San Jose State University

San Jose State University Student Health Facility Project

Final

Initial Study - Mitigated Negative Declaration

September 2012

rincon

E n v i r o n m e n t a l   S c i e n t i s t s   P l a n n e r s   E n g i n e e r s

San Jose State University
Student Health Facility Project

Initial Study – Mitigated Negative Declaration

Prepared for:

The Trustees of the California State University
400 Golden Shore
Long Beach , California 90802-4275

Prepared by:

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September 2012

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1.0 INTRODUCTION

This Initial Study and Mitigated Negative Declaration (IS-MND) analyzes the potential environmental effects of constructing a Student Health Facility on the San Jose State University campus. The proposed project would involve the construction of a 52,000 gross square foot (GSF) student health facility, not to exceed five stories in height, on an infill site located near the center of the SJSU campus.

1.1 PURPOSE AND LEGAL AUTHORITY

This document has been prepared to satisfy the requirements of the California Environmental Quality Act (CEQA) (Pub. Res. Code Section 21000 et seq.) and the State CEQA Guidelines (14 California Code of Regulations [CCR] 15000 et seq.). CEQA requires that all state and local government agencies consider the environmental consequences of projects for which they have discretionary authority before they approve or implement such projects.

The IS is a public document used by the decision-making lead agency to determine whether a project may have a significant effect on the environment. In the case of the proposed project, the Trustees of the California State University are the lead agency and would use the IS to determine whether the project has a significant effect on the environment. If the lead agency finds substantial evidence that any aspect of the project, either alone or in combination with other projects, may have a significant effect on the environment, that agency is required to prepare an Environmental Impact Report (EIR), a supplement to a previously prepared EIR, or a subsequent EIR to analyze the project. If the lead agency finds no substantial evidence that the project or any of its aspects may cause a significant impact on the environment, a Negative Declaration shall be prepared. If, over the course of the analysis, the project is found to have a significant impact on the environment that, with specific mitigation measures, can be reduced to a less-than-significant level, a Mitigated Negative Declaration (MND) shall be prepared.

1.2 INITIAL STUDY FORMAT AND CONTENTS

In addition to Section 1.0 - Introduction, this IS/MND is organized into the following sections:

- **Section 2.0 - Project Description:** Includes a detailed description of the proposed project.

- **Section 3.0 - Environmental Checklist:** Contains the Environmental Checklist Form together with an impact discussion for each of the checklist questions. The Checklist Form is used to determine the following for the proposed project:

  1) *"Potentially Significant Impacts" that may not be mitigated even with the inclusion of mitigation measures;*
  2) *"Potentially Significant Impacts Unless Mitigated" which could be mitigated with incorporation of mitigation measures; and,*
  3) *"Less Than Significant Impacts" which would be less than significant and do not require the implementation of mitigation measures.*

Section 3.0 addresses the following environmental issues:

1. *Aesthetics*
2. *Agriculture and Forestry Resources*
3. *Air Quality*
4. *Biological Resources*
5. *Cultural and Historic Resources*
6. *Greenhouse Gas Emissions*
7. *Geology and Soils*
8. *Hazards and Hazardous Materials*
9. *Hydrology and Water Quality*
10. *Land Use and Planning*
11. *Mineral Resources*
12. *Noise*
13. *Population and Housing*
14. *Public Services*
15. *Recreation*
16. *Transportation/Traffic*
17. *Utilities and Service Systems*

- **Section 4.0 - References:** Identifies the printed and on-line references.

1.3 DETERMINATION

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described in the attached Initial Study have been added to the project. A MITIGATED NEGATIVE DECLARATION will be prepared.	**X**
I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	
I find that the proposed project MAY have a significant effect(s) on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets, if the effect is a "Potentially Significant Impact" or "Potentially Significant Unless Mitigated." An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	
I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because all potentially significant effects (1) have been analyzed in an earlier EIR pursuant to applicable standards and (2) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project.	

San Jose State University
Robert Dias
Director of Planning, Design and Construction

06/08/12
Date

Pursuant to section 21082.1 of the California Environmental Quality Act, the Board of Trustees of the California State University (CSU Board) has independently reviewed and analyzed the Initial Study and Mitigated Negative Declaration for the proposed project and finds that these documents reflect the independent judgment of the CSU Board. The CSU Board, as the lead agency, also confirms that the project mitigation measures detailed in these documents are feasible and will be implemented as stated in the Mitigated Negative Declaration.

Prepared by:
Rincon Consultants, Inc.
Richard Daulton
Principal in Charge

Prepared for:
San Jose State University
Robert Dias
Director of Planning, Design and Construction

2.0 PROJECT DESCRIPTION

2.1 PROJECT TITLE

San Jose State University Student Health Facility Project

2.2 LEAD AGENCY AND LOCAL REPRESENTATIVE

The Trustees of the California State University
400 Golden Shore
Long Beach, California 90802-4275

Locally represented by:

Daniel No
AIA, Associate Director
San Jose State University, Facilities Development and Operations
Planning Design and Construction
One Washington Square
San Jose, California 95192-0010

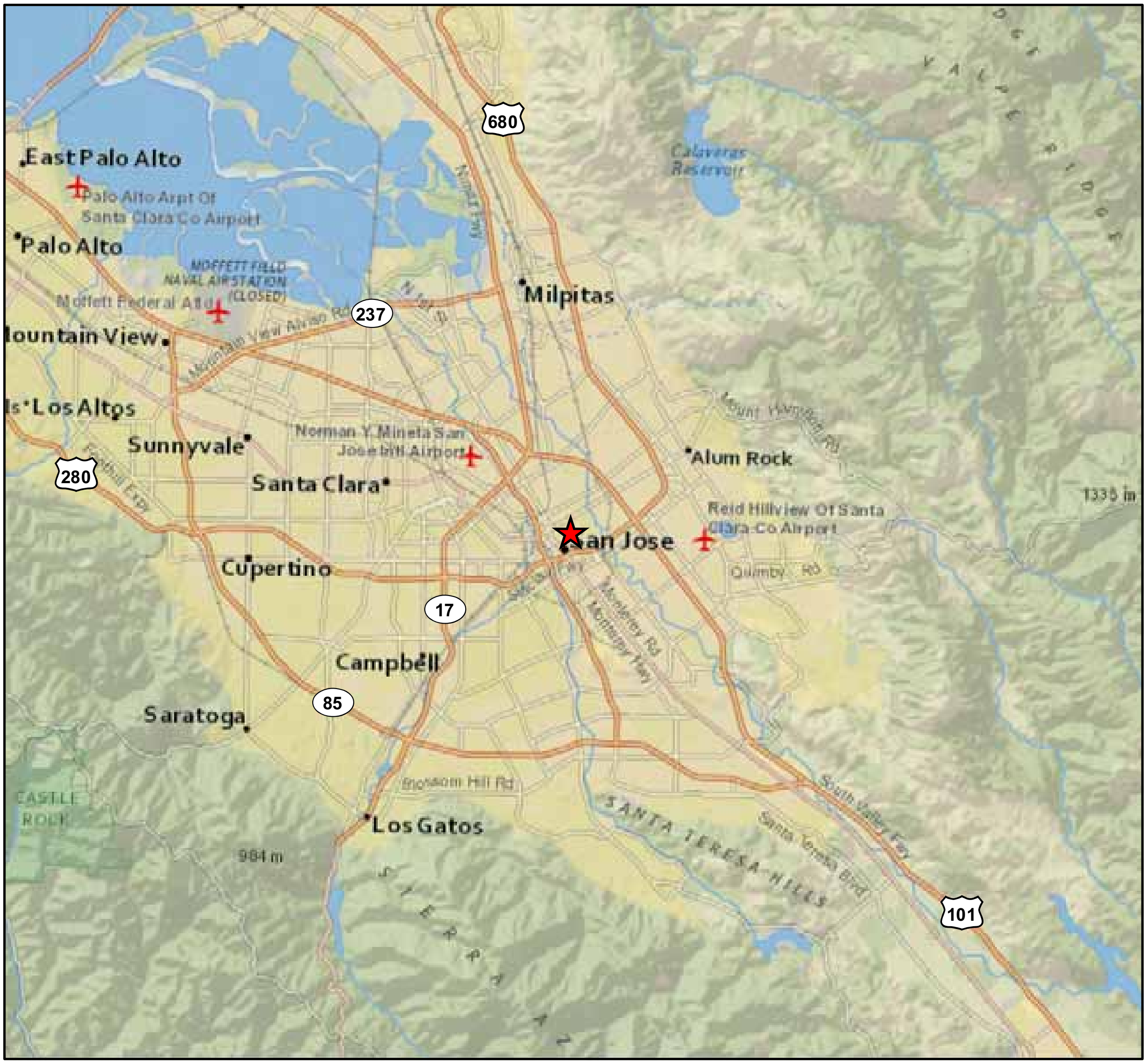
2.3 PROJECT LOCATION

The project site would be located entirely within the main campus of San Jose State University (SJSU) in the center of the City of San Jose, California (Figure 1). The SJSU campus is located to the east of the Guadalupe Freeway and to the north of Interstate 280/Junipero Serra Freeway. The Main Campus occupies a square-shaped property of 88.5-acres bound by San Fernando Street on the north, San Salvador Street on the south, 10th Street on the east, and 4th Street on the west (Figure 2). The proposed student health facility would be located near the center of the SJSU campus, at the intersection of Paseo de San Carlos and 7th Street, as shown in Figure 3.

2.4 SURROUNDING LAND USES AND SETTING

Buildings cover approximately 42% of the SJSU Campus land area. The remaining 58% is composed of open space, service zones, and surface parking. The neighborhoods that immediately surround the campus are mixed residential. North of the campus along San Fernando Street, land use is largely residential, including student housing, multi-story retirement residences, and the campus-owned North Parking facility. West of the campus, along 4th Street, land uses include medium-density residential, including condominiums and rental apartments. Low-density single-family residential currently borders the south side of the campus. Land use on the eastern side of the campus is composed of medium-density residential apartments and low-density single-family residential, including sorority and fraternity houses, apartments, and rooming houses.

The proposed student health facility would be located adjacent to existing classrooms and a day care center, all of which are located in building number 71 (Figure 3), the Central Classroom Building. The proposed facility would also be located to the east of the existing Spartan



Map images copyright © 2012 ESRI and the National Geographic Society.

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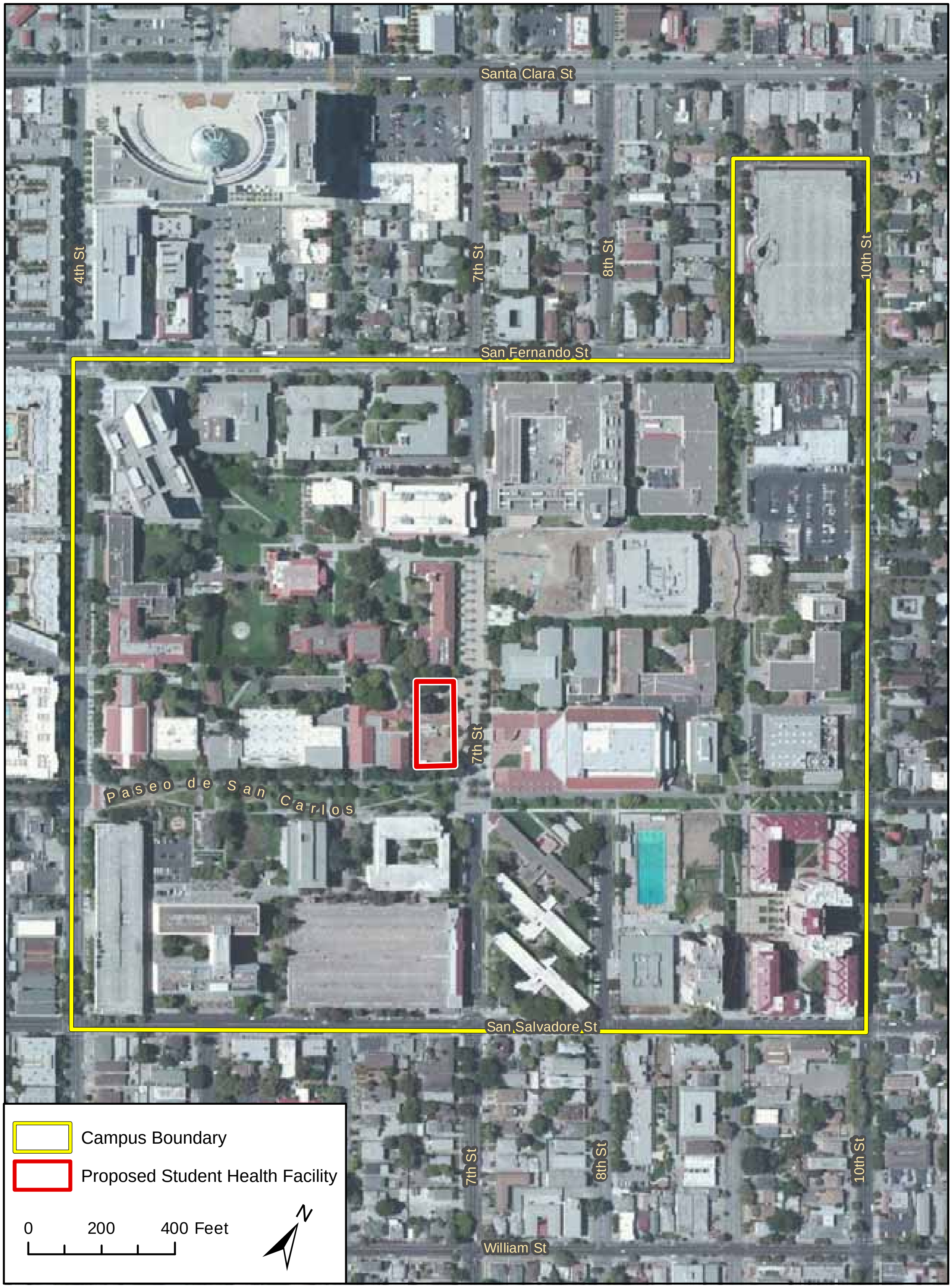
★ Project Location

Regional Location

Figure 1



Project Vicinity Map

Figure 2

Complex and west of the existing Student Union/Recreation Center. The project site is currently undeveloped, with ten mature trees.

