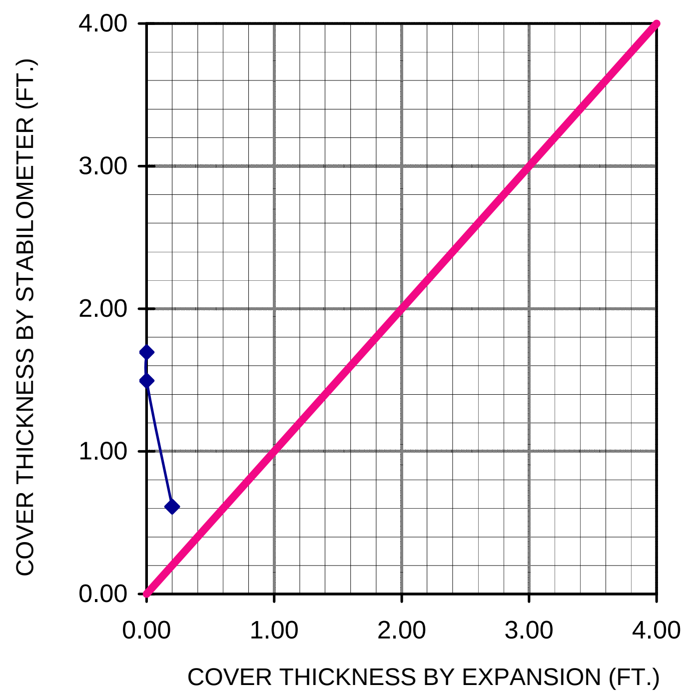
Project Name:	UCR North District	Tested By:	ST	Date:	04/11/17
Project Number:	128685	Computed By:	KM	Date:	04/13/17
Boring No.:	HA-2	Checked By:	AP	Date:	04/18/17
Sample Type:	Bulk	Depth (ft.):	0-5		
Location:	N/A				
Soil Description:	Silty Sand				

Mold Number	G	H	I	
Water Added, g	30	15	0	
Compact Moisture(%)	11.1	9.6	8.1	
Compaction Gage Pressure, psi	50	100	250	
Exudation Pressure, psi	111	223	449	
Sample Height, Inches	2.4	2.4	2.4	
Gross Weight Mold, g	2899	2895	2861	
Tare Weight Mold, g	1828	1837	1819	
Net Sample Weight, g	1071	1058	1042	
Expansion, inchesx10^{-4}	0	0	6	
Stability 2,000 (160 psi)	56/126	46/105	20/35	
Turns Displacement	5.14	4.49	3.91	
R-Value Uncorrected	12	23	70	
R-Value Corrected	11	22	68	
Dry Density, pcf	121.7	121.9	121.7	
Traffic Index	8.0	8.0	8.0	
G.E. by Stability	1.69	1.50	0.61	
G.E. by Expansion	0.00	0.00	0.20	

R-VALUE		
	By Exudation:	37
	By Expansion:	*N/A
	At Equilibrium: (by Exudation)	37

Remarks	
	Gf = 1.34, and 2.9 % Retained on the ¾" *Not Applicable





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R-VALUE TEST DATA

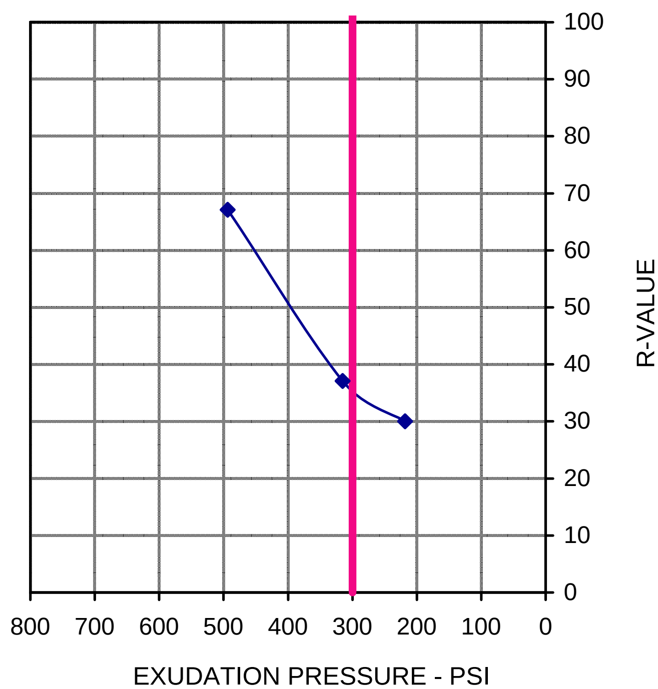
ASTM D2844

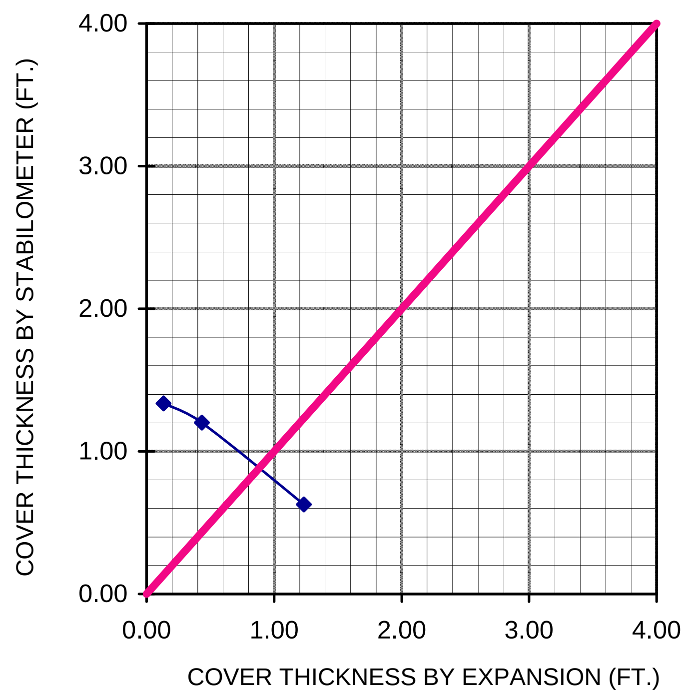
Project Name:	UCR North District	Tested By:	ST	Date:	04/11/17
Project Number:	128685	Computed By:	KM	Date:	04/13/17
Boring No.:	HA-3	Checked By:	AP	Date:	04/18/17
Sample Type:	Bulk	Depth (ft.):	0-5		
Location:	N/A				
Soil Description:	Silty Sand				

Mold Number	D	E	F	
Water Added, g	40	30	20	
Compact Moisture(%)	11.6	10.6	9.5	
Compaction Gage Pressure, psi	100	200	250	
Exudation Pressure, psi	218	315	494	
Sample Height, Inches	2.5	2.5	2.5	
Gross Weight Mold, g	3049	3030	2935	
Tare Weight Mold, g	1969	1956	1869	
Net Sample Weight, g	1080	1074	1066	
Expansion, inchesx10^{-4}	4	13	37	
Stability 2,000 (160 psi)	40/83	37/73	18/34	
Turns Displacement	5.40	5.05	4.54	
R-Value Uncorrected	30	37	67	
R-Value Corrected	30	37	67	
Dry Density, pcf	117.3	117.7	117.9	
Traffic Index	8.0	8.0	8.0	
G.E. by Stability	1.34	1.20	0.63	
G.E. by Expansion	0.13	0.43	1.23	

R-VALUE		
	By Exudation:	35
	By Expansion:	55
	At Equilibrium: (by Exudation)	35

Remarks	
	Gf = 1.34, and 0.0 % Retained on the ¾"





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R-VALUE TEST DATA

ASTM D2844

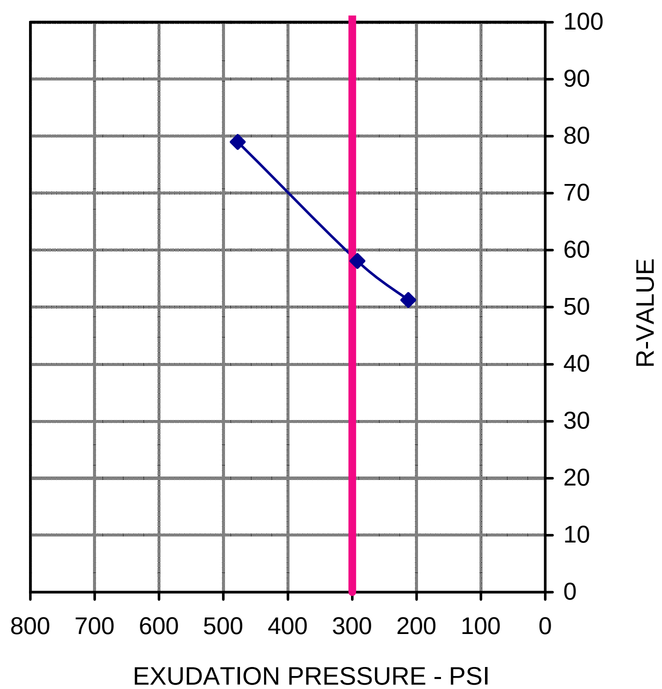
Project Name: UCR North District — Tested By: ST — Date: 04/11/17
Project Number: 128685 — Computed By: KM — Date: 04/13/17
Boring No.: HA-9 — Checked By: AP — Date: 04/18/17
Sample Type: Bulk — Depth (ft.): 0-5
Location: N/A
Soil Description: Silty Sand

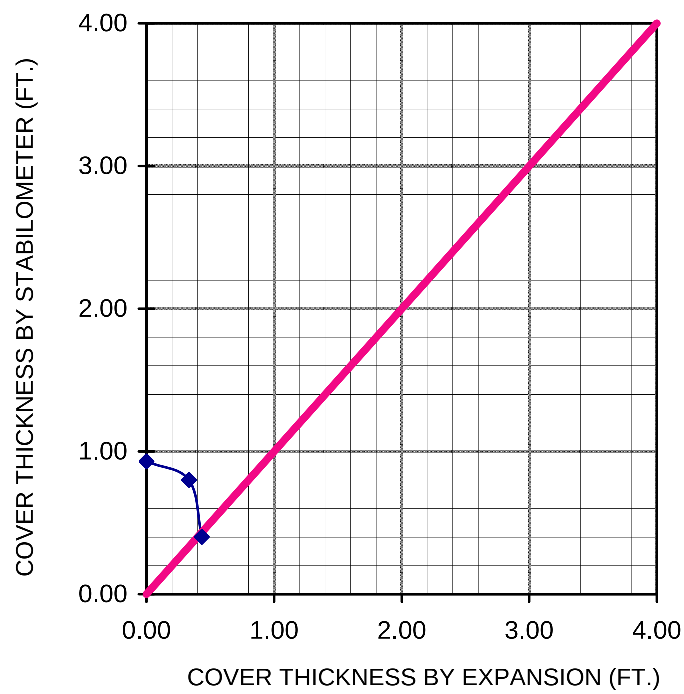
Mold Number	A	C	B	
Water Added, g	58	50	43	
Compact Moisture(%)	9.2	8.4	7.8	
Compaction Gage Pressure, psi	250	250	250	
Exudation Pressure, psi	213	292	478	
Sample Height, Inches	2.4	2.4	2.4	
Gross Weight Mold, g	3067	3057	3056	
Tare Weight Mold, g	1968	1966	1968	
Net Sample Weight, g	1099	1091	1088	
Expansion, inchesx10^{-4}	0	10	13	
Stability 2,000 (160 psi)	24/50	21/42	13/21	
Turns Displacement	4.63	4.50	4.25	
R-Value Uncorrected	54	61	80	
R-Value Corrected	51	58	79	
Dry Density, pcf	127.0	127.0	127.5	
Traffic Index	8.0	8.0	8.0	
G.E. by Stability	0.93	0.80	0.40	
G.E. by Expansion	0.00	0.33	0.43	

R-VALUE		
	By Exudation:	59
	By Expansion:	78
	At Equilibrium: (by Exudation)	59

Remarks

Gf = 1.34, and 0.0 % Retained on the ¾"