2.5 PROJECT BACKGROUND

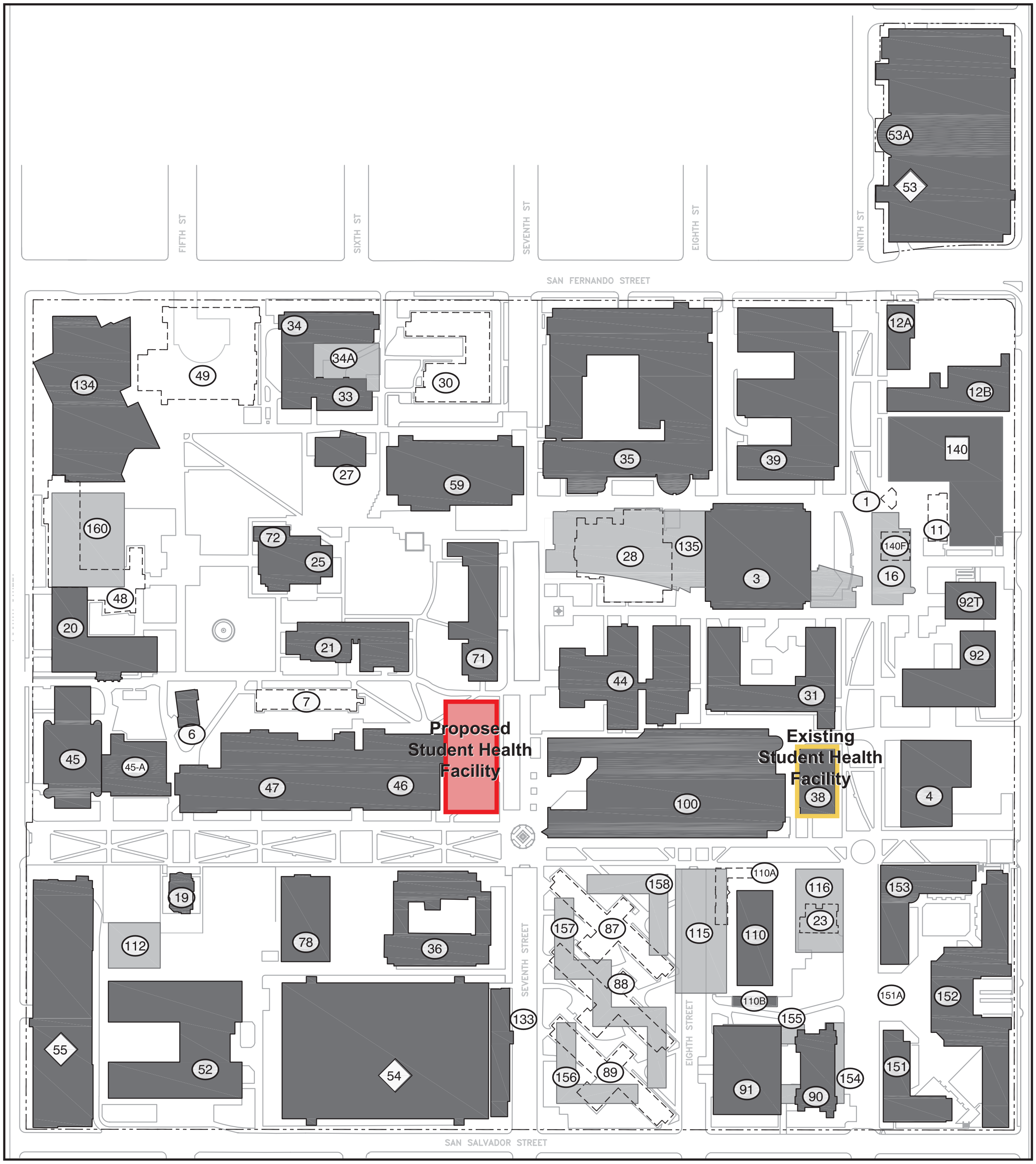
The proposed SJSU Student Health Facility project would involve the construction of a 52,000 gross square foot (GSF) student health facility on an infill site located near the center of the SJSU campus. The proposed student health facility would be no higher than five stories. The existing student health facility, which is shared with the School of Nursing, was built in 1958 and received a small renovation to the entrance in 2006. The current student health facility provides basic outpatient, primary care services to students and employs over 50 practitioners and administrators, and 25 student assistants. The existing student health facility occupies 14,627 gross square feet on the first two floors of the Health Building (40,060 GSF), which also serves as the home for the SJSU Nursing Program. However, this facility is undersized and does not adequately serve the needs of the campus or the student population.

2.6 PROJECT CHARACTERISTICS

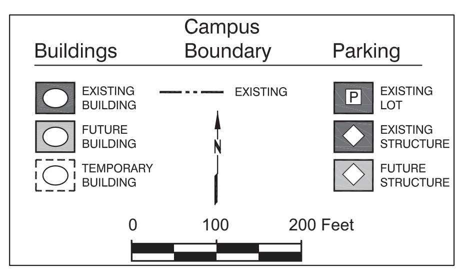
The proposed Student Health Facility project would involve the construction of a 52,000 gross square foot (GSF) student health facility, not to exceed five stories, on an infill site located near the center of the SJSU campus. The proposed project would require a minor campus master plan amendment.

The proposed facility would be located west of the existing student health facility, on a vacant site at the intersection of Paseo de San Carlos and 7th Street. Components of the proposed Student Health Facility project are envisioned to include expanded support spaces and administrative office suite, additional exam/screening rooms, and space for additional programs including massage, acupuncture, dentistry and optometry. The proposed student health facility would have approximately 70 employees and 20 student assistants. Construction of the proposed student health facility would occur over a two year period. In addition, the proposed Student Health Facility is applying for Leadership in Energy and Environmental Design (LEED) certification. Sustainable design principles would be used in the construction of the proposed project. Sustainable design goals include the following:

- *Strategically site new structures in order to optimize the use of solar orientation, wind, shade, and adjacent buildings;*
- *Minimize non-renewable energy consumption by employing the most efficient and appropriate technology for mechanical systems and construction (passive solar heating, daylighting, natural cooling, minimizing solar heat gain, etc.);*
- *Reduce dependence upon non-renewable resources by using recycled materials;*
- *Protect and enhance campus green space by using low-maintenance landscape design that creates ecologically healthy and aesthetically pleasing outdoor spaces for gathering (greens, courtyards, gardens, arbors, etc.);*
- *Protect and conserve water;*
- *Improve indoor air quality by employing materials with low environmental impact during their life cycles; and*
- *Minimize operational and maintenance costs by incorporating innovative energy and daylight management systems at the project inception.*



Base drawing source: San Jose State University, 2002.



SJSU Student Health Facility
Project Site Map

Figure 3

3.0 ENVIRONMENTAL CHECKLIST

The following checklist was developed as a tool to screen potential environmental impacts and is consistent with that contained in the *State CEQA Guidelines*. A discussion, including an environmental impact analysis and a requirement for mitigation measures, is included after each issue area.

AESTHETICS - Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?			X	

a-b. Development of the proposed project would occur on the SJSU Campus. The Campus is not designated as a scenic vista, nor is the project site visible from a designated scenic highway. The construction activities are internal to the campus and the project site would not be visible from public viewsheds. Therefore, no impacts to scenic vistas or highways would occur as a result of this project.

c. The project site is currently vacant, with ten mature trees that would be removed to accommodate development of the proposed project. The project site, in its final constructed state, would resemble the aesthetic form and landscape of several facilities on the SJSU campus. Therefore, the removal of ten trees would not result in a significant impact to the existing visual character or quality of the site.

The character of buildings on the SJSU campus is varied, and the proposed building would be aesthetically compatible with several surrounding buildings with modern architecture on the SJSU campus. Additionally, the campus Master Plan 2001 proposes a campus interior that remains roughly the same in terms of height and mass, to that of surrounding structures, and a more densely developed campus perimeter. The scale and height of the proposed facility would match the height and scale of the adjacent building to the south. The proposed health facility would be visually compatible with the surrounding development, and would not result in a significant impact to the visual character of the campus.

During construction activities, views of staging and construction areas would be affected by equipment, construction materials, and debris. However, staging areas would be screened to the extent possible, and such adverse aesthetic effects during the construction period would be temporary and less than significant.

d. The project site is adjacent to facilities that already have night lighting appropriate to a college campus within an urban area and no substantial change in lighting would occur as a result of the proposed project. Furthermore, the California State University Outdoor Lighting Design Guide contains specific requirements for outdoor lighting to ensure that lighting integrates with campus aesthetics, is low-maintenance and energy efficient, results in minimal light trespass and reduced light pollution while providing good nighttime visibility. Compliance with these existing development standards would ensure that impacts are less than significant. The proposed project would not result in major new sources of glare that may affect daytime visibility for offsite land uses. Although reflective materials are anticipated to be used in the construction of the proposed facility, the new structure would be internal to the campus, and therefore would not significantly impact the area surrounding the campus.

AGRICULTURAL RESOURCES - Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
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))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
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?				X

a-e. The project site lies within the urban core of the City of San Jose and no agricultural use of this land has occurred for many decades. The proposed project would involve the construction of a five-story, 52,000 gross square foot (GSF) student health facility on an infill site located near the center of the SJSU campus. The project does not involve any development that would convert agricultural land to a non-agricultural use, conflict with the existing zoning of forest land or timberland, result in the loss or conversion of forest land to non-forest uses, or interrupt ongoing agricultural activity. Therefore, the proposed project would not adversely affect agricultural, forest land, or timberland resources. No impacts would occur.

AIR QUALITY - Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Conflict with or obstruct implementation of the applicable air quality plan?			**X**	
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			**X**	
c) 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 (including releasing emissions, which exceed quantitative thresholds for ozone precursors?			**X**	
d) Expose sensitive receptors to substantial pollutant concentrations?			**X**	
e) Create objectionable odors affecting a substantial number of people?				**X**

Background Information

Federal and state standards have been established for six criteria pollutants, including ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulates less than 10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$), and lead (Pb). California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Table 1 lists the current federal and state standards for criteria pollutants.

The proposed project lies within the San Francisco Bay Area Air Basin (SFBAAB), under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The local air quality management agency is required to monitor air pollutant levels to ensure that the air quality standards are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the air basin is classified as being in "attainment" or "nonattainment." The SFBAAB is in nonattainment for both the federal and state standards for ozone, as well as the state standard for particulate matter (PM_{10} and $PM_{2.5}$) and the federal standard for 24 hour $PM_{2.5}$. The BAAQMD has adopted a Clean Air Plan (CAP) that provides a strategy for the attainment of state and federal air quality standards. To comply with the California Clean Air Act, the BAAQMD and its cooperating partners adopted the 2005 Ozone Strategy. As a note, the BAAQMD has made updates to the 2005 Ozone Strategy and included those updates in the 2010 Clean Air Plan.

Table 1. Ambient Air Quality Standards & Basin Attainment Status

Pollutant	Averaging Time	California Standards[1]		National Standards[2]	
		Concentration	Attainment Status	Concentration[3]	Attainment Status
Ozone	8 Hour	0.070 ppm (137µg/m^3)	N[9]	0.075 ppm	N[4]
	1 Hour	0.09 ppm (180 µg/m^3)	N		*See footnote 5*
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m^3)	A	9 ppm (10 mg/m^3)	A[6]
	1 Hour	20 ppm (23 mg/m^3)	A	35 ppm (40 mg/m^3)	A
Nitrogen Dioxide	1 Hour	0.18 ppm (339 µg/m^3)	A	0.100 ppm (see footnote 11)	U
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	A
Sulfur Dioxide (See Footnote #12)	24 Hour	0.04 ppm (105 µg/m^3)	A	0.14 ppm (365 µg/m^3)	A
	1 Hour	0.25 ppm (655 µg/m^3)	A	0.075 ppm (196 µg/m^3)	A
	Annual Arithmetic Mean			0.030 ppm (80 µg/m^3)	A
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	N[7]		
	24 Hour	50 µg/m^3	N	150 µg/m^3	U
Particulate Matter - Fine ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	N[7]	15 µg/m^3	A
	24 Hour			35 µg/m^3 *See Footnote 10*	N
Sulfates	24 Hour	25 µg/m^3	A		
Lead (See Footnote 13)	Calendar Quarter			1.5 µg/m^3	A
	Rolling 3 Month Average (See Footnote 14)			0.15 µg/m^3	See Footnote 14
	30 Day Average	1.5 µg/m^3)	A		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3	U		
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 µg/m^3	*No information available*		
Visibility Reducing particles	8 Hour(10:00 to18:00 PST)	*See Footnote 10*	U		

A=Attainment N=Nonattainment U=Unclassified; mg/m^3=milligrams per cubic meter ppm=parts per million µg/m^3=micrograms per cubic meter

1. *California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter - PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM_{10} annual standard), then some measurements may be excluded. In particular, measurements are excluded that ARB determines would occur less than once per year on the average. The Lake Tahoe CO standard is 6.0 ppm, a level one-half the national standard and two-thirds the state standard.*
2. *National standards shown are the "primary standards" designed to protect public health. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations is 0.075 ppm (75 ppb) or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m3. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m3. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM10 is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.*

Table 1. Ambient Air Quality Standards & Basin Attainment Status

Pollutant	Averaging Time	California Standards[1]		National Standards[2]	
		Concentration	Attainment Status	Concentration[3]	Attainment Status

3. National air quality standards are set by US EPA at levels determined to be protective of public health with an adequate margin of safety.
4. On September 22, 2011, the Environmental Protection Agency (EPA) announced it will implement the current 8 hour ozone standard of 75 ppb. The EPA expects to finalize initial area designations for the 2008 8-hour ozone standard by mid-2012.
5. The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.
6. In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.
7. In June 2002, CARB established new annual standards for $PM_{2.5}$ and PM_{10}.
8. Statewide VRP Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.
9. The 8-hour CA ozone standard was approved by the Air Resources Board on April 28, 2005 and became effective on May 17, 2006.
10. U.S EPA lowered the 24-hour $PM_{2.5}$ standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$ in 2006. EPA designated the Bay Area as nonattainment of the $PM_{2.5}$ standard on October 8, 2009. The effective date of the designation is December 14, 2009 and the Air District has three years to develop a plan, called a State Implementation Plan (SIP), that demonstrates the Bay Area will achieve the revised standard by December 14, 2014. The SIP for the new $PM_{2.5}$ standard must be submitted to the US EPA by December 14, 2012.
11. To attain this standard, the 3-year average of the 98^{th} percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100ppm (effective January 22, 2010).
12. On June 2, 2010, the U.S. EPA established a new 1-hour SO2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99^{th} percentile of 1-hour daily maximum concentrations. The existing 0.030ppm annual and 0.14ppm 24-hour SO2 NAAQS however must continue to be used until one year following U.S. EPA initial designations of the new 1-hour SO2 NAAQS. EPA expects to designate areas by June 2012.
13. ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure below which there are no adverse health effects determined.
14. National lead standard, rolling 3-month average: final rule signed October 15, 2008. Final designations expected October 2011.

Source: Bay Area Air Quality Management District Website, 2012: http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm

The BAAQMD has established the following significance thresholds for project operations within the SFBAAB:

- *54 pounds per day of ROG*
- *10 tons per year of ROG*
- *54 pounds per day of NO_x*
- *10 tons per year of NO_x*
- *82 pounds per day of PM_{10}*
- *15 tons per year of PM_{10}*
- *54 pounds per day of $PM_{2.5}$*
- *10 pounds per year of $PM_{2.5}$*

The BAAQMD has established the following significance thresholds for construction emissions within the SFBAAB:

- *54 pounds per day of ROG*
- *54 pounds per day of NO_x*
- *82 pounds per day of PM_{10} (exhaust only)*
- *54 pounds per day of $PM_{2.5}$ (exhaust only)*

According to the *BAAQMD CEQA Guidelines* (March 2011), the proposed project would result in a less-than-significant impact to localized CO concentrations if the following screening criterion is met:

1. The proposed project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.

2. Traffic generated by the proposed project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

3. Traffic generated by the proposed project would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

As the Congestion Management Agency (CMA) for Santa Clara County, the Santa Clara Valley Transportation Authority (VTA) is responsible for establishing, implementing, and monitoring the County's Congestion Management Program (CMP). The VTA develops strategies to reduce congestion, promotes integrated transportation and land use planning, and encourages a balanced transportation system. Through its implementation of the CMP, the VTA works to ensure that roadways operate at acceptable levels of service, and reviews development proposals to ensure that transportation impacts are minimized and transportation alternatives are utilized.

Certain population groups are considered more sensitive to air pollution than others. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases. Residential uses are also considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Being that the project site is located on a university campus, it is reasonable to assume that the majority of the existing classroom, daycare facility, residence halls, and student center facilities would be in use during the construction period. While all of these uses could be considered "sensitive receptors," children at the daycare facility are considered to be the most sensitive to construction emissions. The daycare facility is located on the west side of the Central Classroom Building, building number 71 (refer to Figure 3). The daycare facility is the closest sensitive receptor and is approximately 100 feet north of the project site.

Project emissions for both construction and operation of the project have been modeled using the CalEEMod air quality modeling program (version 2011.1), based on the total square footage of the proposed student health facility and the proposed incorporation of sustainable design features such as employing materials with low environmental impact in the construction of the proposed student health facility. Since the project would not increase the number of vehicle trips in the area (refer to checklist items b. through d., below, for additional discussion), the estimate of operational emissions is primarily related to energy use.

<u>Discussion of Checklist Questions</u>

a. The proposed student health facility is intended to accommodate the student population. The project would not generate additional vehicle trips, or increase vehicle miles traveled beyond existing conditions. Therefore, the proposed project would not conflict with or prevent attainment of the BAAQMD's existing Clean Air Plan (2010). Impacts would be less than significant.

b-d. An evaluation of both short-term and long-term air pollutant emissions is provided in the paragraphs below.

Construction Impacts

Project construction would generate temporary air pollutant emissions. These impacts are associated with fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust emissions from heavy construction vehicles, in addition to reactive organic gases (ROG) that would be released during the drying phase upon application of architectural coatings. Construction would generally consist of site preparation (excavation), grading and stockpiling, construction of the proposed student health facility, paving, and architectural coating. PM_{10} emitted during construction activities varies greatly, depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, and weather conditions.

The construction phase would last two years and was assumed to begin in winter of 2013 and conclude in the fall of 2014. The CalEEMod calculations (Appendix A) also assume that the architectural coating phase of construction would overlap with the building construction phase.

Table 2 summarizes the estimated maximum daily construction emissions of ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$ relative to BAAQMD thresholds.

Table 2
Estimated Construction Maximum Daily Air Pollutant Emissions (lbs/day)

Construction Phase	Maximum Emissions (lbs/day)				
	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
2013 (On-site and Off-site)	4.85	31.72	19.28	1.67	1.66
2014 (On-site and Off-site)	8.50	23.20	18.40	1.50	1.50
2015 (On-site and Off-site)	8.46	16.46	12.78	1.35	1.35
Maximum lbs/day	**8.50**	**31.72**	**19.28**	**1.67**	**1.66**
BAAQMD Thresholds	**54**	**54**	**None**	**82 (exhaust only)**	**54 (exhaust only)**
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**

Notes: All calculations were made using CalEEMod. See Appendix A for calculations. Demolition, Site Preparation, Grading, Paving, Building Construction and Architectural Coating totals include worker trips, construction vehicle emissions and fugitive dust.

** Site Preparation and Grading phases includes adherence to the conditions listed above that are required by BAAQMD to reduce fugitive dust.*

As shown in Table 2, construction emissions would not exceed the BAAQMD thresholds for any criteria pollutant. Consequently, the project's regional air quality impacts would be less than significant. For all proposed projects, BAAQMD recommends implementing all the *Basic Construction Mitigation Measures,* listed in Table 8-1 of the *BAAQMD CEQA Air Quality Guidelines,* to meet the best management practices threshold for fugitive dust, whether or not construction-related emissions exceed applicable thresholds. Measure one and four have been applied to the CalEEMod air quality modeling (see Appendix A for Mitigated Construction calculations) and the BAAQMD recommends implementation of the other measures, to the extent feasible. The BAAQMD standard dust control measures are outlined below:

Construction Dust Control Measures.

1. *All exposed surfaces (e.g. parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day;*
2. *All haul trucks transporting soil, sand, or other loose material off-site shall be covered;*
3. *All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited;*
4. *All vehicle speeds on unpaved roads shall be limited to 15 mph;*
5. *All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used;*

6. *Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points;*
7. *All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator; and*
8. *Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.*

Long-Term Regional Impacts

The proposed Student Health Facility project would meet the needs of the student population on the SJSU campus, and would not generate additional off-site vehicle trips. Therefore, no additional vehicle emissions would result from operation of the proposed facilities.

Table 3 summarizes projected emissions associated with operation of the proposed student health facility. As indicated above, the only project-related operational air pollutant emissions would be due to natural gas, electricity (energy sources), and long-term, low-level architectural coating emissions as the proposed student health facility gets repainted over the life of the project(area sources).

Table 3
Project Operational Emissions (lbs/day)

Emission Source	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
Mobile	0.0	0.0	0.0	0.0	0.0
Energy (Natural Gas and electricity)	0.04	0.35	0.30	0.03	0.03
Area (Consumer Products and Architectural Coating)	1.44	0.0	0.0	0.0	0.0
Total Emissions	**1.48**	**0.35**	**0.30**	**0.03**	**0.03**
BAAQMD Thresholds	*54*	*54*	*9.0ppm*[1]	*82*	*54*
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***

Source: See Appendix A for CalEEMod v.2011.1 model output.
[1]*ppm=parts per million.*

Operational emissions from the project would be minimal as the project would not increase vehicle trips and because the project includes sustainable design principles such as energy efficiency measures that would reduce emissions compared to existing conditions. These sustainable design principles were incorporated into the air quality modeling program and those emission reductions can be viewed under the Mitigated Operational emissions (see Appendix A, Summer Emissions for Mitigated Operational emissions).

In addition, according to the *BAAQMD CEQA Guidelines* (March 2011), the proposed student health facility would result in a less-than-significant impact to localized CO concentrations as the proposed project would not increase traffic volumes beyond existing conditions or degrade acceptable levels of service for surrounding roadways. Therefore, the proposed project would be consistent with the Santa Clara Valley Transportation Authority's Congestion Management Program.

Furthermore, overall emissions would not exceed the BAAQMD thresholds for any criteria pollutant (see Table 3). Consequently, the project's regional air quality impacts would be **less than significant**.

e. The proposed construction of the student health facility would not involve uses that could generate objectionable odors that could affect a substantial number of people. **No impact** would result.

BIOLOGICAL RESOURCES - Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Have a substantial adverse effect 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 Game or U.S. Fish and Wildlife Service?				**X**
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 Game or U.S. Fish and Wildlife Service?				**X**
c) Have a substantial effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				**X**
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?		**X**		
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?		**X**		
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?				**X**

a-c, f. The proposed student health facility would be located on the SJSU campus. The project site lies within the urban core of the City of San Jose in an area that has already been disturbed from its natural state and the proposed project would not significantly affect biological resources. A review of the Biogeographic Information and Observation System (BIOS – www.bios.dfg.ca.gov) and the U.S. Fish and Wildlife Service (USFWS) Critical Habitat Portal (http://criticalhabitat.fws.gov) indicates that no listed species are known to be located or anticipated to be found in this area. No riparian or other sensitive resource habitat is present within the Main SJSU Campus. A review of the USFWS National Wetlands Inventory indicates that no federally protected wetlands are present with in the vicinity of the SJSU Campus. The City of San Jose has entered into a regional partnership with five Local Partners and two Wildlife Agencies to develop Habitat Conservation and Natural Community Conservation Plans for Santa Clara Valley. The HCP and NCCP are in the draft stage, with the release of final versions expected sometime in mid 2012. Therefore, the proposed project would not 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** would result with respect to these issues.

d. The project site is not located within any wildlife movement corridors or native wildlife nursery sites. Therefore, implementation of the proposed project would not result in any impacts in this regard. However, the project would remove 10 existing trees. The project site contains a mixture of the following types of ornamental trees: five Peruvian pepper trees (*Schinus molle*), three elm trees (*Ulmus americana*), and one fig tree (*Ficus* sp.). Therefore, the potential to cause significant impacts to migratory birds exists and the indirect impacts resulting from the removal of on-site trees would be **potentially significant unless mitigation is incorporated**.

<u>Mitigation Measures</u>

BIO-1 **Native/Breeding Native Bird Protection.** Project grading and/or construction shall occur outside of the bird nesting season from September 1st through February 1st to avoid impacts to breeding/nesting birds. If work occurs during the breeding/ nesting season a qualified biologist shall survey all breeding/nesting habitat within the project site and adjacent to the project site for breeding/nesting non-game native birds. If an active bird nest is located, the nest site shall be fenced at a distance commensurate with the particular species and in consultation with CDFG until juveniles have fledged and when there is no evidence of a second attempt at nesting. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing. Construction personnel shall be instructed on the sensitivity of the area. The project proponent shall record the results of the recommended protective measures described above to document compliance with applicable state and federal laws pertaining to protection of native birds. Pre-construction surveys shall occur within a two-week period with the last survey no more than three days prior to the start of work activities.

Significance After Mitigation. Implementation of the above mitigation measure would reduce impacts to the native bird habitat provided by specific trees to a less than significant level.

e. Development of the proposed project would require the removal of ten mature trees. Neither California State University (CSU), nor SJSU have a tree protection and replacement ordinance or policy. Each individual tree to be removed would be replaced with two native trees. Therefore, the development of the proposed student health facility would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Impacts would be less than significant.

CULTURAL RESOURCES - Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?			**X**	
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?			**X**	
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			**X**	
d) Disturb any human remains, including those interred outside of formal cemeteries?			**X**	

a. The proposed project involves the construction of a five-story, 52,000 gross square foot (GSF) student health facility on an infill site located near the center of the SJSU campus. The proposed project does not involve demolition of any existing structures. A Historic Resources Survey of the campus was conducted by Architectural Resources Group on November 30, 2005. This survey examined the historical potential of 11 properties on the SJSU campus. The existing student health facility was constructed after 1955 and was not found to be eligible for the National Register of Historic Places, the California Register of Historical Resources, and is not in a California Register-eligible Historic District.