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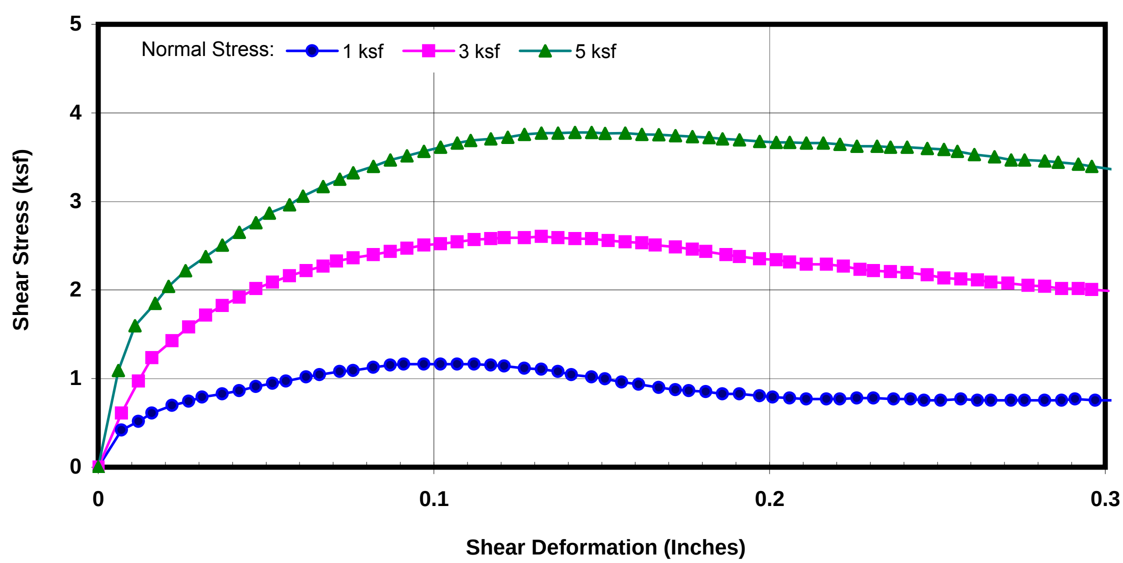
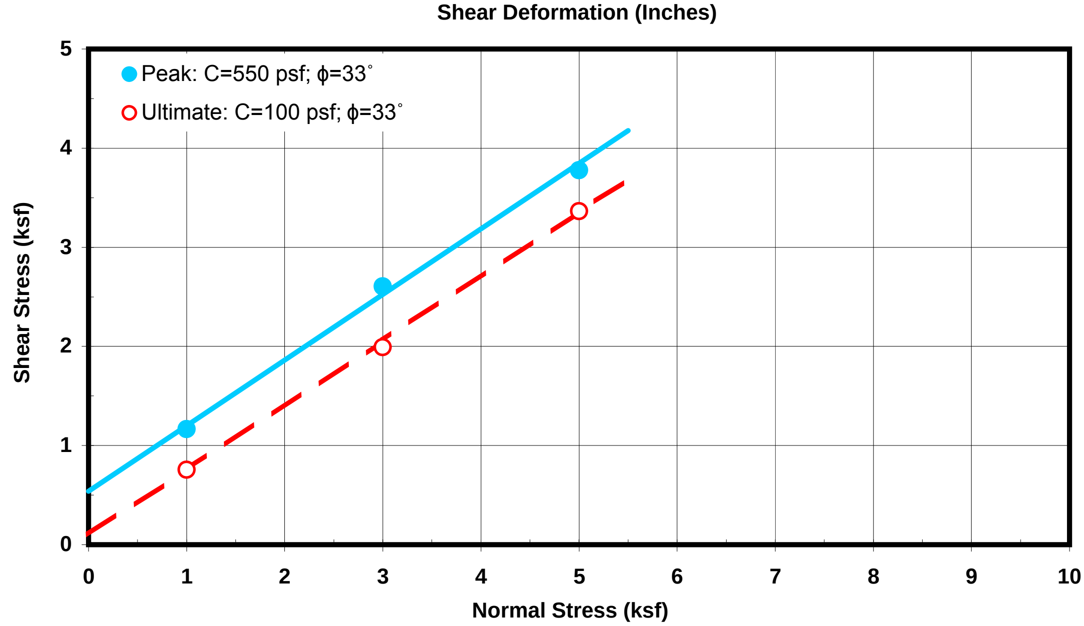
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name: UCR North District
Project No.: 128685
Boring No.: HA-1
Sample No.: - **Depth (ft):** 5
Sample Type: Mod. Cal.
Soil Description: Clayey Sand w/gravel
Test Condition: Inundated **Shear Type:** Regular

Tested By: ST **Date:** 04/12/17
Computed By: JP **Date:** 04/18/17
Checked by: AP **Date:** 04/18/17

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
130.6	120.5	8.4	13.3	57	90	1	1.164	0.756
						3	2.604	1.992
						5	3.778	3.364





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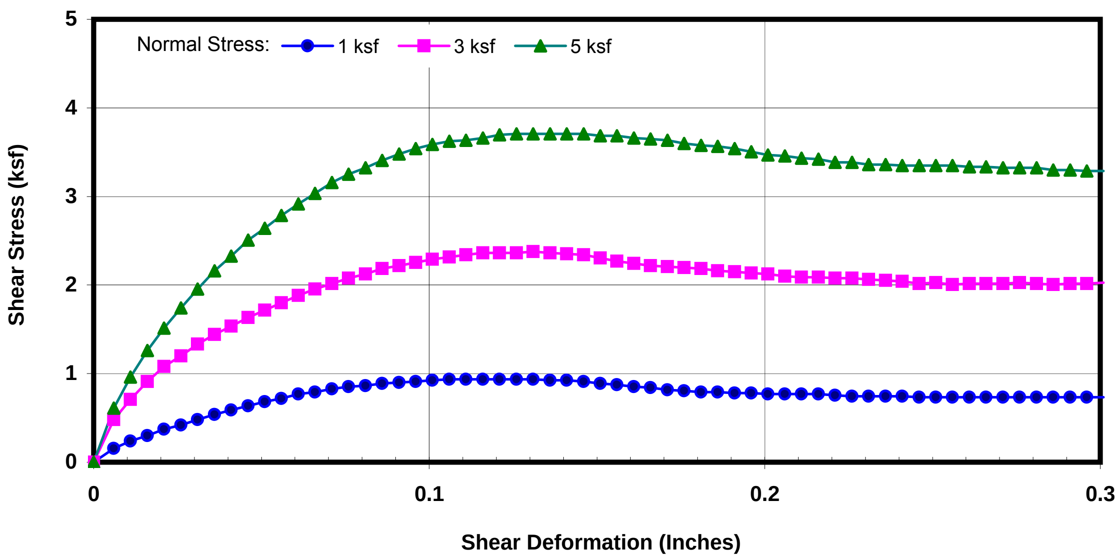
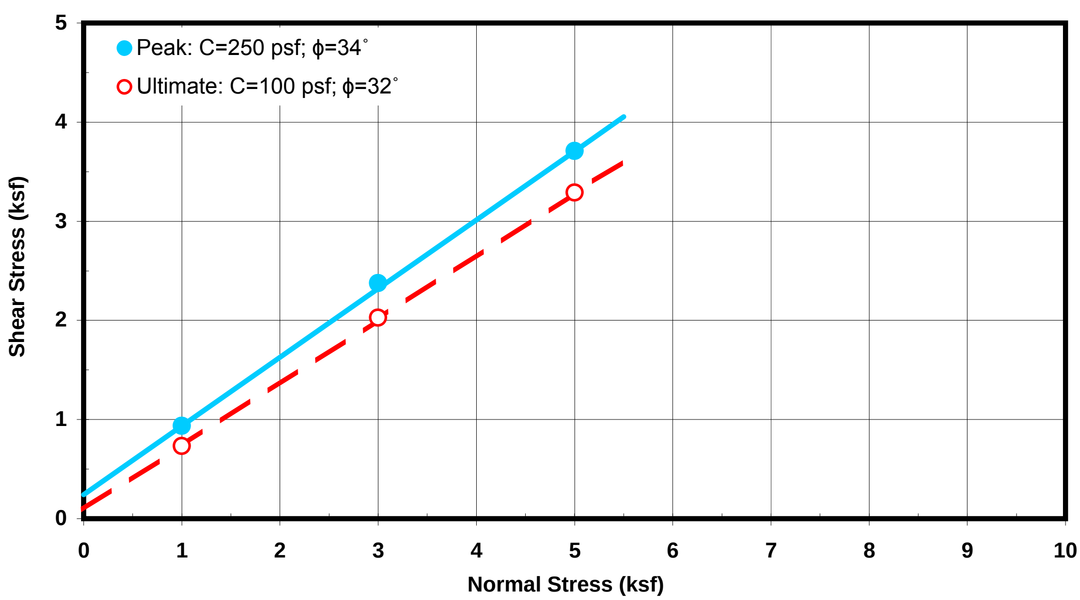
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name: UCR North District
Project No.: 128685
Boring No.: HA-2
Sample No.: - **Depth (ft):** 5
Sample Type: Mod. Cal.
Soil Description: Silty Sand
Test Condition: Inundated **Shear Type:** Regular

Tested By: CS **Date:** 04/14/17
Computed By: JP **Date:** 04/18/17
Checked by: AP **Date:** 04/18/17

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
125.4	114.0	10.0	16.6	56	94	1	0.936	0.732
						3	2.376	2.028
						5	3.708	3.288





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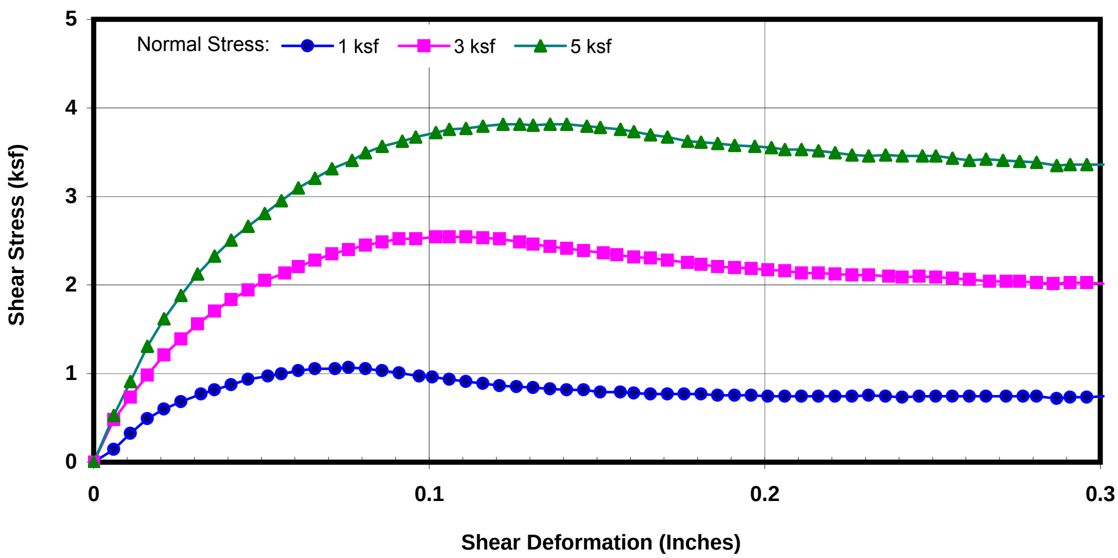
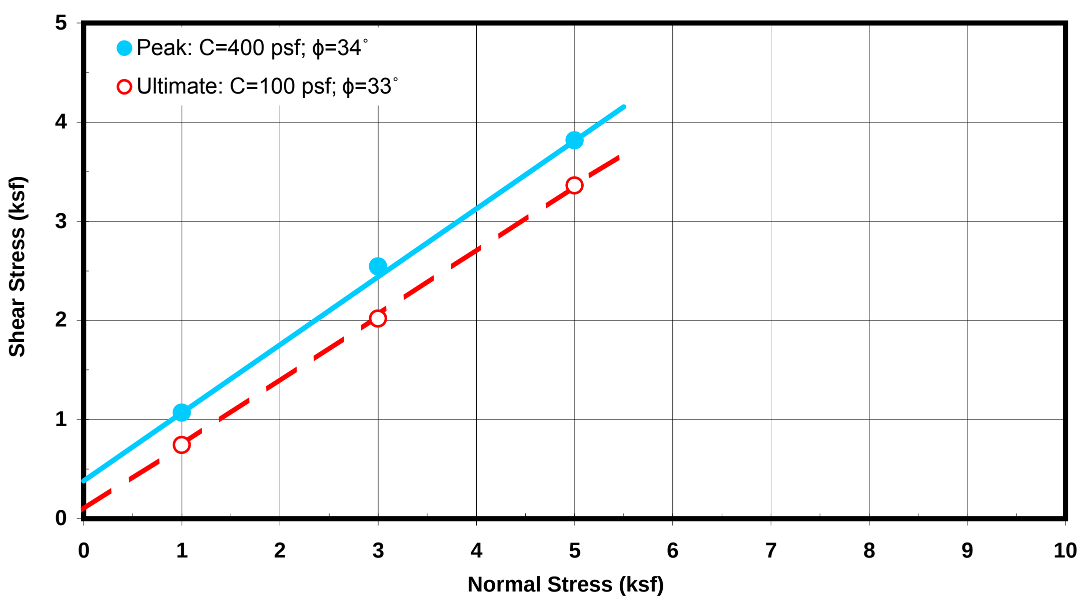
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name: UCR North District
Project No.: 128685
Boring No.: HA-7
Sample No.: - **Depth (ft):** 5
Sample Type: Mod. Cal.
Soil Description: Silty Sand
Test Condition: Inundated **Shear Type:** Regular

Tested By: CS **Date:** 04/14/17
Computed By: JP **Date:** 04/18/17
Checked by: AP **Date:** 04/18/17

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
131.8	120.2	9.7	14.9	65	100	1	1.068	0.744
						3	2.544	2.016
						5	3.816	3.360