The proposed student health facility would be located in the northwest quadrant of the campus, adjacent to buildings such as the Spartan Complex east women's gymnasium constructed in 1928, which are among a small concentration of historic buildings that were described in the 2005 Historic Resources Survey as appearing to be eligible for the California Register as a historic district. The proposed project would not remove distinctive materials or alter features, spaces and spatial relationships that characterize the adjacent historic properties. New construction will be undertaken in such a manner that the essential form and integrity of adjacent historic property and its environment would be unimpaired. In addition, the project site is located on the outer edge of the potentially eligible California historic district. The character of buildings on the SJSU campus is varied, and the proposed building would be aesthetically compatible with several surrounding buildings with modern architecture on the SJSU campus. The project would also retain the academic/campus use of the site. As the construction of the proposed facility would not alter the historic significance of the adjacent buildings, impacts to historical resources would be less than significant.

b-d. The proposed project involves the construction of a five-story, 52,000 gross square foot (GSF) student health facility on an infill site located near the center of the SJSU campus. The findings of a cultural resources records search, conducted by the Northwest Information Center (NWIC), indicate that there is a moderate possibility of identifying both Native American archaeological resources and historic-period archaeological resources. NWIC's finding is based on the discovery that the SJSU campus does not contain recorded archaeological resources, but does contain significant amounts of alluvial deposition that may obscure the visibility of archaeological deposits on the surface. The proposed project is located within an area that has already undergone substantial ground disturbance during construction of existing facilities; thus, the likelihood of encountering unknown cultural, paleontological, or geological resources or human remains is unlikely. Thus, the proposed project would result in less than significant impacts with respect to these issues.

GEOLOGY AND SOILS – Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Expose people or structures to 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?			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?		X		
iv) Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?		X		
c) Be located on a geologic unit or soil that is unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?		X		
d) Be located on expansive soil, as defined in Table 1-B of the Uniform Building Code (1994), creating substantial risks to life or property?		X		
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X

a (i). According to the Geotechnical Report prepared by Converse Consultants (Appendix B), the project site is not located within a currently designated State of California Earthquake Fault Zone (Alquist-Priolo Special Studies Zones) for surface fault rupture (April 20, 2012). No active faults are located on the project site or the SJSU campus; therefore, the potential for surface rupture is remote (Converse Consultants, April 20, 2012). Impacts would be less than significant.

a (ii). The closest known fault to the project site, with a mappable surface expression, is the Hayward Fault, located approximately eight kilometers to the east/northeast (Converse

Consultants, April 20, 2012; refer to Appendix B). The Monte Vista-Shannon blind thrust fault is modeled approximately 11 kilometers to the southwest. Other nearby seismic sources include the Calaveras Fault, located approximately 12 kilometers to the northeast and the San Andreas Fault located approximately 19 kilometers to the southwest.

The project is located in an area subject to seismic shaking, liquefaction, and expansive soils. New construction in areas with such hazards can expose structures and occupants to geotechnical hazards. A geotechnical report was prepared by Converse Consultants (2012) for the proposed Student Health Facility project. The geotechnical report indicates that people or structures could be exposed to geotechnical hazards resulting from strong seismic ground shaking. However, the California State University (CSU) Board of Trustees has enacted more stringent requirements for structural assessment of seismic performance of buildings within CSU campus locations than the current edition of the California Building Code (CBC 2010) as adopted by the California Building Standards Commission. According to CSU Seismic Policy (January 2008), seismic ground parameters are required to be reported for CSU campus locations. This policy applies to all construction activity undertaken by CSU for new and existing buildings, where university operations and activities occur. According to the geotechnical report, CSU seismic design parameters were developed for the proposed project, in accordance with the California State University Seismic Requirements (January 6, 2011). Adherence to the CSU Seismic Design Parameters listed in Table 1 of the geotechnical report and the requirements of the California Building Code would reduce impacts associated with strong seismic ground shaking to a less than significant level.

a (iii). The State of California Seismic Hazard Zone Map for the San Jose West Quadrangle (February 7, 2002) shows the project site is located within an area of potential liquefaction (Converse Consultants, April 20, 2012). The geotechnical report indicates that certain thin lenses of soil, between approximately 25 and 30 feet below ground surface, are prone to liquefaction (Converse Consultants, April 20, 2012). Impacts related to liquefaction would be potentially significant but mitigable.

a (iv). The project site is not located within a landslide hazard zone as defined by Santa Clara County Geologic Hazards Zones. Furthermore, the project site is not located within any earthquake-induced landslide areas due to the relatively flat condition of the site topography (Converse Consultants, April 20, 2012). There is no impact with respect to landslides.

b. The proposed project would involve new substantial ground disturbance that could result in soil erosion or loss of top soil. This is a potentially significant but mitigable impact.

c. The proposed project site is located in an area of sedimentary alluvium. Based on the Santa Clara County Geologic Hazards Zones and the topography of the project site and immediate vicinity, the project site is not in a landslide hazard zone and the potential for lateral spreading is very low (Converse Consultants, April 20, 2012). However, the project site is within a State of California-defined Liquefaction Hazard Zone and the liquefaction analysis contained in the geotechnical report indicates a moderate potential for liquefaction. Subsidence could occur if buildings or other improvements straddle the boundary between different types of subsurface materials. Although subsidence generally occurs slowly enough that its effects are not dangerous to inhabitants, it can cause significant building damage over time. Portions of the project site that contain loose or uncontrolled (non-engineered) fill may be susceptible to subsidence.

The findings of the geotechnical report indicate that granular soils were encountered at depths between 25 and 30 feet, and between 55 and 80 feet below the existing ground surface (bgs) (Converse Consultants, 2012). Impacts related to liquefaction, subsidence, or collapse would be potentially significant but mitigable.

d. According to the geotechnical report, soil conditions on the project site have a low to medium expansion potential (Converse Consultants, 2012). Implementation of mitigation measure GEO-1 and the requirements of the California Building Code would reduce impacts to expansive soils to a less than significant level.

e. The project does not propose to utilize septic tanks or septic systems. The proposed student health facility would be connected to the City of San Jose sewer system. No impacts pertaining to septic systems would occur.

Mitigation Measures

GEO-1 **Geotechnical Measures:** Grading, foundation design and construction of the proposed Student Health Facility shall comply with recommendations in the site specific geotechnical report by Converse Consultants (2012), including but not limited to: recommendations for pile foundation systems, non-building structure footings, slabs-on-grade, soil corrosivity evaluation, site drainage, as well as all applicable earthwork recommendations.

Significance After Mitigation. Compliance with the site specific geotechnical report by Converse Consultants for the proposed Student Health Facility Project will reduce geologic impacts pertaining to subsidence, collapse, liquefaction, and expansive soils to the extent feasible. It is acknowledged that seismic hazards cannot be completely eliminated even with site specific geotechnical investigation and advanced building practices described above. However, exposure to seismic hazards is a generally accepted part of living in the San Francisco Bay Area and the building and design practices described above reduces the potential hazards associated with seismic activity to a less-than-significant level.

Greenhouse Gas Emissions - Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			**X**	
b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			**X**	

Local Regulations and CEQA Requirements

Pursuant to the requirements of SB 97, the Resources Agency adopted amendments to the *CEQA Guidelines* for the feasible mitigation of GHG emissions and analysis of the effects of GHG emissions. The adopted *CEQA Guidelines* provide regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, the Bay Area Air Quality Management District (BAAQMD), the South Coast Air Quality Management District (SCAQMD), and the San Joaquin Air Pollution Control District (SJVAPCD) have adopted significance thresholds for GHGs. The BAAQMD threshold, which was adopted in June 2010, considers operational emissions of over 1,100 metric tons carbon dioxide equivalent (CO_2E)/year to be significant. Note that no air district has the power to establish definitive thresholds that will completely relieve a lead agency of the obligation to determine significance on a case-by-case basis for a specific project.

Assembly Bill (AB) 32, signed in September 2006, requires the State's global warming emissions to be reduced to 1990 levels by 2020. After completing a comprehensive review and update process, the ARB-approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2E (California Air Resources Board, 2007).

In 2005, the BAAQMD initiated a Climate Protection Program. On June 1, 2005 the Air District Board of Directors adopted a resolution establishing a Climate Protection Program and acknowledging the link between climate protection and programs to reduce air pollution in the Bay Area.

Study Methodology

Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude of potential project effects. The analysis focuses on CO_2, CH_4, and N_2O because these make up 98.9% of all GHG emissions by volume (IPCC, 2007) and are the GHG emissions that the project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and SF_6, were also considered for the analysis. However, because the project is an educational development, the quantity of fluorinated gases would not be significant since fluorinated gases are primarily associated with industrial processes. Emissions of all GHGs are converted into their equivalent weight in CO_2 (CO_2E). Minimal amounts of other main GHGs (such as chlorofluorocarbons [CFCs]) would be emitted, and these other GHG emissions would not substantially add to the calculated CO_2E amounts. Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper (January 2008) and included the use of the California Climate Action Registry (CCAR) General Reporting Protocol (January 2009).

Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches (as discussed below in *GHG Cumulative Significance*) adequately address impacts from temporary construction activity. As stated in the *CEQA and Climate Change* white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008). Additionally, the BAAQMD has not established a threshold of significance for construction-related emissions. Nevertheless, air districts such as the SCAQMD (2011) have recommended amortizing construction-related emissions over a 30-year period in conjunction with the proposed project's operational emissions. Emissions associated with the construction period were estimated using the California

Emissions Estimator Model (CalEEMod) computer model, based on the projected maximum amount of equipment that would be used onsite at one time. Complete CalEEMod results and assumptions can be viewed in Appendix A.

Operational emissions from energy use (natural gas) for the project were estimated using the CalEEMod model (see Appendix A for calculations). The default values on which the CalEEMod model are based include the California Energy Commission (CEC) sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies. For this project, it was assumed that the electricity use would be similar to other educational facilities (which would likely have similar lighting and mechanical equipment requirements).

Emissions associated with area sources including consumer products and architectural coating were calculated in the CalEEMod model and utilize standard emission rates from CARB, USEPA, and district supplied emission factor values (CalEEMod User Guide, 2011).

Construction of the proposed project would result in temporary GHG emissions from the utilization of heavy equipment. However, the proposed project will apply for LEED certification and includes a number of design features that would inherently reduce GHG emissions. These sustainable design measures were incorporated in the CalEEMod calculations (see Appendix A for mitigated calculations). Sustainable design principles that have been incorporated into the proposed project are also discussed in the *Utilities and Service Systems* section below.

Discussion of Checklist Questions

a. **Construction Emissions**

Construction activity is assumed to occur over a period of approximately 24 months. Based on the CalEEMod results, construction activity for the project would generate an estimated 609.72 metric tons of carbon dioxide equivalent (CO_2E) units (as shown in Table 4). Amortized over a 30-year period (the assumed life of the project), construction of the proposed project would generate an estimated 20.32 metric tons of CO_2E per year.

Table 4
Estimated Construction Emissions of Greenhouse Gases

Year	Annual Emissions (Carbon Dioxide Equivalent (CO_2E))
2013	360.22 metric tons
2014	226.61 metric tons
2015	22.89 metric tons
Total	**609.72 metric tons**
Amortized over 30 years	**20.32 metric tons per year**

See Appendix A for CalEEMod Results.

Operational Emissions.

The CalEEMod model was used to calculate operational sources of air emissions located at the project site. This includes consumer product use, architectural coatings, and landscape maintenance equipment. However, because the project would not generate additional traffic beyond existing conditions, it was determined that there would be no operational emissions associated with mobile sources for the project.

Operation of the proposed project would consume energy, in the form of natural gas and electricity (see Appendix A for calculations) in order to operate the mechanical equipment and lighting inside the proposed health facility. As shown in Table 5, energy consumption associated with the project would generate approximately 206.65 metric tons of CO_2E per year.

Table 5 combines the construction and operational GHG emissions associated with onsite development for the proposed project. Construction emissions associated with construction activity (approximately 20.32 metric tons CO_2E) are amortized over 30 years (the anticipated life of the project) as recommended by the SCAQMD.

Table 5
Combined Annual Emissions of Greenhouse Gases

Emission Source	Annual Emissions
Construction	20.32 metric tons CO_2E
Operational	
Area	0 metric tons CO_2E
Energy	206.65 metric tons CO_2E
Solid Waste	39.30 metric tons CO_2E
Water	3.62 metric tons CO_2E
Mobile	0 metric tons CO_2E
Total	**269.89 metric tons CO_2E**

Sources: See Appendix A for calculations and for GHG emission factor assumptions.

The proposed project would generate GHG emissions, during both construction and long-term operation of the proposed student health facility. For the proposed project, the combined annual emissions would total approximately 269.89 metric tons per year in CO_2E units.

As previously mentioned, development of the proposed project would incorporate a number of sustainable design features that would further reduce temporary construction and long-term operational GHG emissions (see Appendix A for mitigated and unmitigated calculations). Although development facilitated by proposed project would generate additional GHG emissions beyond existing conditions, because the total amount of GHG emissions would be lower than the threshold of 1,100 metric tons per year, impacts from GHG emissions would be less than significant.

b. CalEPA's Climate Action Team (CAT) published the 2006 CAT Report which includes GHG emissions reduction strategies intended for projects emitting less than 10,000 tons CO_2E/year.

In addition, the California Attorney General's Office has developed Global Warming Measures (2008) and OPR's CEQA and Climate Change (California Air Pollution Control Officers Association, 2008) document includes greenhouse gas reduction measures intended to reduce GHG emissions in order to achieve statewide emissions reduction goals. All of these measures aim to curb the GHG emissions through suggestions pertaining to land use, transportation, renewable energy, and energy efficiency. Several of these actions are already required by California regulations, such as:

- AB 1493 (Pavley) requires the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks.
- In 2004, ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling.
- The Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989) established a 50% waste diversion mandate for California.
- Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).
- California's Renewable Portfolio Standard (RPS), established in 2002, requires that all load serving entities achieve a goal of 33 percent of retail electricity sales from renewable energy sources by 2020, within certain cost constraints.
- Green Building Executive Order, S-20-04 (CA 2004), sets a goal of reducing energy use in public and private buildings by 20 percent by the year 2015, as compared with 2003 levels.

The proposed project would be required to comply with all State and local regulations intended to reduce GHG emissions from new development. Consistency with these State regulations and goals illustrates that the project would not conflict with the State's greenhouse gas-related legislation and would not contribute to the inability to meet reduction goals. Impacts would be less than significant.

***HAZARDS AND HAZARDOUS MATERIALS* - Would the project:**	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) 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?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 1/4-mile of an existing or proposed school?			X	
d) Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X	
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 for people residing or working in the project area?				X
f) For a project in the vicinity of a municipal airstrip, would the project result in a safety hazard for people residing or working in the area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X

Background Information

Off-Site Contamination

Based upon a hazardous materials records search prepared by Environmental Data Resources Inc., there are 66 sites within approximately 0.5 miles of the project site that are listed on the State Water Resources Control Board Leaking Underground Storage Tank (LUST) Information System. Twenty-three of these sites are located upgradient from the project site. Of those 23 sites, 20 have gone through site remediation or other site cleanup processes to attain a status of completed. The following three sites are listed as open and undergoing site assessment: two of the LUST records are from Pete's Stop Inc., located at 447 East William Street and one site, Spartan #4, is located at 498 South 4th Street. All three of the sites formerly had underground storage tanks (USTs) which had releases of petroleum hydrocarbons that caused soil and groundwater contamination in the immediate vicinity of the former USTs.

1. The two Pete's Stop Inc. sites are located approximately 0.25 mile from the proposed student health facility. Investigation at this site has been ongoing since April of 1986, when gasoline-contaminated soil and water were sampled by Soil Tech Engineering

(STE) while installing three monitoring wells in the vicinity of the former fuel tank area. In January of 1992, four USTs were removed from the site, and soil samples from beneath the tanks confirmed that they were the source of the gasoline contamination. In March of 1993, STE drilled 11 soil borings and detected gasoline in five of the 11 samples collected at a depth of 15 feet. Four additional monitoring wells were drilled in December 1996 and January 1997. STE prepared a Corrective Action Plan in August of 2003. However, because the extent of the contamination problem was not fully defined , no corrective action has been implemented. Enviro Soil Tech Consultants (ESTC) extended the investigation beyond the property boundaries beginning in October 2002, when 32 additional borings were drilled. The borings confirmed that very elevated concentrations of gasoline were present in groundwater north of the site along the east side of 10th street, and wells were installed in August 2006 to monitor this contamination and better define its extent. In the third quarter of 2006, ESTC recommended moving forward with site remediation, and suggested that air sparging be tested to determine its potential in cleaning up the groundwater. The regulatory agency approved that recommendation in early 2008.

2. The Spartan #4 site is located at the northern corner of the South 4th Street and East William Street intersection in the City of San Jose. This site is located approximately 0.25 mile east of the project site. Total petroleum hydrocarbons as gasoline (TPHg) and diesel fuel (TPHd) were initially detected in soil and groundwater beneath the Site during investigation activities in 1989. Since 1989, corrective action work including soil and groundwater investigations and remediation work has been performed under the direction of the local oversight agency (currently Santa Clara County Department of Environmental Health) and the site has been assigned Fuel Leak Case No. 14-049. Investigative results indicate that the fuel leak originating from the site contained a mixture of fuel-related compounds, including TPHg and methyl tertiary butyl ether (MTBE). A TPHg plume without MTBE has been detected up-and cross-gradient to the southeast and east. The up- and cross-gradient TPHg contamination was attributed to Fuel Leak Case No. 14-049 and the local oversight agency required several stages of investigation work to characterize its lateral extent. Six borings and nested wells were installed southeast and east of the site in order to characterize up- and cross-gradient contamination. One groundwater extraction well was installed in order to control further migrations of these cross-gradient contaminants. The results of a historical survey documented in Allterra's March 31, 2005 Corrective Action Plan, indicated that a gas station formerly operated at 502 South 4th Street where an apartment complex is currently located. Comparing the location of the former gas station with the available groundwater data suggests that the TPHg contamination east and southeast of the Site originated from the former gas station. However, before proceeding with possible enforcement action, an Up-gradient Source Investigation was conducted. Soil and groundwater samples from the Up-gradient Source Investigation were submitted for chemical analysis to McCampbell Analytical Inc., a State of California certified laboratory.

Onsite Contamination

The project site is currently vacant. No mapped sites were found in EDR's search of available government records on the project site.

Discussion of Checklist Questions

a,c. The proposed project consists of the construction of a five-story, 52,000 gross square foot (GSF) student health facility on an infill site located near the center of the SJSU campus. The final constructed state of the proposed student health facility would not involve the transport, use, or disposal of substantial quantities of hazardous materials. Existing activities at the health facility may involve the use of small amounts of hazardous materials such as solvents and reagents, and could generate small amounts of hazardous waste, including medical waste. However, proper handling, transportation, and disposal in accordance with Federal, State, and Local laws and regulations will avoid significant exposure and hazards to people and the environment from potential hazardous materials contamination. Less than significant impacts would result.

b. The project would not emit or handle substantial quantities of hazardous materials in its final constructed state. Activities at the health facility may involve the use of small amounts of hazardous materials such as solvents and reagents, and could generate small amounts of hazardous waste, including medical waste. However, proper handling, transportation, and disposal in accordance with Federal, State, and Local laws and regulations will avoid significant exposure and hazards to people and the environment from potential hazardous materials contamination. The project would not involve demolition activities. Therefore, potential risks to the public or the environment through reasonable forseeable upset and accident conditions involving the release of hazardous materials into the environment would be less than significant.

d. The proposed project consists of the construction of a five-story, 52,000 gross square foot (GSF) student health facility on an infill site located near the center of the SJSU campus. The project is not located on a site which has been included on a list of hazardous material sites. The project site is located within ¼ mile of three LUST sites. However, because of the distance between the LUST sites and the project site, the LUST sites would not be anticipated to result in contamination of groundwater at the project site. Therefore, impacts would be **less than significant**.

e, f. The project site is about 2.15 miles from the Norman Y. Mineta San Jose International Airport, and is outside the safety zones and flight path of the airport (San Jose Airport Land Use Commission, Land Use Plan for Areas Surrounding Santa Clara County Airports, December 14, 2005). Therefore, significant airport safety hazards are not anticipated. **No impacts** would result.

g. The proposed project would not interfere with any emergency response plan or evacuation route. **No impacts** would result.

h. The SJSU campus is in a completely urbanized area of the city of San Jose. Therefore, the project is not subject to wildland fire hazards. **No impacts** would result.

HYDROLOGY AND WATER QUALITY - Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Violate any water quality standards or waste discharge requirements?			**X**	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			**X**	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation?			**X**	
d) Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			**X**	
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			**X**	
f) Otherwise substantially degrade water quality?			**X**	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				**X**
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				**X**
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?				**X**
j) Inundation by seiche, tsunami, or mudflow?				**X**

a, f. The proposed project would involve the construction of a five-story, 52,000 gross square foot (GSF) student health facility on an infill site located near the center of the SJSU campus. The campus is already developed, and is surrounded by urbanized areas of the City of San Jose. The State Water Resources Control Board (SWRCB) is responsible for issuing construction permits. However, as the proposed project would not disturb more than one acre of soil, a Storm Water Pollution Prevention Plan (SWPPP) identifying construction Best Management Practices (BMPs) would not be required. As such, the project would not substantially degrade water quality or violate any water quality standards or waste discharge requirements. Impacts would be less than significant.

b. The proposed construction activities would not adversely affect groundwater supplies. The overall ratio of developed to open space areas on the SJSU campus would be similar to existing conditions, and would not significantly interfere with groundwater recharge. Impacts would be less than significant.

c-e. The proposed project would involve the construction of a five-story, 52,000 gross square foot (GSF) student health facility on an infill site located near the center of the SJSU campus. The proposed project would incrementally increase the amount of impervious surface on-site. However, development of the proposed project would not alter the existing drainage pattern or create a significant change in runoff conditions. Impacts would be less than significant.

g, h. The proposed project does not involve construction of housing; therefore, it would not expose people to risks from flooding. In addition, the existing and proposed facilities are not located in areas subject to flooding. No impacts would occur.

i, j. The SJSU campus is not located within a dam inundation area and is not subject to flooding risks from dam failure. The campus is located inland from the coast and is not subject to tsunami hazards, and it is not located near any impounded bodies of water that could present hazards from seiches. No impacts would occur.

LAND USE AND PLANNING - Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Physically divide an established community?				**X**
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				**X**
c) Conflict with an applicable habitat conservation plan or natural community conservation plan?				**X**

a-c. The proposed Student Health Facility project would be internal to the SJSU campus. The proposed facility is intended to accommodate the student population, and therefore would not generate additional on-campus growth that would have the potential to affect adjacent City land uses. The project would not physically divide an established community, nor would it conflict with any land use plans or policies or any habitat conservation plans. **No impacts** would result.

MINERAL RESOURCES - Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				**X**
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?				**X**

a-b. The project site is not currently used for mineral resource extraction. **No impact** to energy or mineral resources is anticipated.

NOISE - Would the project result in:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			**X**	
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			**X**	
c) A substantial permanent increase in ambient noise levels above levels existing without the project?			**X**	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		**X**		
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 expose people residing or working in the project area to excessive noise levels?				**X**
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise?				**X**

a,c. The proposed project would involve the construction of a five-story, 52,000 gross square foot (GSF) student health facility on an infill site located near the center of the SJSU campus. Operation of this facility would not generate any significant long-term, or permanent noise levels beyond existing levels. The proposed facility is intended to accommodate the student population, and therefore would not generate additional traffic that could result in noise level increases. Impacts would be less than significant.

b. During the construction phase of the proposed project, heavy equipment would be required to construct the new facility.

Construction vibration sources have a wide range of energy and velocity, as a function of time, transmitted on the ground. The ground motion caused by vibration is measured as particle velocity in inches per second and, in the U.S., is referenced as vibration decibels (VdB).

The Federal Transit Administration has identified vibration impact criteria for sensitive buildings, residences, and institutional land uses near rail transit and railroads. Because construction thresholds are based on single events, they do not apply narrowly to railway operations, but can be used for most construction activities. According to the Federal Transit Administration (FTA), groundborne vibration impact criteria for institutional receptors are 75 vibration decibels (VdB) for frequent events, 78 VdB for occasional events, and 83 VdB for infrequent events[1] (FTA, 2006). As construction would be temporary and infrequent, a threshold of 83 VdB is used for this analysis.

Being that the project site is located on a university campus, it is reasonable to assume that the majority of the existing classroom, daycare facility, residence halls, and student center facilities would be in use during the construction period. While all of these uses could be considered "sensitive receptors," children at the daycare facility are considered to be the most sensitive to increased noise and vibration levels. The proposed student health facility is internal to the campus, and existing buildings would help to shield off-campus residences from exposure to excessive noise levels during construction activities. The daycare facility is located on the west side of the Central Classroom Building, building number 71 (Figure 3). The daycare facility is the closest sensitive receptor and is approximately 100 feet north of the project site.

Table 6 identifies various vibration velocity levels for the types of construction equipment that would operate at the project site during construction.

Table 6
Vibration Source Levels for Construction Equipment

Equipment	Approximate VdB				
	25 Feet	50 Feet	75 Feet	100 Feet	150 Feet
Loaded Trucks	86	80	76	74	71
Jackhammer	79	73	69	67	64

Source: Federal Railroad Administration, 2005
Note: Construction would not include the use of a pile driver; therefore, pile driving equipment was not included in the analysis of construction vibration.

As illustrated in Table 6, vibration levels could reach approximately 74 VdB at the adjacent daycare facility and adjacent classrooms (Building 71; refer to Figure 3), which is the closest sensitive receptor, approximately 100 feet north of the project site. Additionally, vibration levels could reach approximately 71 VdB at the classrooms in building number 21 (refer to Figure 3). This would not exceed the groundborne velocity

[1] "Frequent events" is defined as more than 70 vibration events of the same source per day; "occasional events" is defined as between 30 and 70 vibration events per day, and "infrequent events" is defined as less than 30 vibration events per day (FTA, 2006).

threshold level of 83 vibration decibels (VdB) established by the Federal Railroad Administration for noise-sensitive buildings, residences, and institutional land uses. Therefore, temporary vibration impacts caused by construction activities would be less than significant.

d. As previously mentioned, construction of the proposed student health facility would involve the use of heavy construction equipment. Noise levels as a result of project construction activities could impact the adjacent daycare facility and classrooms located in Building 71.

Table 7 demonstrates the typical noise levels associated with heavy construction equipment. As shown therein, noise levels range from 74 to 95 dB at a distance of 100 feet from the construction site (FTA, 2006).

Table 7
Typical Noise Levels at Construction Sites

Equipment	Typical Level (dBA) 100 Feet from the Source
Air Compressor	75
Backhoe	74
Concrete Mixer	79
Pile Driver (Impact)	95
Pile Driver (Sonic)	90
Paver	83
Saw	64
Scraper	83
Truck	82

Source: FTA, May 2006.

Equipment used during construction would include equipment such as: a back hoe, graders, tractors, a crane, forklifts, welders, cement mixers, loaders, rollers, an air compressor during the architectural coating phase, and a paving machine. The project would not require pile driving. The primary source of construction noise would be generated during grading and building construction. Noise levels typically attenuate (or drop off) at a rate of 6 dB per doubling of distance from point sources such as construction equipment. As previously mentioned, the closest sensitive receptors are located approximately 100 feet from where proposed construction activities would occur. Therefore, temporary noise generated by construction activities at the adjacent daycare facility and classrooms could be as high as about 83 dBA. Although temporary, this level of noise is considered substantial. Therefore, mitigation is required to reduce construction-related noise impacts to a less than significant level.