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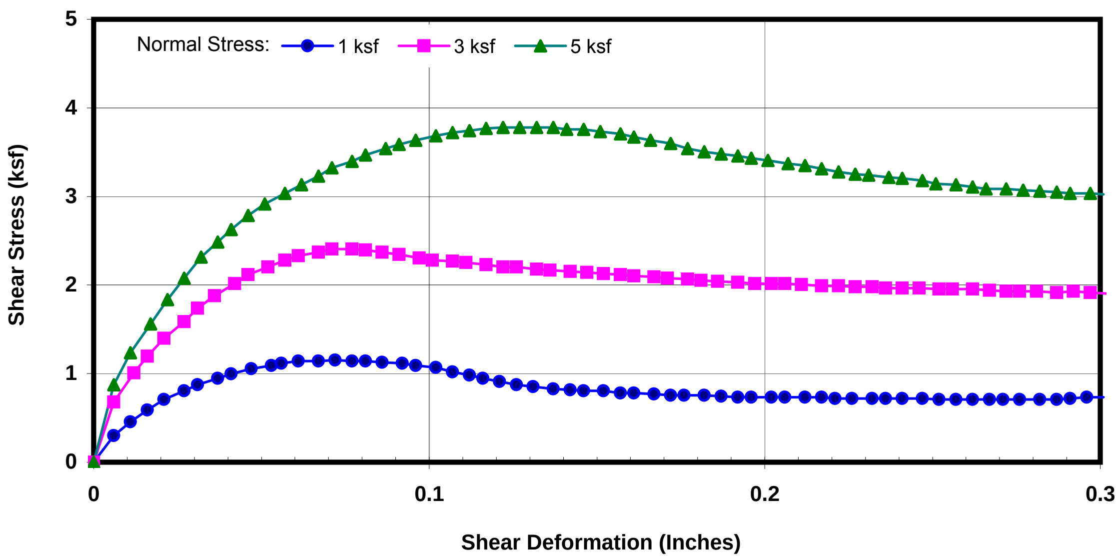
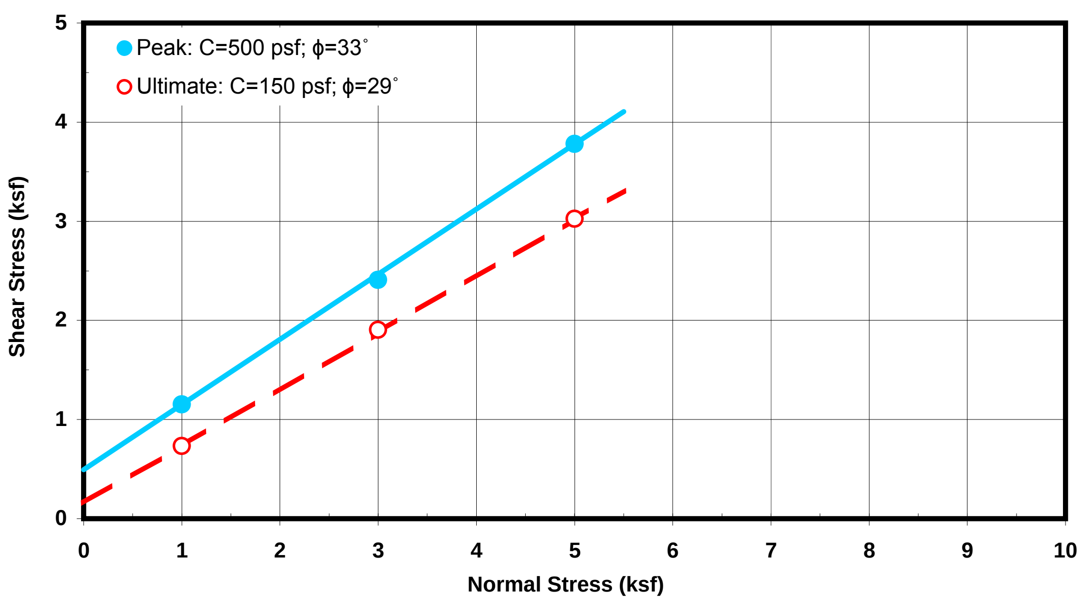
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name: UCR North District
Project No.: 128685
Boring No.: HA-7
Sample No.: - **Depth (ft):** 15
Sample Type: Mod. Cal.
Soil Description: Silty Sand
Test Condition: Inundated **Shear Type:** Regular

Tested By: CS **Date:** 04/14/17
Computed By: JP **Date:** 04/18/17
Checked by: AP **Date:** 04/18/17

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
125.1	108.6	15.2	20.3	74	99	1	1.152	0.732
						3	2.407	1.903
						5	3.780	3.024





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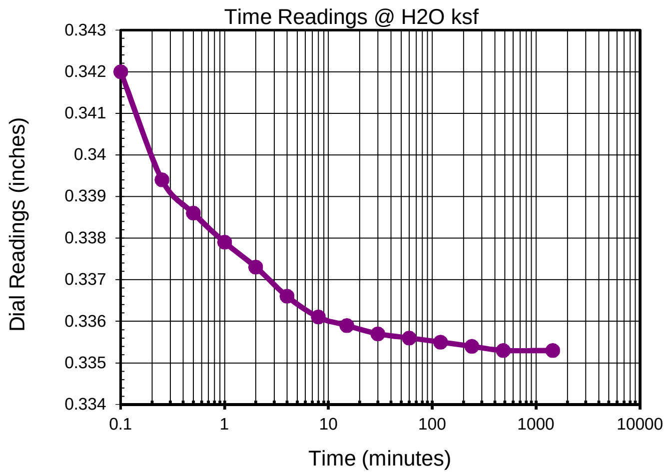

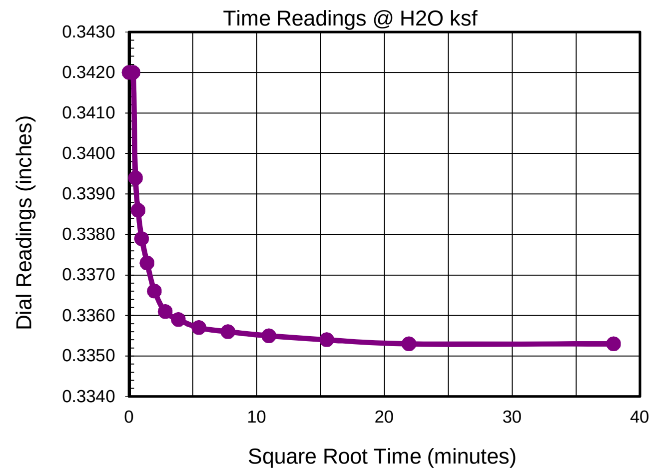

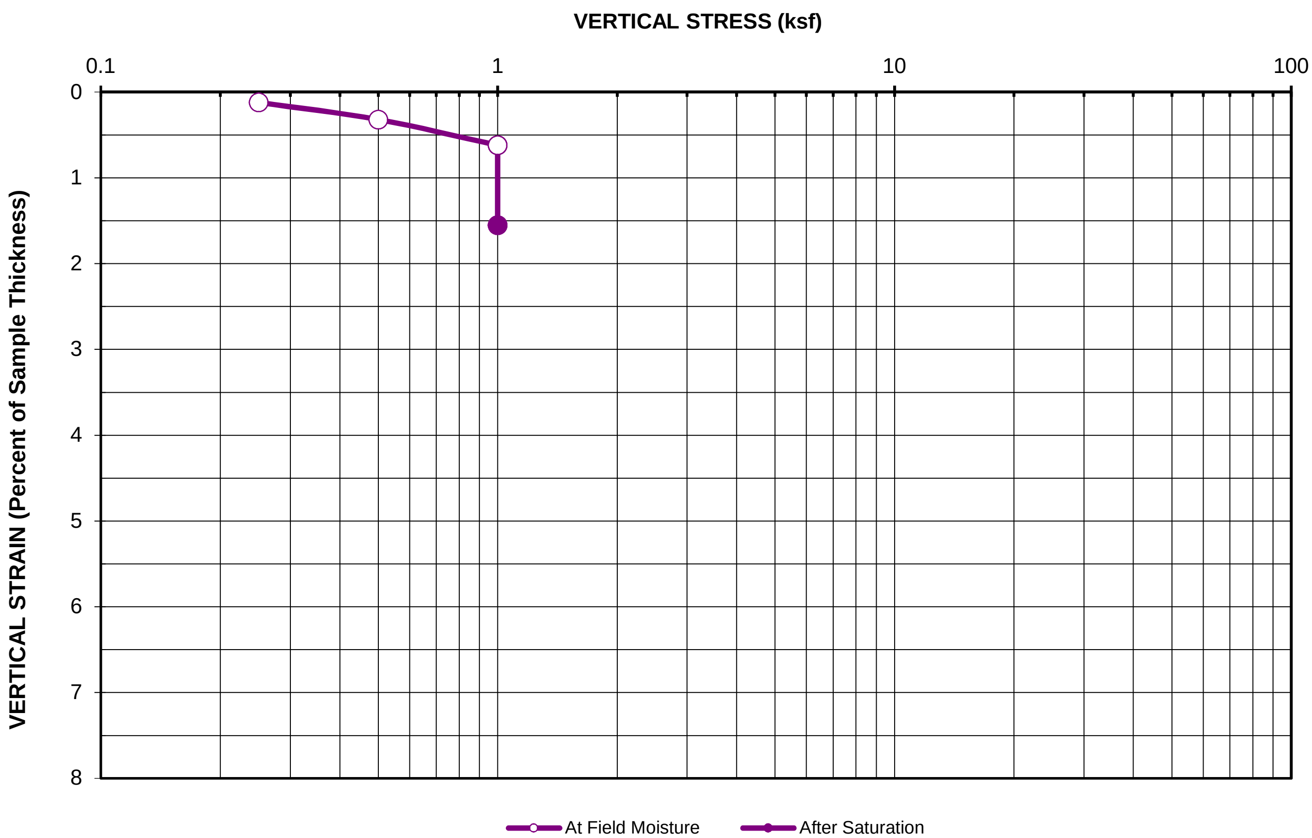

Boring No. :	HA-3	Initial Dry Unit Weight (pcf):	122.2
Sample No.:	-	Initial Moisture Content (%):	5.1
Depth (feet):	5	Final Moisture Content (%):	11.2
Sample Type:	Mod Cal	Initial Void Ratio:	0.38
Soil Description:	Silty Sand		
Remarks:	Collapse= 0.93% upon inundation		

Project Name:	UCR North District
Project No.:	128685
Project Location:	N/A
AP No:	17-0412

1-D SWELL/COLLAPSE
ASTM D 4546-08, Method B

Apr-15

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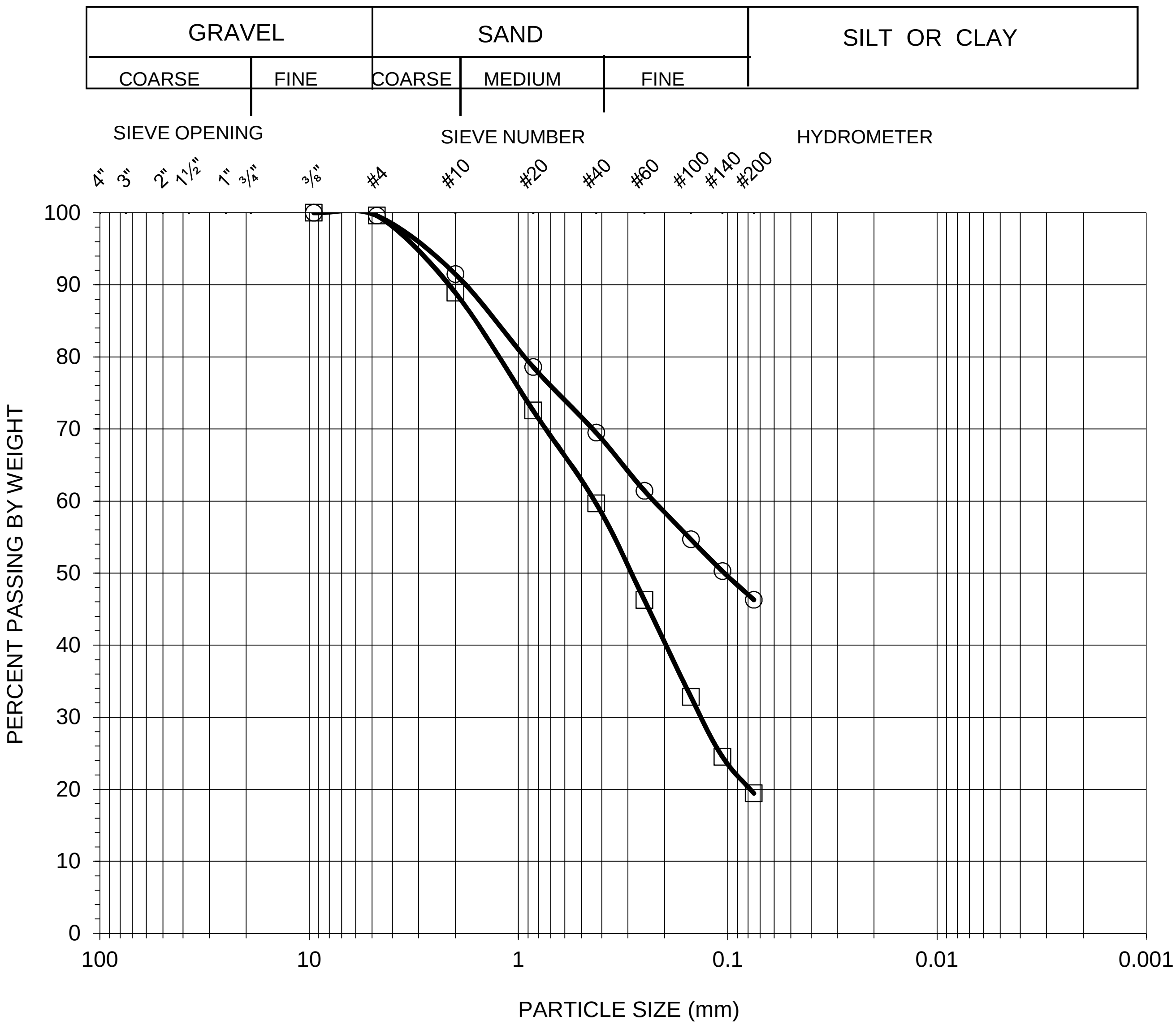
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913