Therefore, temporary noise impacts caused by construction activities would be **potentially significant but mitigable.**

e, f. The project area is located about 2.15 miles from the Norman Y Mineta San Jose International Airport, and the proposed project does not involve the development of new noise-sensitive uses. Thus, significant impacts relating to aircraft noise are not anticipated.

Mitigation Measures

N-1 Construction Noise: The following requirements shall be implemented during construction of the project:

- *Limit construction activities to between the hours of 7:00 AM and 4:00 PM.*
- *To ensure that noise emissions from construction vehicles and other equipment are limited to the minimum feasible levels, equip all noise-producing equipment and vehicles using internal combustion engines with mufflers, and air-inlet silencers where appropriate, that meet or exceed original factory specification. Equip mobile or fixed "package" equipment (e.g., arc-welders, air compressors) with shrouds and noise-control features that are readily available for that type of equipment.*
- *Install a sound barrier around the daycare facility during construction, during operation of heavy construction equipment.*
- *Stage asphalt/concrete crushing operation and equipment away from residences and adjacent uses that are sensitive to noise.*
- *The construction manager/contractor shall act as a noise disturbance coordinator. The noise disturbance coordinator shall be responsible for coordinating construction activities so as to not impact vibration-sensitive uses. The noise disturbance coordinator shall also respond to any local complaints about construction noise, determine the cause of the noise complaint and institute reasonable measures warranted to correct the problem. The telephone number of the noise disturbance coordinator shall be posted at the project site and will be provided to adjacent neighbors.*

Significance After Mitigation. Implementation of the required mitigation measure would reduce noise and vibration impacts from construction to a **less than significant** level.

POPULATION AND HOUSING - Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a) Induce substantial 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)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X

a-c. The proposed project consists of construction of a student health facility on an infill site located near the center of the SJSU campus. The construction of a new health facility would serve the needs of the students on the SJSU campus. The proposed project would not displace any housing or people or induce any population growth. Therefore, **no impacts** to population or housing would occur.

PUBLIC SERVICES - Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
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: a) Fire protection?			**X**	
b) Police protection?				**X**
c) Schools?				**X**
d) Other public facilities?				**X**

a. The City of San Jose Fire Department (SJFD) provides emergency response and public safety needs on the SJSU campus. Response times to the campus are within the four-minute response time called for in the San Jose 2020 General Plan (Campus Master Plan 2001 Environmental Impact Report, URS, 2001). Emergency access throughout the campus is facilitated by the campus design, incorporation of fire lanes and access to fire hydrants. Future buildings would need to comply with applicable building and fire codes and therefore could be served by SJFD in the event of an emergency. Implementation of the proposed project would not require SJFD to provide new facilities or services that could result in an environmental impact. Impacts would be less than significant.

b. The SJSU campus has its own on-campus police department. The proposed project would not generate additional population or an expanded service area, and therefore would not result in impacts to police protection services. No impacts would occur.

c-d. The proposed construction of the new student health facility on the SJSU campus is intended to accommodate the student population. The proposed project would not in itself generate population growth and therefore would not increase the demand for schools or other public facilities. No impacts would occur.

RECREATION	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Would the project 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?				**X**
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				**X**

a, b. The proposed project consists of construction of student health facility on an infill site located near the center of the SJSU campus. The proposed project would not increase population and therefore would not affect existing recreational facilities nor create demand for new recreational facilities. No impacts would occur.

***TRANSPORTATION / TRAFFIC* - Would the project:**	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			**X**	
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			**X**	
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				**X**
d) Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible use (e.g. farm equipment)?				**X**
e) Result in inadequate emergency access?				**X**
f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				**X**

a-b. The proposed project would involve the construction of student health facility on an infill site located near the center of the SJSU campus. This new facility would accommodate the needs of the student population, and is not anticipated to generate additional off-site vehicle trips that could impact the City's circulation system or existing level of service standards.

Temporary impacts to the circulation system may occur as a result of the additional truck trips required during the construction of the student health facility. However, off-site construction trips typically occur during off-peak traffic periods, when intersections and roadways operate well within acceptable levels of service. In addition, the City of San Jose Department of Transportation will review haul routes during construction, and the final route to the freeways would be determined following submission of a haul route permit application for the project to the City of San José. Therefore, significant impacts to the circulation system during the construction or operational period are not anticipated to occur. Impacts would be less than significant.

c-f. The proposed project would involve the construction of a student health facility on an infill site located near the center of the SJSU campus. The proposed project would not generate any air traffic, create any traffic hazards, conflict with emergency access patterns, or conflict with any adopted transportation plans or policies. No impacts would occur.

UTILITIES AND SERVICE SYSTEMS - Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			X	
b) Require or result in the construction of new water or wastewater treatment facilities of expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			X	
e) Result in a determination by the wastewater 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 provider's existing commitments?			X	
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	
g) Comply with federal, state, and local statutes and regulations related to solid waste?			X	
h) Result in a Substantial increase in demand of existing sources of energy or require the development of new sources of energy?			X	

a, b. The San Francisco Bay Regional Water Quality Control Board regulates wastewater treatment for the City of San Jose. The proposed facility would be a relocation of an existing facility and would serve the student population on the SJSU campus by replacing the existing, undersized student health facility. In addition, the project is not anticipated to generate additional growth. Furthermore, the proposed project would result in a maximum wastewater discharge of approximately 120 gallons per minute, which would be discharged into a sewer line on the west side of the proposed student health facility. This sewer line discharges into a 72-inch sanitary sewer interceptor. The impact of this small amount of flow on the performance of the 72-inch interceptor is anticipated to be minimal (Kennedy/Jenks Consultants, May 24, 2012), and no off-site improvements would be necessary. Therefore, the project would not cause a significant increase in wastewater or exceed wastewater treatment requirements. Impacts would be **less than significant**.

c. Storm water drainage facilities on the SJSU campus would not be significantly altered as a result of the proposed project. As the project site is mostly pervious, the developed surface area would incrementally increase as a result of the proposed project. However, the proposed project would be engineered to address storm water drainage and flooding standards by either designing a retention pond within a landscaped area adjacent to the proposed student health facility or connecting to existing storm water drainage utilities on the SJSU campus (Personal Communication, Adam Bayer, Energy and Utilities Director SJSU, May 31, 2012). Therefore, there would be no additional off-site disturbance as a result of the proposed project. In addition, SJSU would be required to comply with regulations and policies set forth by the State Water Resources Control Board and the San Francisco Bay Area Regional Water Quality Control Board to meet storm water quality regulations. Therefore, the proposed project would not cause significant environmental effects by adding or expanding storm water drainage facilities. Impacts would be less than significant.

d, e. The proposed project is not anticipated to alter the existing water or wastewater needs for the SJSU campus. The proposed project is applying for Leadership in Energy and Environmental Design (LEED) certification and contains sustainable design principles, including the protection and conservation of water. This new facility would accommodate the needs of the student population, and is not anticipated to generate additional students or employees. Therefore, existing water entitlements and wastewater treatment facilities would be sufficient for the campus population upon completion of the proposed project (Campus Master Plan 2001 EIR, URS, 2001). Wastewater generated at SJSU is discharged into City wastewater mains that range in size from 6 inch diameter to 72 inch diameter. As previously mentioned, the small amount of wastewater flow on existing infrastructure would be anticipated to be minimal (Kennedy/Jenks Consultants, May 24, 2012). As such, there would be adequate capacity in these mains and at the City Water Pollution Control Plant to accommodate flows from the proposed project. Furthermore, the campus well, which is located between the Aquatic Center and Building BB, maintains sufficient capacity to accommodate water demand from campus buildout. Therefore, less than significant impacts would result.

f, g. The SJSU campus disposes of solid waste through a contract with Republic Services, independent of the City of San Jose. Solid Waste is disposed of at Newby Island Landfill, which has a permitted capacity of 4,000 tons/day. The landfill has a remaining capacity of 36%, which is over 18,000,000 cubic yards, (California Integrated Waste Management

Board (CIWMB), 2012). The proposed project would involve the relocation of an existing use. The proposed project would not result in an increase in population or development and would not be anticipated to generate additional solid waste beyond existing conditions. Additionally, the campus promotes an effective recycling program, and approximately 58% of waste is diverted, and recycled. Therefore, impacts would be less than significant.

h. Gas lines on the SJSU campus are owned and operated by the Pacific Gas & Electric Company (PG&E). The Central Plant on campus provides electricity, chilled water for cooling, and steam for heating campus buildings.

As mentioned, the proposed project is applying for LEED certification. Sustainable design principles would be used in the construction of the proposed projects, which would reduce energy consumption to the extent feasible. The proposed student health facility would replace the existing facility to better serve the student population. Sustainable design goals include the following:

- *Strategically site new structures in order to optimize the use of solar orientation, wind, shade, and adjacent buildings;*
- *Minimize non-renewable energy consumption by employing the most efficient and appropriate technology for mechanical systems and construction (passive solar heating, daylighting, natural cooling, minimizing solar heat gain, etc.);*
- *Reduce dependence upon non-renewable resources by using recycled materials;*
- *Protect and enhance campus green space by using low-maintenance landscape design that creates ecologically healthy and aesthetically pleasing outdoor spaces for gathering (greens, courtyards, gardens, arbors, etc.);*
- *Protect and conserve water;*
- *Improve indoor air quality by employing materials with low environmental impact during their life cycles; and*
- *Minimize operational and maintenance costs by incorporating innovative energy and daylight management systems at the project inception.*

With implementation of these sustainable design principles, impacts related to energy demand would be less than significant.

MANDATORY FINDINGS OF SIGNIFICANCE	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Does the project have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self- sustaining levels, eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				**X**
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, and the effects of probable future projects)?			**X**	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		**X**		

a. The project is located in an existing developed area that does not contain known historic resources. Therefore, the project would not impact fish or wildlife populations, eliminate or reduce the number or restrict the range of a plant or animal community, or eliminate examples of major periods of California history or prehistory. No impacts would occur.

b. The project would not create any significant impacts that cannot be mitigated. The project would accommodate the needs of the student population by providing expanded services, and is not anticipated to generate additional off-site vehicle trips that could impact the City's circulation system, existing level of service standards, regional operation air contaminant emissions or greenhouse gas emissions standards, or noise standards, on a cumulative basis. Therefore, the project's contribution to cumulative impacts would be less than significant.

c. The proposed project could result in potentially significant direct or indirect impacts to humans. Refer to the *Geology and Soils,* and *Noise* sections in the above analysis. However, as described in these sections, all impacts would be mitigated to a less than significant level. Therefore, with implementation of the required measures, no substantial adverse effects on human beings would occur as a result of the proposed project.

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Appendix A

Air Quality and Greenhouse Gas Emissions Calculations

San Jose State University Student Health Expansion Project

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
University/College (4Yr)	108	Employee

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s) 2.2

Utility Company Pacific Gas & Electric Company

Climate Zone 4

Precipitation Freq (Days) 64

1.3 User Entered Comments

Project Characteristics -

Land Use - 108 employees represents 70 employees, 20 student assistants and a 20% increase in the number of employees (reflecting a conservative estimate).
52,000 gross square feet represents a conservative analysis, as net square feet would be smaller.

Construction Phase - Construction duration is assumed to be two years. Architectural Coating phase is reasonably assumed to ovrelap with building construction and paving and to last 150 days. No Demo.

Trips and VMT - No Demo

On-road Fugitive Dust - No demo

Energy Mitigation - Consistent with LEED scorecard

Grading - 1, 1.5

Vehicle Trips - No net new trips

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.62	3.25	2.46	0.00	0.07	0.22	0.29	0.02	0.21	0.23	0.00	359.17	359.17	0.05	0.00	360.22
2014	0.80	1.91	1.52	0.00	0.03	0.13	0.16	0.00	0.13	0.13	0.00	226.00	226.00	0.03	0.00	226.61
2015	0.20	0.22	0.17	0.00	0.00	0.02	0.02	0.00	0.02	0.02	0.00	22.83	22.83	0.00	0.00	22.89
Total	**1.62**	**5.38**	**4.15**	**0.00**	**0.10**	**0.37**	**0.47**	**0.02**	**0.36**	**0.38**	**0.00**	**608.00**	**608.00**	**0.08**	**0.00**	**609.72**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.62	3.25	2.46	0.00	0.05	0.22	0.27	0.01	0.21	0.22	0.00	359.17	359.17	0.05	0.00	360.22
2014	0.80	1.91	1.52	0.00	0.03	0.13	0.16	0.00	0.13	0.13	0.00	226.00	226.00	0.03	0.00	226.61
2015	0.20	0.22	0.17	0.00	0.00	0.02	0.02	0.00	0.02	0.02	0.00	22.83	22.83	0.00	0.00	22.89
Total	**1.62**	**5.38**	**4.15**	**0.00**	**0.08**	**0.37**	**0.45**	**0.01**	**0.36**	**0.37**	**0.00**	**608.00**	**608.00**	**0.08**	**0.00**	**609.72**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.26	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	205.37	205.37	0.01	0.00	206.65
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	17.54	0.00	17.54	1.04	0.00	39.30
Water						0.00	0.00		0.00	0.00	0.00	2.82	2.82	0.03	0.00	3.62
Total	**0.27**	**0.06**	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**17.54**	**208.19**	**225.73**	**1.08**	**0.00**	**249.57**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.26	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	181.43	181.43	0.01	0.00	182.56
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	8.77	0.00	8.77	0.52	0.00	19.65
Water						0.00	0.00		0.00	0.00	0.00	2.26	2.26	0.03	0.00	3.05
Total	**0.27**	**0.05**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**8.77**	**183.69**	**192.46**	**0.56**	**0.00**	**205.26**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.06	0.04	0.00		0.00	0.00		0.00	0.00	0.00	5.90	5.90	0.00	0.00	5.91
Total	**0.01**	**0.06**	**0.04**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.00**	**5.90**	**5.90**	**0.00**	**0.00**	**5.91**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.00	0.00	0.16
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.16**	**0.16**	**0.00**	**0.00**	**0.16**