Client Name:	Haley & Aldrich	Tested by:	LS	Date:	04/18/18
Project Name:	UCR North District Phase 1B	Computed by:	JP	Date:	04/18/18
Project Number:	131648-003	Checked by:	AP	Date:	04/18/18



Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	HA-12	-	5.25-6.5	0	54	46	N/A	SC*
□	HA-12	-	45-46.25	0	81	19	N/A	SM

**Note: Based on visual classification of sample*

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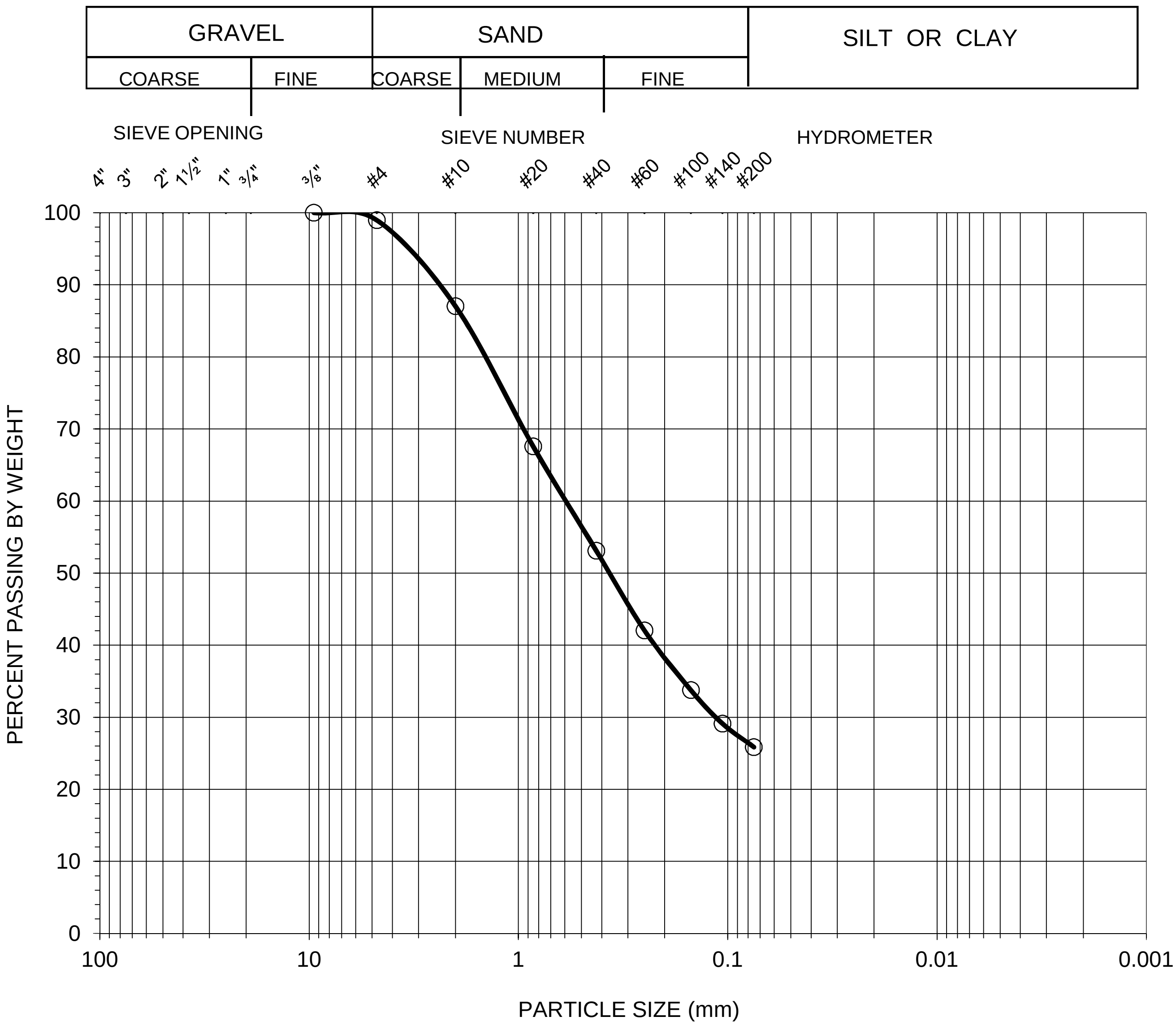
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913

Client Name:	Haley & Aldrich	Tested by:	LS	Date:	04/18/18
Project Name:	UCR North District Phase 1B	Computed by:	JP	Date:	04/18/18
Project Number:	131648-003	Checked by:	AP	Date:	04/18/18



Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	HA-14	-	5.5-6.5	1	73	26	N/A	SM

PERCENT PASSING NO. 200 SIEVE

ASTM D1140

Client: Haley & Aldrich
AP Lab No.: 18-0425
Project Name: UCR North District Phase 1B
Test Date: 04/17/18
Project Number: 131648-003

Boring No.	Sample No.	Depth (ft)	Percent Fines (%)
HA-12	-	16-16.5	12.8
HA-12	-	31-31.5	21.1
HA-15	-	0-5	32.0
HA-15	-	35-36.5	19.8

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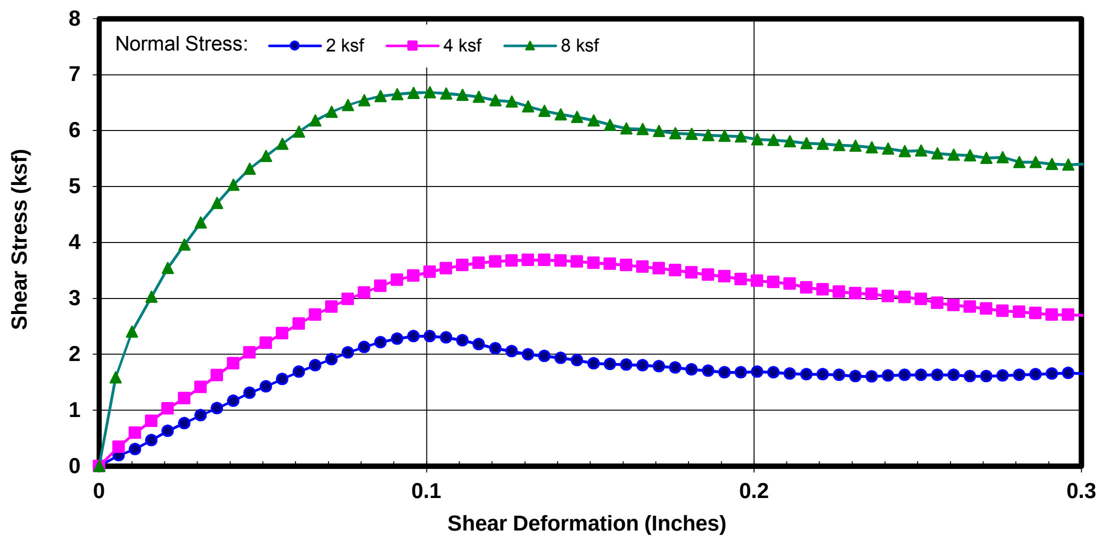
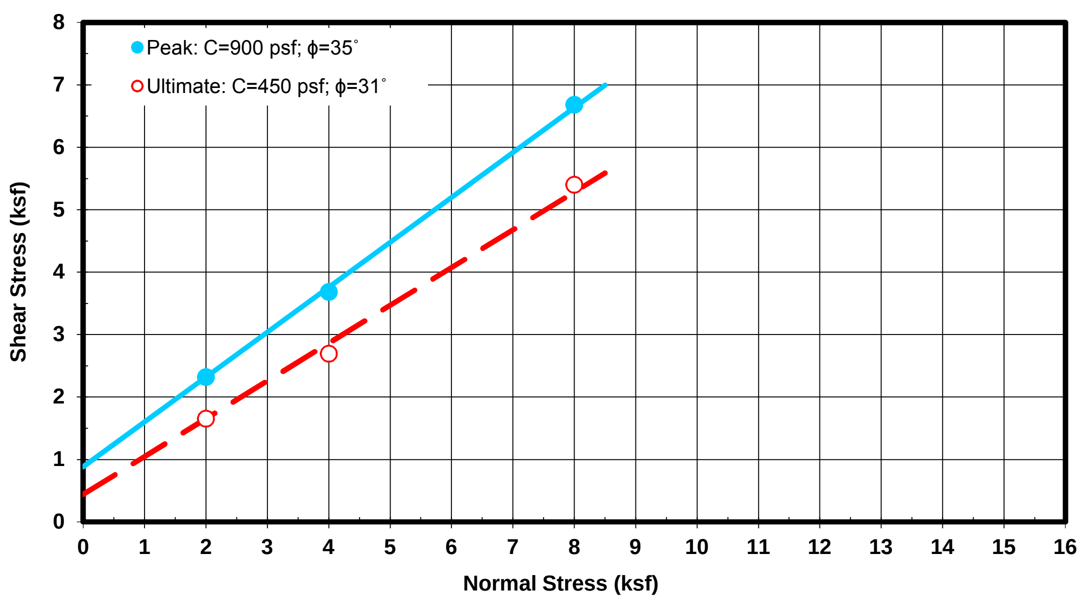
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name: UCR North District Phase 1B
Project No.: 131648-003
Boring No.: HA-12
Sample No.: - **Depth (ft):** 11-11.5
Sample Type: Mod. Cal.
Soil Description: Silty Sand w/gravel
Test Condition: Inundated **Shear Type:** Regular

Tested By: ST **Date:** 04/18/18
Computed By: JP **Date:** 04/18/18
Checked by: AP **Date:** 04/18/18

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
128.3	119.1	7.8	15.2	50	99	2	2.322	1.652
						4	3.683	2.693
						8	6.684	5.400





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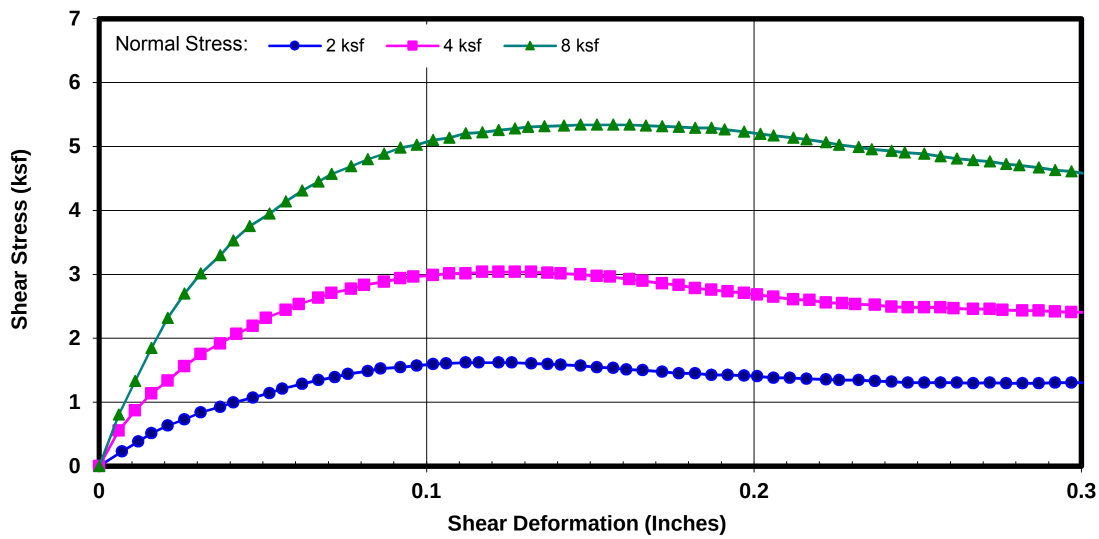
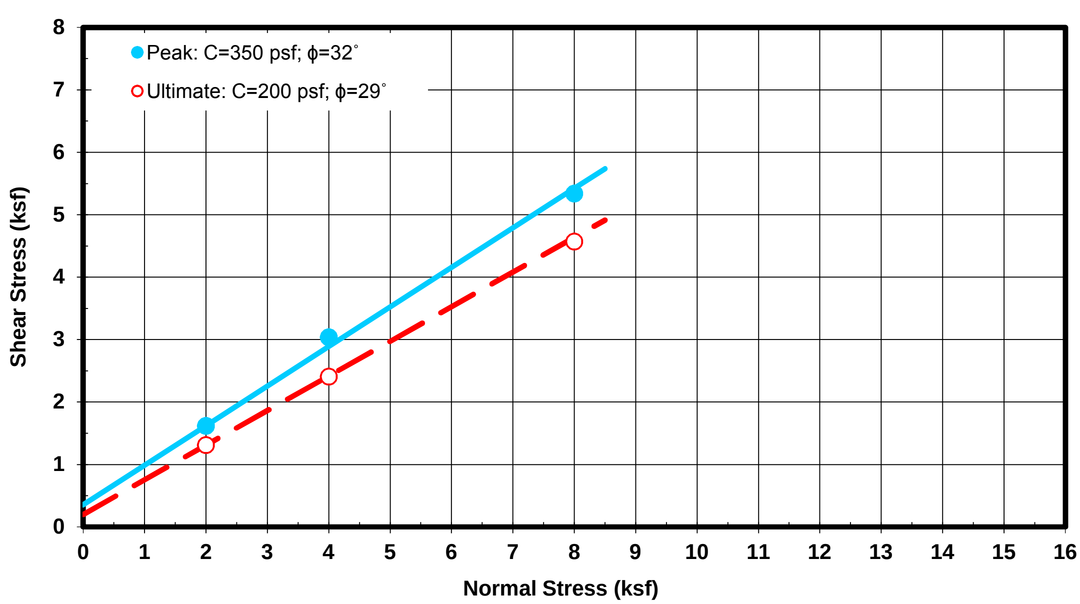
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name: UCR North District Phase 1B
Project No.: 131648-003
Boring No.: HA-12
Sample No.: - **Depth (ft):** 21-21.5
Sample Type: Mod. Cal.
Soil Description: Silty Sand w/gravel
Test Condition: Inundated **Shear Type:** Regular