3.2 Site Preparation - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.06	0.04	0.00		0.00	0.00		0.00	0.00	0.00	5.90	5.90	0.00	0.00	5.91
Total	**0.01**	**0.06**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**5.90**	**5.90**	**0.00**	**0.00**	**5.91**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.00	0.00	0.16
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.16**	**0.16**	**0.00**	**0.00**	**0.16**

3.3 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.02	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.10	0.06	0.00		0.01	0.01		0.01	0.01	0.00	9.76	9.76	0.00	0.00	9.78
Total	**0.01**	**0.10**	**0.06**	**0.00**	**0.02**	**0.01**	**0.03**	**0.01**	**0.01**	**0.02**	**0.00**	**9.76**	**9.76**	**0.00**	**0.00**	**9.78**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.00	0.00	0.33
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.33**	**0.33**	**0.00**	**0.00**	**0.33**

3.3 Grading - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.10	0.06	0.00		0.01	0.01		0.01	0.01	0.00	9.76	9.76	0.00	0.00	9.78
Total	**0.01**	**0.10**	**0.06**	**0.00**	**0.01**	**0.01**	**0.02**	**0.00**	**0.01**	**0.01**	**0.00**	**9.76**	**9.76**	**0.00**	**0.00**	**9.78**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.00	0.00	0.33
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.33**	**0.33**	**0.00**	**0.00**	**0.33**

3.4 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.56	2.88	2.02	0.00		0.20	0.20		0.20	0.20	0.00	288.08	288.08	0.05	0.00	289.04
Total	**0.56**	**2.88**	**2.02**	**0.00**		**0.20**	**0.20**		**0.20**	**0.20**	**0.00**	**288.08**	**288.08**	**0.05**	**0.00**	**289.04**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.02	0.17	0.13	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	27.14	27.14	0.00	0.00	27.16
Worker	0.02	0.02	0.21	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	27.80	27.80	0.00	0.00	27.84
Total	**0.04**	**0.19**	**0.34**	**0.00**	**0.04**	**0.01**	**0.04**	**0.00**	**0.00**	**0.01**	**0.00**	**54.94**	**54.94**	**0.00**	**0.00**	**55.00**

3.4 Building Construction - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.56	2.88	2.02	0.00		0.20	0.20		0.20	0.20	0.00	288.08	288.08	0.05	0.00	289.04
Total	**0.56**	**2.88**	**2.02**	**0.00**		**0.20**	**0.20**		**0.20**	**0.20**	**0.00**	**288.08**	**288.08**	**0.05**	**0.00**	**289.04**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.02	0.17	0.13	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	27.14	27.14	0.00	0.00	27.16
Worker	0.02	0.02	0.21	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	27.80	27.80	0.00	0.00	27.84
Total	**0.04**	**0.19**	**0.34**	**0.00**	**0.04**	**0.01**	**0.04**	**0.00**	**0.00**	**0.01**	**0.00**	**54.94**	**54.94**	**0.00**	**0.00**	**55.00**

3.4 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.31	1.65	1.21	0.00		0.11	0.11		0.11	0.11	0.00	176.56	176.56	0.03	0.00	177.10
Total	**0.31**	**1.65**	**1.21**	**0.00**		**0.11**	**0.11**		**0.11**	**0.11**	**0.00**	**176.56**	**176.56**	**0.03**	**0.00**	**177.10**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.01	0.10	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	16.67	16.67	0.00	0.00	16.68
Worker	0.01	0.01	0.12	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	16.69	16.69	0.00	0.00	16.71
Total	**0.02**	**0.11**	**0.19**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**33.36**	**33.36**	**0.00**	**0.00**	**33.39**

3.4 Building Construction - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.31	1.65	1.21	0.00		0.11	0.11		0.11	0.11	0.00	176.56	176.56	0.03	0.00	177.10
Total	**0.31**	**1.65**	**1.21**	**0.00**		**0.11**	**0.11**		**0.11**	**0.11**	**0.00**	**176.56**	**176.56**	**0.03**	**0.00**	**177.10**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.01	0.10	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	16.67	16.67	0.00	0.00	16.68
Worker	0.01	0.01	0.12	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	16.69	16.69	0.00	0.00	16.71
Total	**0.02**	**0.11**	**0.19**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**33.36**	**33.36**	**0.00**	**0.00**	**33.39**

3.5 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.44					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.10	0.00		0.01	0.01		0.01	0.01	0.00	13.90	13.90	0.00	0.00	13.94
Total	**0.46**	**0.15**	**0.10**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**13.90**	**13.90**	**0.00**	**0.00**	**13.94**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.18	2.18	0.00	0.00	2.18
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.18**	**2.18**	**0.00**	**0.00**	**2.18**

3.5 Architectural Coating - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.44					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.10	0.00		0.01	0.01		0.01	0.01	0.00	13.90	13.90	0.00	0.00	13.94
Total	**0.46**	**0.15**	**0.10**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**13.90**	**13.90**	**0.00**	**0.00**	**13.94**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.18	2.18	0.00	0.00	2.18
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.18**	**2.18**	**0.00**	**0.00**	**2.18**

3.5 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.16					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	5.23	5.23	0.00	0.00	5.24
Total	**0.17**	**0.05**	**0.04**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**5.23**	**5.23**	**0.00**	**0.00**	**5.24**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.80	0.00	0.00	0.80
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.80**	**0.80**	**0.00**	**0.00**	**0.80**

3.5 Architectural Coating - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.16					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	5.23	5.23	0.00	0.00	5.24
Total	**0.17**	**0.05**	**0.04**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**5.23**	**5.23**	**0.00**	**0.00**	**5.24**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.80	0.00	0.00	0.80
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.80**	**0.80**	**0.00**	**0.00**	**0.80**

3.6 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.16	0.12	0.00		0.01	0.01		0.01	0.01	0.00	15.53	15.53	0.00	0.00	15.58
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.03**	**0.16**	**0.12**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**15.53**	**15.53**	**0.00**	**0.00**	**15.58**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27	1.27	0.00	0.00	1.27
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.27**	**1.27**	**0.00**	**0.00**	**1.27**

3.6 Paving - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.16	0.12	0.00		0.01	0.01		0.01	0.01	0.00	15.53	15.53	0.00	0.00	15.58
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.03**	**0.16**	**0.12**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**15.53**	**15.53**	**0.00**	**0.00**	**15.58**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27	1.27	0.00	0.00	1.27
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.27**	**1.27**	**0.00**	**0.00**	**1.27**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00	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	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
University/College (4Yr)	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
University/College (4Yr)	9.50	7.30	7.30	6.40	88.60	5.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	124.53	124.53	0.01	0.00	125.31
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	135.39	135.39	0.01	0.00	136.24
NaturalGas Mitigated	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	56.91	56.91	0.00	0.00	57.25
NaturalGas Unmitigated	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	69.98	69.98	0.00	0.00	70.41
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
University/College (4Yr)	1.31144e+006	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	69.98	69.98	0.00	0.00	70.41
Total		**0.01**	**0.06**	**0.05**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**69.98**	**69.98**	**0.00**	**0.00**	**70.41**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
University/College (4Yr)	1.06637e+006	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	56.91	56.91	0.00	0.00	57.25
Total		**0.01**	**0.05**	**0.04**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**56.91**	**56.91**	**0.00**	**0.00**	**57.25**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
University/College (4Yr)	465400					135.39	0.01	0.00	136.24
Total						**135.39**	**0.01**	**0.00**	**136.24**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
University/College (4Yr)	428059					124.53	0.01	0.00	125.31
Total						**124.53**	**0.01**	**0.00**	**125.31**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.26	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.26	0.00	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	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.20					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	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	**0.26**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.20					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	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	**0.26**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

Use Reclaimed Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					2.26	0.03	0.00	3.05
Unmitigated					2.82	0.03	0.00	3.62
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
University/College (4Yr)	0.887957 / 1.38886					2.82	0.03	0.00	3.62
Total						**2.82**	**0.03**	**0.00**	**3.62**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
University/College (4Yr)	0.887957 / 0.840059					2.26	0.03	0.00	3.05
Total						**2.26**	**0.03**	**0.00**	**3.05**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					8.77	0.52	0.00	19.65
Unmitigated					17.54	1.04	0.00	39.30
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
University/College (4Yr)	86.4					17.54	1.04	0.00	39.30
Total						**17.54**	**1.04**	**0.00**	**39.30**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
University/College (4Yr)	43.2					8.77	0.52	0.00	19.65
Total						**8.77**	**0.52**	**0.00**	**19.65**

9.0 Vegetation

San Jose State University Student Health Expansion Project

Bay Area AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
University/College (4Yr)	108	Employee

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s) 2.2

Utility Company Pacific Gas & Electric Company

Climate Zone 4

Precipitation Freq (Days) 64

1.3 User Entered Comments

Project Characteristics -

Land Use - 108 employees represents 70 employees, 20 student assistants and a 20% increase in the number of employees (reflecting a conservative estimate).
52,000 gross square feet represents a conservative analysis, as net square feet would be smaller.

Construction Phase - Construction duration is assumed to be two years. Architectural Coating phase is reasonably assumed to ovrelap with building construction and paving and to last 150 days. No Demo.

Trips and VMT - No Demo

On-road Fugitive Dust - No demo

Energy Mitigation - Consistent with LEED scorecard

Grading - 1, 1.5

Vehicle Trips - No net new trips

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2013	4.85	31.72	19.28	0.03	5.65	1.67	7.26	2.90	1.66	4.50	0.00	3,352.31	0.00	0.43	0.00	3,361.36
2014	8.50	23.20	18.40	0.03	0.41	1.50	1.92	0.01	1.50	1.51	0.00	3,070.72	0.00	0.39	0.00	3,078.99
2015	8.46	16.46	12.78	0.02	0.19	1.35	1.55	0.00	1.35	1.35	0.00	1,866.68	0.00	0.24	0.00	1,871.80
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2013	4.85	31.72	19.28	0.03	2.61	1.67	4.21	1.31	1.66	2.91	0.00	3,352.31	0.00	0.43	0.00	3,361.36
2014	8.50	23.20	18.40	0.03	0.41	1.50	1.92	0.01	1.50	1.51	0.00	3,070.72	0.00	0.39	0.00	3,078.99
2015	8.46	16.46	12.78	0.02	0.19	1.35	1.55	0.00	1.35	1.35	0.00	1,866.68	0.00	0.24	0.00	1,871.80
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.04	0.35	0.30	0.00		0.00	0.03		0.00	0.03		422.70		0.01	0.01	425.28
Mobile	0.00	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	**1.48**	**0.35**	**0.30**	**0.00**	**0.00**	**0.00**	**0.03**	**0.00**	**0.00**	**0.03**		**422.70**		**0.01**	**0.01**	**425.28**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.03	0.29	0.24	0.00		0.00	0.02		0.00	0.02		343.71		0.01	0.01	345.81
Mobile	0.00	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	**1.47**	**0.29**	**0.24**	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.02**		**343.71**		**0.01**	**0.01**	**345.81**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.53	0.00	5.53	2.90	0.00	2.90						0.00
Off-Road	3.96	31.66	18.62	0.03		1.60	1.60		1.60	1.60		3,253.39		0.36		3,260.86
Total	**3.96**	**31.66**	**18.62**	**0.03**	**5.53**	**1.60**	**7.13**	**2.90**	**1.60**	**4.50**		**3,253.39**		**0.36**		**3,260.86**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.06	0.66	0.00	0.12	0.00	0.12	0.00	0.00	0.00		98.92		0.01		99.05
Total	**0.06**	**0.06**	**0.66**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.00**		**98.92**		**0.01**		**99.05**

3.2 Site Preparation - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.49	0.00	2.49	1.30	0.00	1.30						0.00
Off-Road	3.96	31.66	18.62	0.03		1.60	1.60		1.60	1.60	0.00	3,253.39		0.36		3,260.86
Total	**3.96**	**31.66**	**18.62**	**0.03**	**2.49**	**1.60**	**4.09**	**1.30**	**1.60**	**2.90**	**0.00**	**3,253.39**		**0.36**		**3,260.86**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.06	0.66	0.00	0.12	0.00	0.12	0.00	0.00	0.00		98.92		0.01		99.05
Total	**0.06**	**0.06**	**0.66**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.00**		**98.92**		**0.01**		**99.05**

3.3 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.72	0.00	4.72	2.48	0.00	2.48						0.00
Off-Road	3.28	26.25	15.38	0.03		1.32	1.32		1.32	1.32		2,689.97		0.29		2,696.15
Total	**3.28**	**26.25**	**15.38**	**0.03**	**4.72**	**1.32**	**6.04**	**2.48**	**1.32**	**3.80**		**2,689.97**		**0.29**		**2,696.15**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.06	0.66	0.00	0.12	0.00	0.12	0.00	0.00	0.00		98.92		0.01		99.05
Total	**0.06**	**0.06**	**0.66**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.00**		**98.92**		**0.01**		**99.05**

3.3 Grading - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.12	0.00	2.12	1.12	0.00	1.12						0.00
Off-Road	3.28	26.25	15.38	0.03		1.32	1.32		1.32	1.32	0.00	2,689.97		0.29		2,696.15
Total	**3.28**	**26.25**	**15.38**	**0.03**	**2.12**	**1.32**	**3.44**	**1.12**	**1.32**	**2.44**	**0.00**	**2,689.97**		**0.29**		**2,696.15**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.06	0.66	0.00	0.12	0.00	0.12	0.00	0.00	0.00		98.92		0.01		99.05
Total	**0.06**	**0.06**	**0.66**	**0.00**	**0.12**	**0.00**	**0.12**	**0.00**	**0.00**	**0.00**		**98.92**		**0.01**		**99.05**