Tested By: NG **Date:** 04/17/18
Computed By: JP **Date:** 04/18/18
Checked by: AP **Date:** 04/18/18

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
127.0	116.1	9.3	16.6	56	99	2	1.620	1.308
						4	3.037	2.407
						8	5.340	4.572





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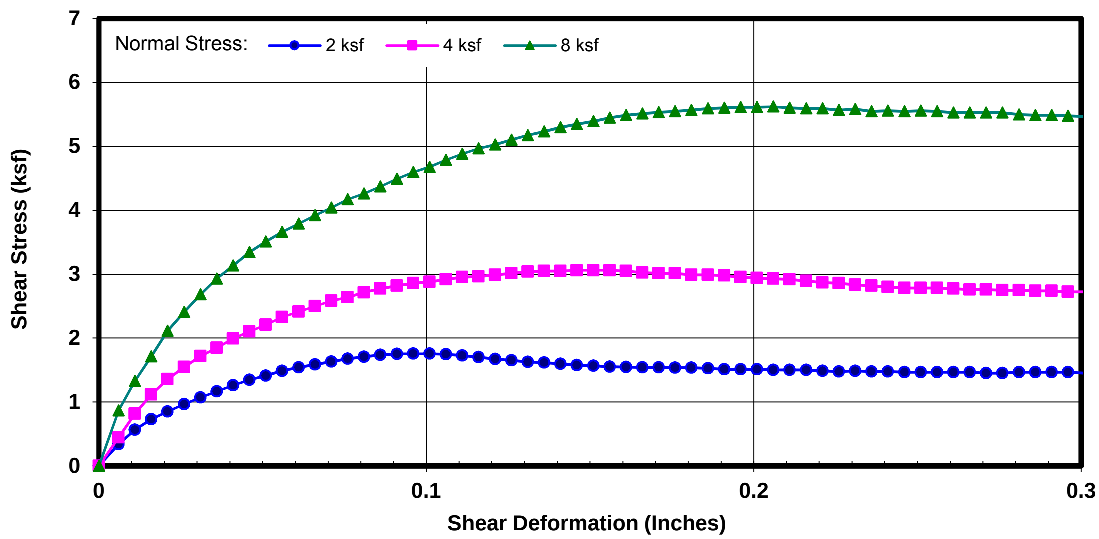
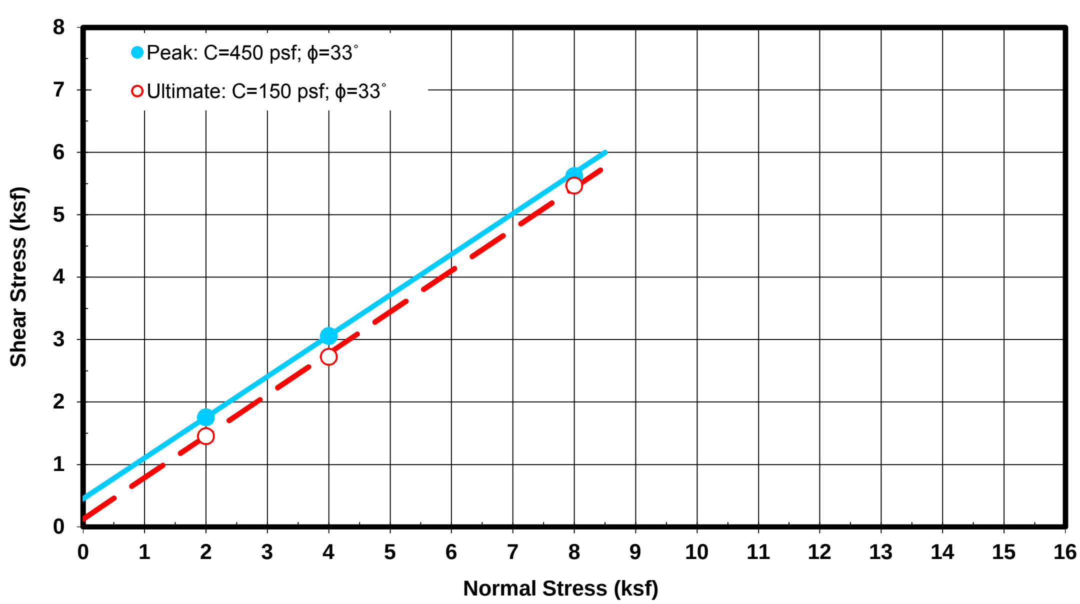
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name: UCR North District Phase 1B
Project No.: 131648-003
Boring No.: HA-15
Sample No.: - **Depth (ft):** 11-11.5
Sample Type: Mod. Cal.
Soil Description: Silty Sand w/gravel
Test Condition: Inundated **Shear Type:** Regular

Tested By: NG **Date:** 04/17/18
Computed By: JP **Date:** 04/18/18
Checked by: AP **Date:** 04/18/18

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
125.2	117.1	6.9	16.1	43	99	2	1.755	1.452
						4	3.060	2.724
						8	5.620	5.467





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CORROSION TEST RESULTS

Client Name: Haley & Aldrich
Project Name: UCR North District Phase 1B
Project No.: 131648-003

AP Job No.: 18-0425
Date: 04/17/18

Boring No.	Sample Type	Depth (feet)	Soil Type	Minimum Resistivity (ohm-cm)	pH	Sulfate Content (ppm)	Chloride Content (ppm)
HA-12	Bulk	0-5	SC	1848	7.4	46	39
HA-14	-	11-11.5	SM	13448	8.0	38	32

NOTES:
Resistivity Test and pH: California Test Method 643
Sulfate Content : California Test Method 417
Chloride Content : California Test Method 422
ND = Not Detectable
NA = Not Sufficient Sample
NR = Not Requested

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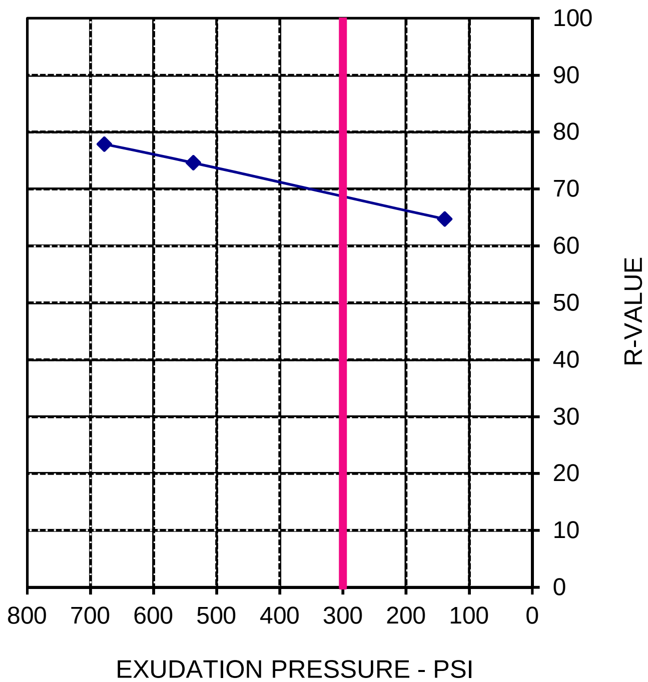
R-VALUE TEST DATA

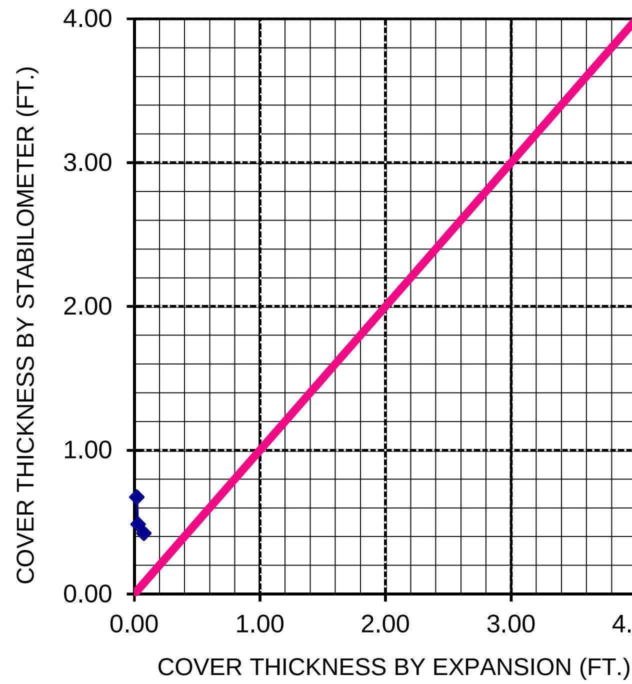
ASTM D2844

Project Name:	UCR North District Phase 1B	Tested By:	ST	Date:	04/13/18
Project Number:	131648-003	Computed By:	KM	Date:	04/14/18
Boring No.:	HA-10	Checked By:	AP	Date:	04/18/18
Sample Type:	Bulk	Depth (ft.):	0-5		
Location:	N/A				
Soil Description:	Silty Sand				

Mold Number	G	H	I	
Water Added, g	46	39	31	
Compact Moisture(%)	41.9	41.1	40.0	
Compaction Gage Pressure, psi	250	250	250	
Exudation Pressure, psi	139	537	678	
Sample Height, Inches	2.4	2.4	2.4	
Gross Weight Mold, g	2914	2920	2890	
Tare Weight Mold, g	1827	1837	1819	
Net Sample Weight, g	1087	1084	1072	
Expansion, inchesx10^{-4}	6	9	23	
Stability 2,000 (160 psi)	16/30	12/22	10/20	
Turns Displacement	5.38	4.82	4.69	
R-Value Uncorrected	67	76	79	
R-Value Corrected	65	75	78	
Dry Density, pcf	96.7	97.0	96.6	
Traffic Index	8.0	8.0	8.0	
G.E. by Stability	0.67	0.49	0.42	
G.E. by Expansion	0.02	0.03	0.08	

R-VALUE		
	By Exudation:	69
	By Expansion:	*N/A
	At Equilibrium: (by Exudation)	69
Remarks	Gf = 1.34, and 0.0 % Retained on the ¾" *Not Applicable	





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R-VALUE TEST DATA

ASTM D2844

Project Name: UCR North District Phase 1B
Project Number: 131648-003
Boring No.: HA-11
Sample Type: Bulk   Depth (ft.): 0-5
Location: N/A
Soil Description: Silty Sand

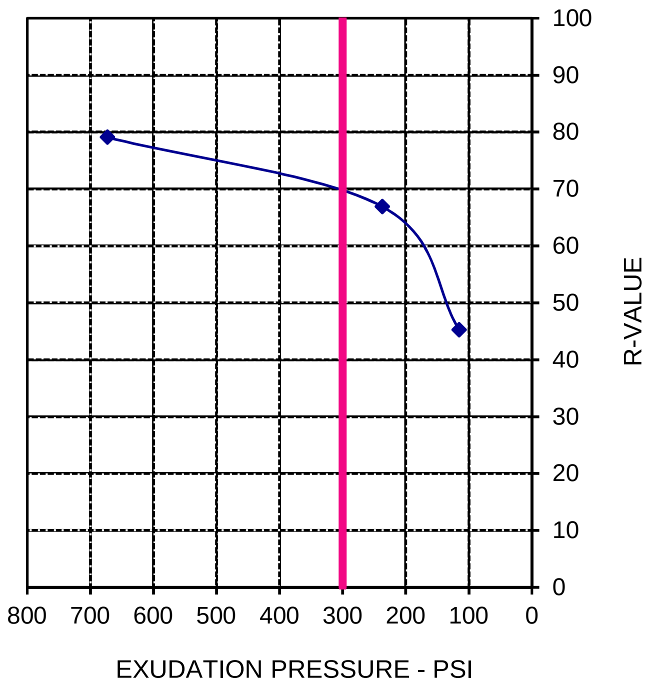
Tested By: ST   Date: 04/13/18
Computed By: KM   Date: 04/14/18
Checked By: AP   Date: 04/18/18

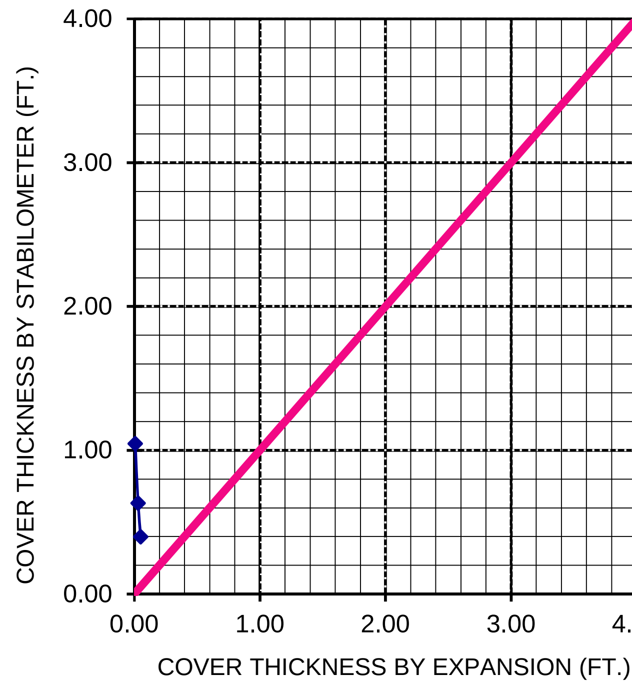
Mold Number	B	A	C	
Water Added, g	31	16	0	
Compact Moisture(%)	17.8	16.1	14.4	
Compaction Gage Pressure, psi	250	250	250	
Exudation Pressure, psi	115	237	673	
Sample Height, Inches	2.4	2.4	2.3	
Gross Weight Mold, g	3036	3024	3011	
Tare Weight Mold, g	1966	1967	1965	
Net Sample Weight, g	1070	1056	1047	
Expansion, inchesx10^{-4}	2	9	15	
Stability 2,000 (160 psi)	24/50	14/27	8/16	
Turns Displacement	5.86	5.48	5.30	
R-Value Uncorrected	48	69	81	
R-Value Corrected	45	67	79	
Dry Density, pcf	114.7	114.9	120.6	
Traffic Index	8.0	8.0	8.0	
G.E. by Stability	1.05	0.63	0.40	
G.E. by Expansion	0.01	0.03	0.05	

R-VALUE		
	By Exudation:	70
	By Expansion:	*N/A
	At Equilibrium: (by Exudation)	70

Remarks

Gf = 1.34, and 0.2 % Retained on the ¾"
*Not Applicable





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R-VALUE TEST DATA

ASTM D2844

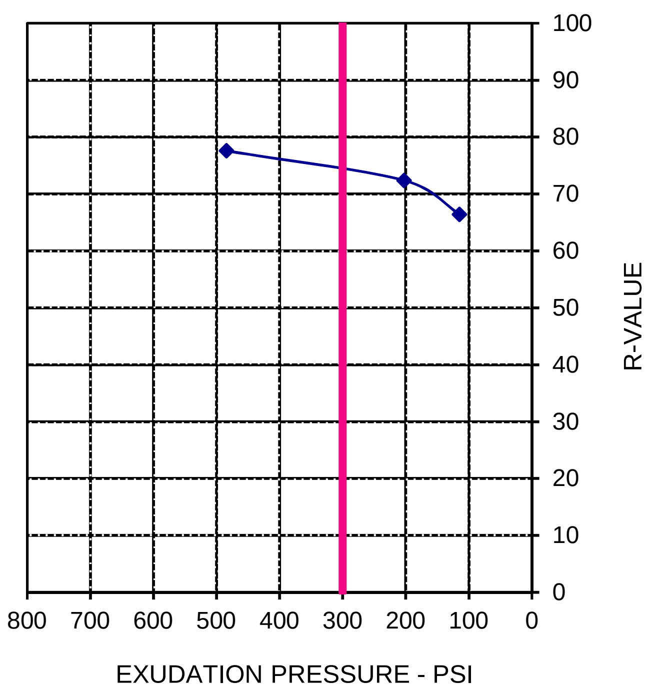
Project Name:	UCR North District Phase 1B	Tested By:	ST	Date:	04/12/18
Project Number:	131648-003	Computed By:	KM	Date:	04/14/18
Boring No.:	HA-16	Checked By:	AP	Date:	04/18/18
Sample Type:	Bulk	Depth (ft.):	0-5		
Location:	N/A				
Soil Description:	Silty Sand				

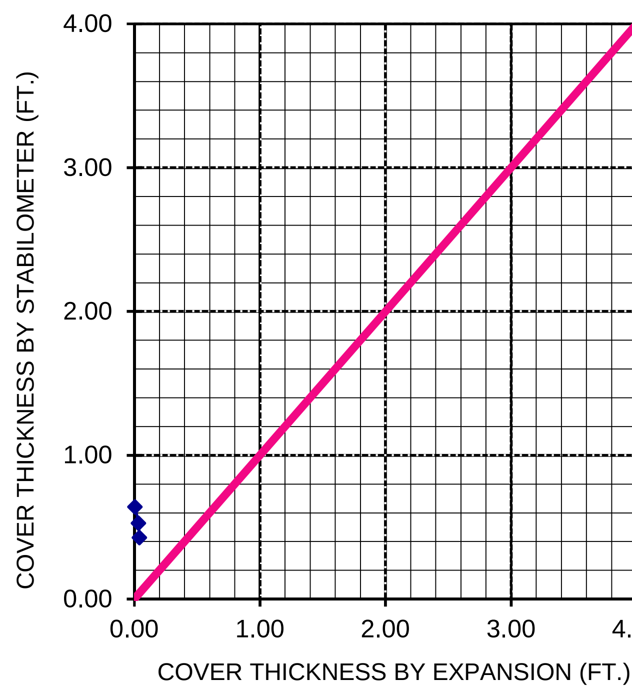
Mold Number	R4	R5	R6	
Water Added, g	80	70	61	
Compact Moisture(%)	9.9	9.0	8.0	
Compaction Gage Pressure, psi	250	300	350	
Exudation Pressure, psi	115	203	484	
Sample Height, Inches	2.5	2.5	2.5	
Gross Weight Mold, g	3134	3122	3110	
Tare Weight Mold, g	2015	2010	2011	
Net Sample Weight, g	1119	1112	1099	
Expansion, inchesx10^{-4}	1	10	12	
Stability 2,000 (160 psi)	16/29	12/22	10/16	
Turns Displacement	5.71	5.98	6.50	
R-Value Uncorrected	66	72	78	
R-Value Corrected	66	72	78	
Dry Density, pcf	123.3	123.7	123.3	
Traffic Index	8.0	8.0	8.0	
G.E. by Stability	0.64	0.53	0.43	
G.E. by Expansion	0.00	0.03	0.04	

R-VALUE		
	By Exudation:	75
	By Expansion:	*N/A
	At Equilibrium: (by Exudation)	75

Remarks

Gf = 1.34, and 0.2 % Retained on the ¾"
*Not Applicable





APPENDIX D – VMT SCREENING EVALUATION MEMORANDUM

MEMORANDUM

URBAN | CROSSROADS

DATE: May 19, 2023
TO: Sonya Hooker, Ruth Villalobos & Associates Inc.
FROM: Alex So, Urban Crossroads, Inc.
JOB NO: 15278-01 VMT

UCR NORTH DISTRICT PHASE 2 VEHICLE MILES TRAVELED (VMT) SCREENING EVALUATION

Urban Crossroads, Inc. is pleased to provide the following Vehicle Miles Traveled (VMT) Screening Evaluation for the UCR North District Phase 2 (**Project**), which is located on the northeastern portion of the UCR East Campus bounded by Blaine Street to the north, W. Linden Street to the south, UCR Corporation Yard and Child Development Center to the east, and Canyon Crest Drive to the west in the City of Riverside.

PROJECT OVERVIEW

The proposed Project entails the development of approximately 1,600 student housing beds in apartment-style units and student housing support services (e.g., retail, fitness space, laundry, group study space) for undergraduate and graduate students in two buildings, up to 7 stories in height, and totaling approximately 425,000 gross square feet.

VMT SCREENING METHODOLOGY

The California Environmental Quality Act (CEQA) requires all lead agencies to adopt VMT as the measure for identifying transportation impacts for land use projects. To assist lead agencies in complying with CEQA requirements, the Governor's Office of Planning and Research (OPR) has provided their Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018) (**Technical Advisory**) (1). The Technical Advisory provides recommendations for methodologies to be used to conduct VMT screening evaluations and VMT analyses. The Technical Advisory has been used to identify various criteria or screening steps used to conduct this VMT screening evaluation.

To assist in the assessment of VMT screening criteria applicable to the Project, the Riverside County Transportation Model or RIVCOM can be used to estimate VMT by parcel or group of parcels and the region as a whole. RIVCOM is a sub-regional travel demand model developed and maintained by the Western Riverside Council of Governments (WRCOG) for use throughout Western Riverside County.

VMT SCREENING

Screening criteria described within the Technical Advisory are used to identify when a proposed land use project is anticipated to result in a less than significant impact without the need to conduct a more detailed project level analysis. The screening criteria indicated in bold text below were selected as being most applicable to the proposed Project and have been further evaluated in this screening evaluation.

- Project Size
- **Low Area VMT for Residential and Office Projects**
- **Transit Availability**
- Affordable Housing
- **Local Serving**

A land use project needs only to meet one of the above screening criteria to result in a less than significant impact.

LOW AREA VMT FOR RESIDENTIAL AND OFFICE PROJECTS

The Technical Advisory states residential and office projects that are in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. For residential projects, the Technical Advisory recommends the threshold of 15% or more below existing regional VMT per capita.

The Project's physical location was identified in the RIVCOM model to determine the traffic analysis zone (TAZ) in which the Project resides. The Project was found to be located within TAZ 2095 of the RIVCOM model, and the proposed Project is generally consistent with other land uses represented in the TAZ. As such, VMT has been estimated for TAZ 2095 using the Production-Attraction (PA) method to obtain PA home-based VMT per capita. TAZ 2095 was found to generate PA VMT per capita of 7.0 for existing conditions. RIVCOM was also used to calculate existing regional VMT per capita for Western Riverside County. Existing regional PA VMT per capita was calculated as 18.8, and when applying the Technical Advisory recommended threshold of 15% below existing regional VMT per capita, the impact threshold for low area VMT screening would be 16.0 VMT per capita. As the Project's TAZ was found to generate 7.0 VMT per capita it would appear to reside in an area of low VMT.

Low Area VMT for Residential and Office Projects criteria is met.

TRANSIT AVAILABILITY

Consistent with guidance from the Technical Advisory, projects located within a Transit Priority Area (TPA) (i.e., within ½ mile of an existing "major transit stop"[1] or an existing stop along a "high-

[1] Pub. Resources Code, § 21064.3 ("'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.").

quality transit corridor"[2]) may be presumed to have a less than significant impact absent substantial evidence to the contrary.

However, the presumption may not be appropriate if a project:

- Has a Floor Area Ratio (FAR) of less than 0.75;
- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);
- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

TPA was identified using the Riverside Transit Authority (RTA) transit schedule, RTA Route 1 and Route 16 were found to be located within ½ mile of the Project site and provides service intervals of 15 minutes or less (see Attachment A).

Due to the large open space areas, recreational fields, and parking lot components of this project, the building only encompasses a small portion of the approximately 26-acre project area, thereby resulting in a floor area ratio much less than 0.75. However, FAR is not a standard metric used by UCR and would not apply properly to this project scenario. Additionally, the Project has been designed with the appropriate amount of parking to serve the project, as determined by UCR, and not any more.

Although UCR is part of the UC Regents and therefore is its own lead agency the proposed Project is consistent with the surrounding land uses, most of which are student oriented housing. In addition, the Project is consistent with the key aspects of the Sustainable Communities Strategy which includes utilizing infill opportunities and focusing on housing within existing urbanized areas. Finally, since the project site is currently vacant, the development would not replace affordable residential units, rather it would create new housing for students.

Transit Availability Screening criteria is met.

LOCAL SERVING USES

It should be noted the Technical Advisory, in addition to WRCOG's own recommendations to local agencies for VMT screening criteria, identifies local serving retail under 50,000 square feet and other local serving uses, such as parks, day care centers, and student housing, are presumed to have a less than significant impact on VMT due to their ability to reduce the length of travel needed to obtain basic local services.

In 2019, the North District Phase 1 project, to the immediate east, was subject to an EIR analysis. That EIR included an informational discussion of VMT for North District at buildout. It was determined for both the Existing Plus Phase 1 and Existing Plus Buildout scenarios, North District would reduce VMT as the expected new student housing would eliminate the "commute trip" because students would reside on campus and be close to academic and other support uses

[2] Pub. Resources Code, § 21155 ("For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.").

rather than commute to campus. In addition, the mixed-use amenities offered in North District would provide local retail and dining options for the students under Buildout conditions, further reducing the need to travel.

The proposed Project consists of 1,600 student housing beds in apartment-style units and student housing support services (e.g., retail, fitness space, laundry, group study space). Project residents will include both UCR students and up to 327 Riverside Community College District (RCCD) students who plan on transferring to UCR. As the Project is student housing with supportive services in close proximity to UCR's main campus, for students already attending UCR, this would result in shifts in modes of transportation (i.e., walking or bicycling) and would discourage vehicle travel to the main campus for educational purposes and the surrounding community for supportive services, thus reducing VMT.

RCCD students will also be able to access the supportive services described above and therefore discourage associated vehicle travel. In addition, Riverside City College students are expected to shift their mode of transportation through the utilization of the nearby Route 1 bus line which provides direct service to Riverside City College and downtown Riverside. Moreno Valley College students can utilize the nearby Route 16 bus line and transfer at the Moreno Valley Mall to bus lines serving Moreno Valley College.

Locally Serving Uses Screening criteria is met.

CONCLUSION

The Project meets the Technical Advisory's Low Area VMT for Residential and Office Projects screening criteria, Transit Availability screening criteria, and partially meets Locally Serving Uses screening criteria. The Project is presumed to have a less than significant impact on VMT consistent with the findings in the North District Phase 1 EIR.

If you have any questions, please contact me directly at aso@urbanxroads.com.

REFERENCES

1. **OPR.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* s.l. : Technical Advisory, 2018.

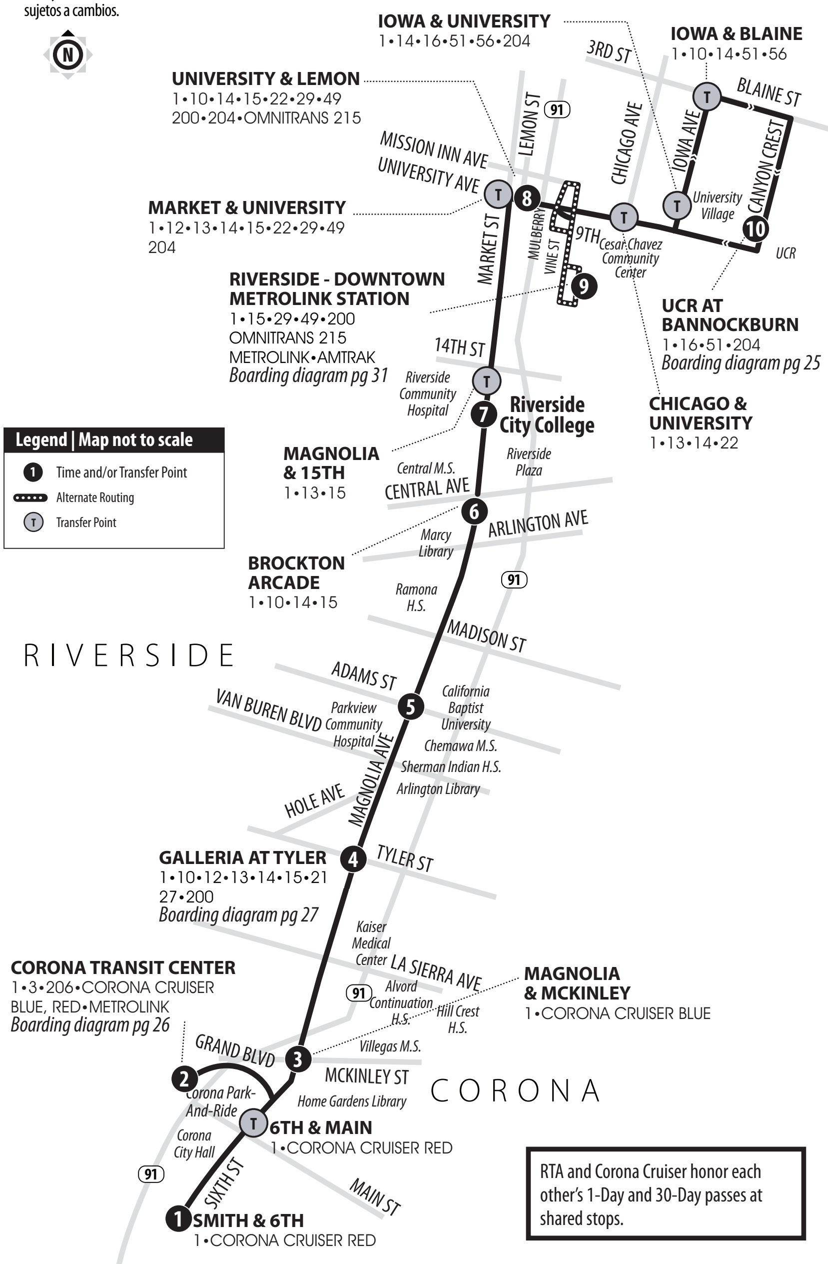
2. **Governments, Western Riverside Council of.** *Recommended Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment.* Western Riverside County : Western Riverside Council of Governments, 2020.

ATTACHMENT A

RTA ROUTE 1 AND 16 MAP AND SCHEDULE

1 UCR - DOWNTOWN RIVERSIDE - CORONA

Routing and timetables subject to change.
Rutas y horarios son sujetos a cambios.



1 EASTBOUND TO DOWNTOWN RIVERSIDE/UCR | WEEKDAYS

A.M. times are in PLAIN, P.M. times are in BOLD | Times are approximate

SMITH & 6TH 1	CORONA TRANSIT CENTER 2	MAGNOLIA & MCKINLEY 3	GALLERIA AT TYLER 4	MAGNOLIA & ADAMS 5	BROCKTON ARCADE 6	RIVERSIDE CITY COLLEGE 7	UNIVERSITY & LEMON 8	RIVERSIDE-DOWNTOWN METROLINK STATION 9	UCR AT BANNOCKBURN 10
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4:34	4:45	4:56	5:07	5:16	5:22	5:27	5:32	5:36	5:50
4:49	5:00	5:11	5:22	5:31	5:37	5:42	5:47	5:51	6:05
5:05	5:15	5:26	5:37	5:46	5:52	5:57	6:02	6:06	6:20
5:25	5:37	5:48	5:59	6:08	6:14	6:20	6:25	6:29	6:43
5:57	6:09	6:20	6:31	6:40	6:46	6:52	6:57	7:01	7:17
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6:57	7:11	7:23	7:37	7:50	7:57	8:04	8:10	—	8:27
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1 WESTBOUND TO CORONA | WEEKDAYS

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1 EASTBOUND TO DOWNTOWN RIVERSIDE/UCR | WEEKENDS

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10:02	10:20	10:33	10:45	10:57	11:04	11:11	11:19	—	11:37
10:15	10:33	10:46	10:58	11:10	11:17	11:24	11:32	—	11:50
10:27	10:45	10:58	11:13	11:25	11:32	11:39	11:47	—	**12:05**
10:42	11:00	11:13	11:28	11:40	11:47	11:54	**12:02**	—	**12:20**
10:59	11:17	11:30	11:45	11:57	**12:04**	**12:11**	**12:19**	—	**12:37**
11:12	11:30	11:43	11:58	**12:10**	**12:17**	**12:24**	**12:32**	—	**12:50**
11:29	11:47	**12:00**	**12:15**	**12:27**	**12:34**	**12:41**	**12:49**	—	**1:07**
11:42	**12:00**	**12:13**	**12:28**	**12:40**	**12:47**	**12:54**	**1:02**	—	**1:20**
11:57	**12:15**	**12:28**	**12:43**	**12:55**	**1:02**	**1:09**	**1:17**	—	**1:35**
12:12	**12:30**	**12:43**	**12:58**	**1:10**	**1:17**	**1:24**	**1:32**	—	**1:50**
12:28	**12:46**	**12:59**	**1:14**	**1:26**	**1:33**	**1:40**	**1:48**	—	**2:06**
12:43	**1:01**	**1:14**	**1:29**	**1:41**	**1:48**	**1:55**	**2:03**	—	**2:21**
12:58	**1:16**	**1:29**	**1:44**	**1:56**	**2:03**	**2:10**	**2:18**	—	**2:38**
1:13	**1:31**	**1:44**	**1:59**	**2:11**	**2:18**	**2:25**	**2:33**	—	**2:53**
1:30	**1:48**	**2:01**	**2:16**	**2:28**	**2:35**	**2:42**	**2:50**	—	**3:10**
1:45	**2:03**	**2:16**	**2:31**	**2:43**	**2:50**	**2:57**	**3:05**	—	**3:25**
2:00	**2:18**	**2:31**	**2:46**	**2:58**	**3:05**	**3:12**	**3:20**	—	**3:40**
2:13	**2:31**	**2:44**	**2:59**	**3:11**	**3:18**	**3:25**	**3:33**	—	**3:53**
2:33	**2:51**	**3:04**	**3:19**	**3:31**	**3:38**	**3:45**	**3:53**	—	**4:10**
2:48	**3:06**	**3:19**	**3:34**	**3:46**	**3:53**	**4:00**	**4:08**	—	**4:28**
3:05	**3:23**	**3:36**	**3:51**	**4:03**	**4:10**	**4:17**	**4:25**	—	**4:45**
3:18	**3:36**	**3:49**	**4:03**	**4:15**	**4:22**	**4:29**	**4:37**	—	**4:57**
3:32	**3:50**	**4:03**	**4:17**	**4:29**	**4:36**	**4:43**	**4:51**	**4:56**	**5:14**
3:47	**4:05**	**4:18**	**4:32**	**4:44**	**4:51**	**4:58**	**5:06**	**5:11**	**5:29**
4:03	**4:21**	**4:34**	**4:48**	**5:00**	**5:07**	**5:14**	**5:22**	—	**5:37**
4:19	**4:37**	**4:50**	**5:04**	**5:16**	**5:23**	**5:30**	**5:38**	—	**5:56**
4:39	**4:57**	**5:09**	**5:22**	**5:33**	**5:39**	**5:46**	**5:54**	—	**6:12**
4:55	**5:13**	**5:25**	**5:38**	**5:49**	**5:55**	**6:02**	**6:10**	—	**6:28**
5:33	**5:51**	**6:03**	**6:16**	**6:27**	**6:33**	**6:40**	**6:48**	**6:53**	**7:11**
5:58	**6:16**	**6:28**	**6:41**	**6:52**	**6:58**	**7:05**	**7:13**	—	**7:31**
6:30	**6:46**	**6:58**	**7:10**	**7:21**	**7:27**	**7:34**	**7:41**	—	**7:59**
6:52	**7:08**	**7:20**	**7:32**	**7:43**	**7:49**	**7:56**	**8:03**	—	**8:21**
7:23	**7:39**	**7:51**	**8:03**	**8:14**	**8:20**	**8:27**	**8:34**	—	**8:52**
7:46	**8:02**	**8:14**	**8:26**	**8:37**	**8:43**	**8:49**	**8:55**	**9:00**	**9:15**
8:46	**9:01**	**9:13**	**9:25**	**9:36**	**9:42**	**9:48**	**9:54**	—	**10:07**

1 WESTBOUND TO CORONA | WEEKENDS

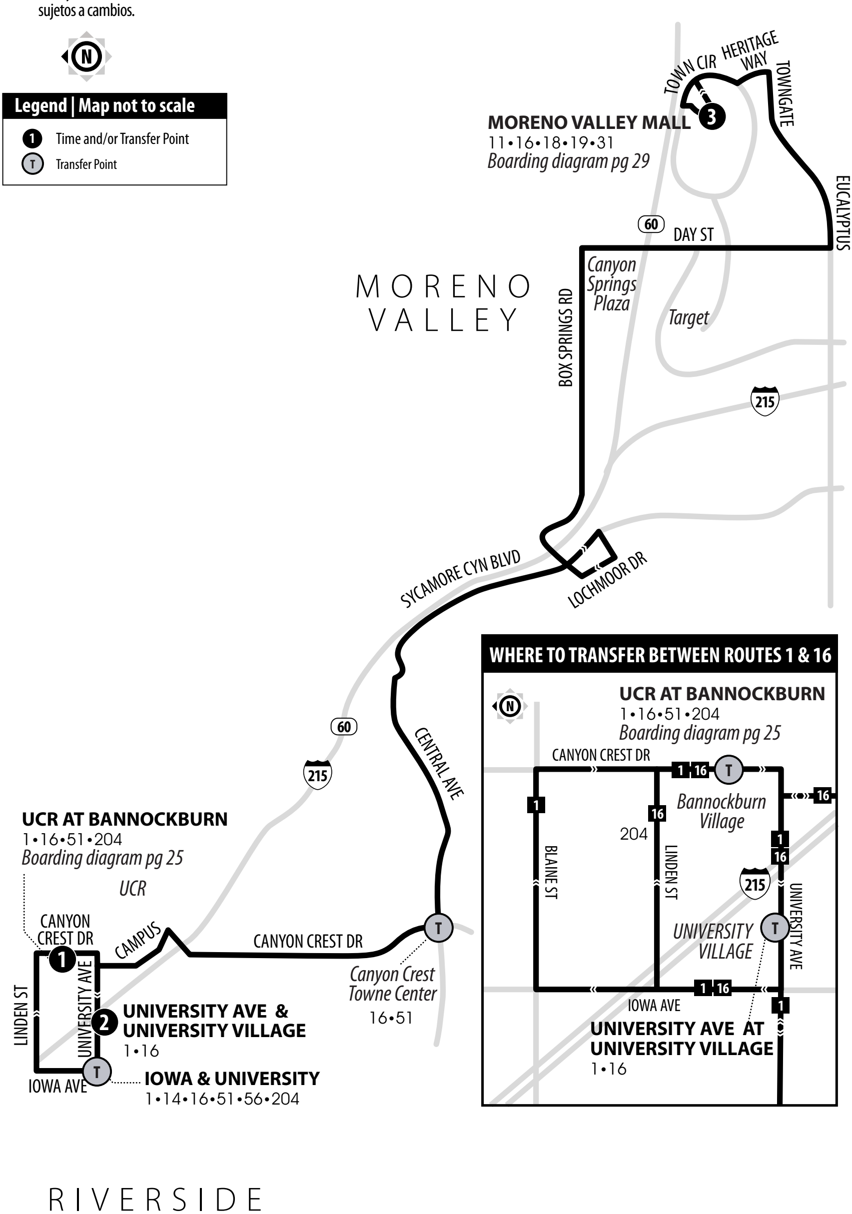
A.M. times are in PLAIN, P.M. times are in BOLD | Times are approximate

UCR AT BANNOCKBURN	RIVERSIDE-DOWNTOWN METROLINK STATION	UNIVERSITY & LEMON	RIVERSIDE CITY COLLEGE	BROCKTON ARCADE	MAGNOLIA & ADAMS	GALLERIA AT TYLER	MAGNOLIA & MCKINLEY	CORONA TRANSIT CENTER	SMITH & 6TH
10	9	8	7	6	5	4	3	2	1
5:48	—	5:56	6:02	6:08	6:14	6:23	6:35	6:45	6:56
6:18	—	6:26	6:33	6:39	6:45	6:54	7:06	7:16	7:27
6:43	6:55	6:59	7:06	7:12	7:18	7:27	7:39	7:50	8:01
7:20	7:34	7:38	7:45	7:51	7:58	8:10	8:25	8:36	8:47
7:48	—	8:01	8:08	8:14	8:21	8:33	8:48	9:00	9:11
8:22	8:36	8:40	8:47	8:54	9:02	9:14	9:29	9:41	9:52
8:49	9:03	9:07	9:14	9:21	9:29	9:41	9:56	10:08	10:21
9:07	—	9:20	9:28	9:35	9:43	9:55	10:10	10:22	10:35
9:40	—	9:53	10:01	10:08	10:16	10:30	10:45	10:57	11:10
10:02	—	10:15	10:23	10:30	10:39	10:53	11:09	11:23	11:36
10:17	—	10:30	10:38	10:45	10:54	11:08	11:24	11:38	11:51
10:32	—	10:45	10:53	11:00	11:09	11:25	11:41	11:55	**12:08**
10:47	—	11:00	11:08	11:15	11:24	11:40	11:56	**12:10**	**12:23**
11:02	—	11:15	11:23	11:30	11:39	11:55	**12:11**	**12:25**	**12:38**
11:17	—	11:30	11:38	11:45	11:54	**12:10**	**12:26**	**12:40**	**12:53**
11:32	—	11:47	11:55	**12:02**	**12:11**	**12:27**	**12:43**	**12:57**	**1:10**
11:47	—	**12:02**	**12:10**	**12:17**	**12:26**	**12:42**	**12:58**	**1:12**	**1:25**
12:02	**—**	**12:17**	**12:25**	**12:32**	**12:41**	**12:57**	**1:13**	**1:27**	**1:40**
12:17	**—**	**12:32**	**12:40**	**12:47**	**12:56**	**1:12**	**1:28**	**1:42**	**1:55**
12:32	**—**	**12:47**	**12:55**	**1:03**	**1:12**	**1:28**	**1:46**	**2:00**	**2:13**
12:47	**—**	**1:02**	**1:10**	**1:18**	**1:27**	**1:43**	**2:01**	**2:15**	**2:28**
1:02	**—**	**1:17**	**1:25**	**1:33**	**1:42**	**1:58**	**2:16**	**2:30**	**2:43**
1:17	**—**	**1:32**	**1:40**	**1:48**	**1:57**	**2:13**	**2:31**	**2:45**	**2:58**
1:32	**—**	**1:47**	**1:55**	**2:03**	**2:12**	**2:27**	**2:45**	**2:59**	**3:12**
1:47	**—**	**2:02**	**2:10**	**2:18**	**2:27**	**2:42**	**3:00**	**3:14**	**3:27**
2:02	**—**	**2:17**	**2:26**	**2:34**	**2:43**	**2:58**	**3:16**	**3:30**	**3:43**
2:18	**—**	**2:33**	**2:42**	**2:50**	**2:59**	**3:14**	**3:32**	**3:46**	**3:59**
2:33	**—**	**2:48**	**2:57**	**3:05**	**3:14**	**3:29**	**3:47**	**4:01**	**4:14**
2:50	**—**	**3:05**	**3:14**	**3:22**	**3:31**	**3:46**	**4:04**	**4:18**	**4:31**
3:05	**—**	**3:20**	**3:29**	**3:37**	**3:46**	**4:01**	**4:19**	**4:33**	**4:43**
3:22	**—**	**3:37**	**3:46**	**3:54**	**4:03**	**4:18**	**4:36**	**4:50**	**5:03**
3:37	**—**	**3:52**	**4:01**	**4:09**	**4:18**	**4:33**	**4:51**	**5:05**	**5:18**
3:52	**—**	**4:07**	**4:16**	**4:24**	**4:33**	**4:48**	**5:06**	**5:20**	**5:33**
4:25	**—**	**4:40**	**4:49**	**4:57**	**5:06**	**5:21**	**5:39**	**5:53**	**6:06**
4:43	**4:59**	**5:03**	**5:12**	**5:20**	**5:29**	**5:44**	**6:02**	**6:16**	**6:29**
5:09	**5:25**	**5:29**	**5:38**	**5:46**	**5:55**	**6:09**	**6:25**	**6:37**	**6:49**
5:26	**—**	**5:41**	**5:49**	**5:56**	**6:04**	**6:18**	**6:34**	**6:46**	**6:58**
5:52	**—**	**6:05**	**6:13**	**6:20**	**6:28**	**6:41**	**6:56**	**7:07**	**7:19**
6:12	**—**	**6:25**	**6:33**	**6:40**	**6:47**	**7:00**	**7:15**	**7:26**	**7:38**
6:51	**7:05**	**7:09**	**7:17**	**7:24**	**7:31**	**7:44**	**7:59**	**8:10**	**8:22**
7:43	**—**	**7:56**	**8:04**	**8:11**	**8:18**	**8:30**	**8:45**	**8:56**	**9:08**
8:25	**—**	**8:38**	**8:46**	**8:53**	**9:00**	**9:12**	**9:27**	**9:38**	**9:50**
9:04	**9:18**	**9:22**	**9:30**	**9:37**	**9:44**	**9:56**	**10:11**	**10:22**	**10:34**

16 MORENO VALLEY MALL TO UCR

Routing and timetables subject to change.
Rutas y horarios son sujetos a cambios.

Legend | Map not to scale
- 1 Time and/or Transfer Point
- T Transfer Point



16 WEEKDAYS

A.M. times are in PLAIN, P.M. times are in BOLD | Times are approximate

EASTBOUND TO MORENO VALLEY MALL	
UCR AT BANNOCKBURN	MORENO VALLEY MALL
1	3
5:40	6:06
6:12	6:39
7:12	7:42
7:51	8:21
8:31	9:01
8:55	9:25
9:10	9:40
9:25	9:55
9:40	10:10
9:55	10:25
10:08	10:40
10:22	10:54
10:36	11:08
10:51	11:23
11:06	11:39
11:22	**12:00**
11:36	**12:09**
11:51	**12:24**
12:06	**12:43**
12:21	**12:58**
12:36	**1:13**
12:51	**1:25**
1:08	**1:42**
1:23	**1:57**
1:38	**2:12**
1:53	**2:27**
2:08	**2:44**
2:23	**2:59**
2:38	**3:14**
2:53	**3:29**
3:08	**3:44**
3:22	**4:01**
3:40	**4:15**
3:55	**4:30**
4:10	**4:47**
4:25	**5:00**
4:38	**5:13**
4:55	**5:32**
5:10	**5:47**
5:25	**6:02**
5:40	**6:15**
5:55	**6:30**
6:10	**6:44**
6:25	**6:59**
6:40	**7:12**
6:55	**7:27**
7:10	**7:42**
7:25	**7:57**
7:40	**8:12**
7:55	**8:27**
8:18	**8:50**
8:55	**9:27**
9:31	**10:00**
10:12	**10:41**

WESTBOUND TO UCR		
MORENO VALLEY MALL	UNIVERSITY AVE & UNIVERSITY VILLAGE	UCR AT BANNOCKBURN
3	2	1
4:55	5:16	5:24
5:27	5:54	6:02
6:25	6:52	7:01
6:58	7:32	7:41
7:35	8:12	8:21
8:00	8:33	8:42
8:16	8:49	8:58
8:31	9:00	9:09
8:46	9:15	9:24
9:01	9:35	9:44
9:16	9:46	9:55
9:31	10:01	10:10
9:46	10:16	10:25
10:01	10:31	10:40
10:16	10:46	10:56
10:31	11:02	11:12
10:46	11:16	11:26
11:01	11:31	11:41
11:16	11:46	11:56
11:31	**12:01**	**12:11**
11:46	**12:16**	**12:26**
12:02	**12:31**	**12:41**
12:17	**12:46**	**12:56**
12:32	**1:01**	**1:11**
12:47	**1:16**	**1:26**
1:02	**1:31**	**1:41**
1:17	**1:46**	**1:56**
1:32	**2:02**	**2:12**
1:47	**2:17**	**2:27**
2:02	**2:32**	**2:42**
2:17	**2:47**	**2:57**
2:32	**3:02**	**3:12**
2:49	**3:20**	**3:30**
3:02	**3:33**	**3:43**
3:17	**3:48**	**3:58**
3:32	**4:03**	**4:13**
3:47	**4:18**	**4:28**
4:02	**4:34**	**4:44**
4:17	**4:49**	**4:59**
4:32	**5:04**	**5:14**
4:47	**5:19**	**5:29**
5:02	**5:34**	**5:44**
5:17	**5:47**	**5:57**
5:32	**6:02**	**6:12**
5:47	**6:17**	**6:27**
6:02	**6:31**	**6:41**
6:17	**6:46**	**6:56**
6:32	**7:01**	**7:11**
6:47	**7:13**	**7:23**
7:02	**7:28**	**7:38**
7:17	**7:43**	**7:53**
7:32	**7:58**	**8:08**
7:47	**8:13**	**8:23**
8:09	**8:35**	**8:45**
8:45	**9:11**	**9:21**
9:29	**9:52**	**10:02**
10:15	**10:37**	**10:47**

16 WEEKENDS

A.M. times are in PLAIN, P.M. times are in BOLD | Times are approximate

EASTBOUND TO MORENO VALLEY MALL	
UCR AT BANNOCKBURN	MORENO VALLEY MALL
1	3
7:30	7:59
8:15	8:42
8:58	9:27
9:26	9:57
9:56	10:27
10:11	10:42
10:28	10:59
10:40	11:11
10:55	11:26
11:09	11:40
11:25	11:56
11:41	**12:13**
11:56	**12:28**
12:09	**12:41**
12:25	**12:57**
12:41	**1:13**
12:56	**1:28**
1:11	**1:43**
1:26	**1:58**
1:41	**2:13**
1:56	**2:28**
2:11	**2:43**
2:26	**2:58**
2:42	**3:14**
2:57	**3:29**
3:12	**3:44**
3:27	**3:59**
3:44	**4:16**
4:01	**4:33**
4:16	**4:48**
4:31	**5:03**
4:46	**5:18**
5:01	**5:33**
5:18	**5:50**
5:31	**6:03**
6:03	**6:35**
6:25	**6:57**
7:34	**8:06**
8:37	**9:07**
10:13	**10:39**

WESTBOUND TO UCR		
MORENO VALLEY MALL	UNIVERSITY AVE & UNIVERSITY VILLAGE	UCR AT BANNOCKBURN
3	2	1
7:11	7:36	7:44
7:55	8:20	8:28
8:38	9:06	9:14
9:07	9:35	9:43
9:36	10:04	10:12
10:04	10:32	10:40
10:19	10:47	10:55
10:34	11:02	11:10
10:49	11:17	11:25
11:04	11:32	11:40
11:19	11:47	11:55
11:34	**12:02**	**12:10**
11:48	**12:17**	**12:25**
12:02	**12:32**	**12:40**
12:17	**12:47**	**12:55**
12:32	**1:02**	**1:10**
12:47	**1:17**	**1:25**
1:02	**1:32**	**1:40**
1:17	**1:47**	**1:55**
1:34	**2:04**	**2:12**
1:47	**2:17**	**2:25**
2:02	**2:32**	**2:40**
2:17	**2:47**	**2:55**
2:32	**3:02**	**3:10**
2:50	**3:20**	**3:28**
3:05	**3:35**	**3:43**
3:20	**3:50**	**3:58**
3:35	**4:05**	**4:13**
3:52	**4:22**	**4:30**
4:07	**4:37**	**4:45**
4:22	**4:52**	**5:00**
4:47	**5:17**	**5:25**
5:07	**5:37**	**5:45**
5:22	**5:52**	**6:00**
5:37	**6:07**	**6:15**
5:51	**6:20**	**6:27**
6:09	**6:37**	**6:45**
6:39	**7:07**	**7:15**
7:07	**7:35**	**7:43**
7:39	**8:07**	**8:15**
8:25	**8:53**	**9:01**
9:19	**9:47**	**9:55**