3.4 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.54	23.27	16.29	0.03		1.61	1.61		1.61	1.61		2,561.58		0.41		2,570.13
Total	**4.54**	**23.27**	**16.29**	**0.03**		**1.61**	**1.61**		**1.61**	**1.61**		**2,561.58**		**0.41**		**2,570.13**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.13	1.43	0.89	0.00	0.08	0.04	0.13	0.00	0.04	0.04		242.13		0.01		242.26
Worker	0.18	0.17	1.82	0.00	0.33	0.01	0.34	0.00	0.01	0.01		272.03		0.02		272.40
Total	**0.31**	**1.60**	**2.71**	**0.00**	**0.41**	**0.05**	**0.47**	**0.00**	**0.05**	**0.05**		**514.16**		**0.03**		**514.66**

3.4 Building Construction - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.54	23.27	16.29	0.03		1.61	1.61		1.61	1.61	0.00	2,561.58		0.41		2,570.13
Total	**4.54**	**23.27**	**16.29**	**0.03**		**1.61**	**1.61**		**1.61**	**1.61**	**0.00**	**2,561.58**		**0.41**		**2,570.13**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.13	1.43	0.89	0.00	0.08	0.04	0.13	0.00	0.04	0.04		242.13		0.01		242.26
Worker	0.18	0.17	1.82	0.00	0.33	0.01	0.34	0.00	0.01	0.01		272.03		0.02		272.40
Total	**0.31**	**1.60**	**2.71**	**0.00**	**0.41**	**0.05**	**0.47**	**0.00**	**0.05**	**0.05**		**514.16**		**0.03**		**514.66**

3.4 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.15	21.74	15.92	0.03		1.46	1.46		1.46	1.46		2,561.58		0.37		2,569.39
Total	**4.15**	**21.74**	**15.92**	**0.03**		**1.46**	**1.46**		**1.46**	**1.46**		**2,561.58**		**0.37**		**2,569.39**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.12	1.31	0.82	0.00	0.08	0.04	0.12	0.00	0.04	0.04		242.69		0.01		242.81
Worker	0.16	0.15	1.66	0.00	0.33	0.01	0.34	0.00	0.01	0.01		266.46		0.02		266.79
Total	**0.28**	**1.46**	**2.48**	**0.00**	**0.41**	**0.05**	**0.46**	**0.00**	**0.05**	**0.05**		**509.15**		**0.03**		**509.60**

3.4 Building Construction - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.15	21.74	15.92	0.03		1.46	1.46		1.46	1.46	0.00	2,561.58		0.37		2,569.39
Total	**4.15**	**21.74**	**15.92**	**0.03**		**1.46**	**1.46**		**1.46**	**1.46**	**0.00**	**2,561.58**		**0.37**		**2,569.39**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.12	1.31	0.82	0.00	0.08	0.04	0.12	0.00	0.04	0.04		242.69		0.01		242.81
Worker	0.16	0.15	1.66	0.00	0.33	0.01	0.34	0.00	0.01	0.01		266.46		0.02		266.79
Total	**0.28**	**1.46**	**2.48**	**0.00**	**0.41**	**0.05**	**0.46**	**0.00**	**0.05**	**0.05**		**509.15**		**0.03**		**509.60**

3.5 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.03					0.00	0.00		0.00	0.00						0.00
Off-Road	0.45	2.77	1.92	0.00		0.24	0.24		0.24	0.24		281.19		0.04		282.03
Total	**8.48**	**2.77**	**1.92**	**0.00**		**0.24**	**0.24**		**0.24**	**0.24**		**281.19**		**0.04**		**282.03**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.03	0.03	0.30	0.00	0.06	0.00	0.06	0.00	0.00	0.00		48.45		0.00		48.51
Total	**0.03**	**0.03**	**0.30**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**		**48.45**		**0.00**		**48.51**

3.5 Architectural Coating - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.03					0.00	0.00		0.00	0.00						0.00
Off-Road	0.45	2.77	1.92	0.00		0.24	0.24		0.24	0.24	0.00	281.19		0.04		282.03
Total	**8.48**	**2.77**	**1.92**	**0.00**		**0.24**	**0.24**		**0.24**	**0.24**	**0.00**	**281.19**		**0.04**		**282.03**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.03	0.03	0.30	0.00	0.06	0.00	0.06	0.00	0.00	0.00		48.45		0.00		48.51
Total	**0.03**	**0.03**	**0.30**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**		**48.45**		**0.00**		**48.51**

3.5 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.03					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22		281.19		0.04		281.96
Total	**8.44**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**		**281.19**		**0.04**		**281.96**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.03	0.02	0.27	0.00	0.06	0.00	0.06	0.00	0.00	0.00		47.37		0.00		47.43
Total	**0.03**	**0.02**	**0.27**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**		**47.37**		**0.00**		**47.43**

3.5 Architectural Coating - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.03					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22	0.00	281.19		0.04		281.96
Total	**8.44**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**281.19**		**0.04**		**281.96**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.03	0.02	0.27	0.00	0.06	0.00	0.06	0.00	0.00	0.00		47.37		0.00		47.43
Total	**0.03**	**0.02**	**0.27**	**0.00**	**0.06**	**0.00**	**0.06**	**0.00**	**0.00**	**0.00**		**47.37**		**0.00**		**47.43**

3.6 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.62	16.38	11.89	0.02		1.34	1.34		1.34	1.34		1,712.73		0.24		1,717.66
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**2.62**	**16.38**	**11.89**	**0.02**		**1.34**	**1.34**		**1.34**	**1.34**		**1,712.73**		**0.24**		**1,717.66**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.09	0.08	0.89	0.00	0.19	0.01	0.20	0.00	0.01	0.01		153.95		0.01		154.13
Total	**0.09**	**0.08**	**0.89**	**0.00**	**0.19**	**0.01**	**0.20**	**0.00**	**0.01**	**0.01**		**153.95**		**0.01**		**154.13**

3.6 Paving - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.62	16.38	11.89	0.02		1.34	1.34		1.34	1.34	0.00	1,712.73		0.24		1,717.66
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**2.62**	**16.38**	**11.89**	**0.02**		**1.34**	**1.34**		**1.34**	**1.34**	**0.00**	**1,712.73**		**0.24**		**1,717.66**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.09	0.08	0.89	0.00	0.19	0.01	0.20	0.00	0.01	0.01		153.95		0.01		154.13
Total	**0.09**	**0.08**	**0.89**	**0.00**	**0.19**	**0.01**	**0.20**	**0.00**	**0.01**	**0.01**		**153.95**		**0.01**		**154.13**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	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	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
University/College (4Yr)	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
University/College (4Yr)	9.50	7.30	7.30	6.40	88.60	5.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.03	0.29	0.24	0.00		0.00	0.02		0.00	0.02		343.71		0.01	0.01	345.81
NaturalGas Unmitigated	0.04	0.35	0.30	0.00		0.00	0.03		0.00	0.03		422.70		0.01	0.01	425.28
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
University/College (4Yr)	3592.99	0.04	0.35	0.30	0.00		0.00	0.03		0.00	0.03		422.70		0.01	0.01	425.28
Total		**0.04**	**0.35**	**0.30**	**0.00**		**0.00**	**0.03**		**0.00**	**0.03**		**422.70**		**0.01**	**0.01**	**425.28**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
University/College (4Yr)	2.92157	0.03	0.29	0.24	0.00		0.00	0.02		0.00	0.02		343.71		0.01	0.01	345.81
Total		**0.03**	**0.29**	**0.24**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**343.71**		**0.01**	**0.01**	**345.81**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	1.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.33					0.00	0.00		0.00	0.00						0.00
Consumer Products	1.11					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**1.44**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.33					0.00	0.00		0.00	0.00						0.00
Consumer Products	1.11					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**1.44**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

Use Reclaimed Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Vegetation

Appendix B

Geotechnical Engineering Report

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Converse Consultants

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

GEOTECHNICAL STUDY REPORT

Proposed Student Health and Counseling Building

San Jose State University
San Jose, California

Converse Project No. 11-13-105-01

April 20, 2012

PREPARED FOR

San Jose State University
Planning, Design and Construction
One Washington Square
San Jose, California 95192-1262

222 East Huntington Drive, Suite 211, Monrovia, California 91016-3500
Telephone: (626) 930-1200 ♦ Facsimile: (626) 930-1212 ♦ e-mail: converse@converseconsultants.com

Converse Consultants

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

April 20, 2012

Mr. Daniel No
Associate Director
San Jose State University
Planning, Design and Construction
One Washington Square
San Jose, CA 95192-1262

Subject: **GEOTECHNICAL STUDY REPORT**
Proposed Student Health and Counseling Building
San Jose State University
San Jose, California
Converse Project No. 11-13-105-01

Dear Mr. No:

Enclosed is the geotechnical study report performed by Converse Consultants (Converse) for the proposed Student Health and Counseling Building to be located at the San Jose State University, in San Jose, California. The purpose of the study was to generate a report for geologic and geotechnical design parameters consistent with California State University seismic requirements and the current edition of California Building Code. Our services were performed in accordance with our proposal dated December 8, 2011 and the Service Agreement No. 3000004375 dated February 22, 2012 and Extra Service Authorization dated March 9, 2012.

Based on our field exploration, laboratory testing, geologic evaluation and geotechnical analysis, the site is suitable from a geotechnical standpoint for the proposed project, provided our conclusions and recommendations are implemented during design and construction.

We appreciate the opportunity to be of continued service to San Jose State University. If you should have any questions, please do not hesitate to contact us at (626) 930-1200.

CONVERSE CONSULTANTS

William H. Chu, P.E., G.E.
Senior Vice President/Principal Engineer

Dist: 6/Addressee

SCL/GDS/WHC/amm

222 East Huntington Drive, Suite 211, Monrovia, California 91016-3500
Telephone: (626) 930-1200 ♦ Facsimile: (626) 930-1212 ♦ e-mail: converse@converseconsultants.com

PROFESSIONAL CERTIFICATION

This report for the Student Health and Counseling Building planned in the San Jose State University campus, in San Jose, California has been prepared by the staff of Converse under the professional supervision of the individuals whose seals and signatures appear hereon.

The findings, recommendations, specifications or professional opinions contained in this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice in this area of California. There is no warranty, either expressed or implied.

In the event that changes to the property occur, or additional, relevant information about the property is brought to our attention, the conclusions contained in this report may not be valid unless these changes and additional relevant information are reviewed and the recommendations of this report are modified or verified in writing.

Sean C. Lin, P.E., G.E.
Senior Engineer

Geoffrey D. Stokes, P.G., C.E.G.
Senior Geologist

William H. Chu, G.E.
Principal Engineer, Senior Vice President

EXECUTIVE SUMMARY

The following is the summary of our geotechnical study, findings, conclusions, and recommendations, as presented in the body of this report. Please refer to the appropriate sections of the report for complete conclusions and recommendations. In the event of a conflict between this summary and the report, or an omission in the summary, the report shall prevail.

- The proposed Student Health and Counseling Building is located at north side of Paseo De San Carlos and west side of 7th Street in the campus of San Jose State University, San Jose, California.
- The project consists of construction of a 4-story building with associated hardscape. It is our understanding that no subterranean basement is proposed. The detailed structural information and loads are not available at this time.
- Three (3) exploratory borings (MR-1 through MR-3) and five (5) CPT soundings (CPT-1 through CPT-5) were drilled/advanced within the project site on March 5, and 6, 2012.
- Borings drilled for this project indicate that the site is underlain by a thin layer of undocumented fill soils (Af). The fill material encountered is approximately 2 feet thick and generally consists of sandy silt and clayey silt. Alluvial fan deposits (Qhf) were encountered below the fill in both borings drilled to the maximum depth explored of 100.6 feet bgs. The alluvial fan deposits mainly consist of clay and clayey silt to approximate 55 feet, silty sand and gravelly sand between 55 and 80 feet, and inter-bedded clay and sand layers below 80 feet.
- Groundwater was encountered at approximate 10 feet below ground surface during the drilling.
- The project site is not located within a currently designated State of California Earthquake Fault Zone (Alquist-Priolo Special Studies Zones) for surface fault rupture.
- The results of liquefaction analysis indicate certain thin lenses of soil at between approximate 25 and 30 feet below ground surface are prone to liquefaction. The potential liquefaction induced settlement is estimated to be 0.37 inch with a potential differential settlement of 0.25 inch. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.
- The proposed building can be supported by deep piles penetrating the compressible and liquefiable soils into firm stratum.
- The pH and chloride content of the sample tested are in the non-corrosive range. However, saturated resistivity is in the corrosive range to ferrous metal. The soluble

sulfate concentration is in the non-corrosive range to concrete. Mitigation measures to protect concrete in contact with the soils are not anticipated.

- Site preparation will require the removal of building demolition debris, buried foundations, utilities, etc., and remedial grading to provide a relatively uniform soil condition for support of future slabs, hardscape and pavement.

Results of our study indicate that the site is suitable from a geotechnical standpoint for the proposed development, provided that the recommendations contained in this report are incorporated into the design and construction of the project.

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Tables

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Drawings

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Appendices

1.0 INTRODUCTION

This report contains the findings and recommendations of our preliminary geotechnical study performed for the Student Health and Counseling Building planned at San Jose State University campus, in San Jose, California, as shown on Drawing No. 1, *Site Location Map.*

The purpose of the study was to evaluate the nature and general engineering properties of the subsurface soils, to evaluate groundwater elevation, and to provide geotechnical recommendations for project design.

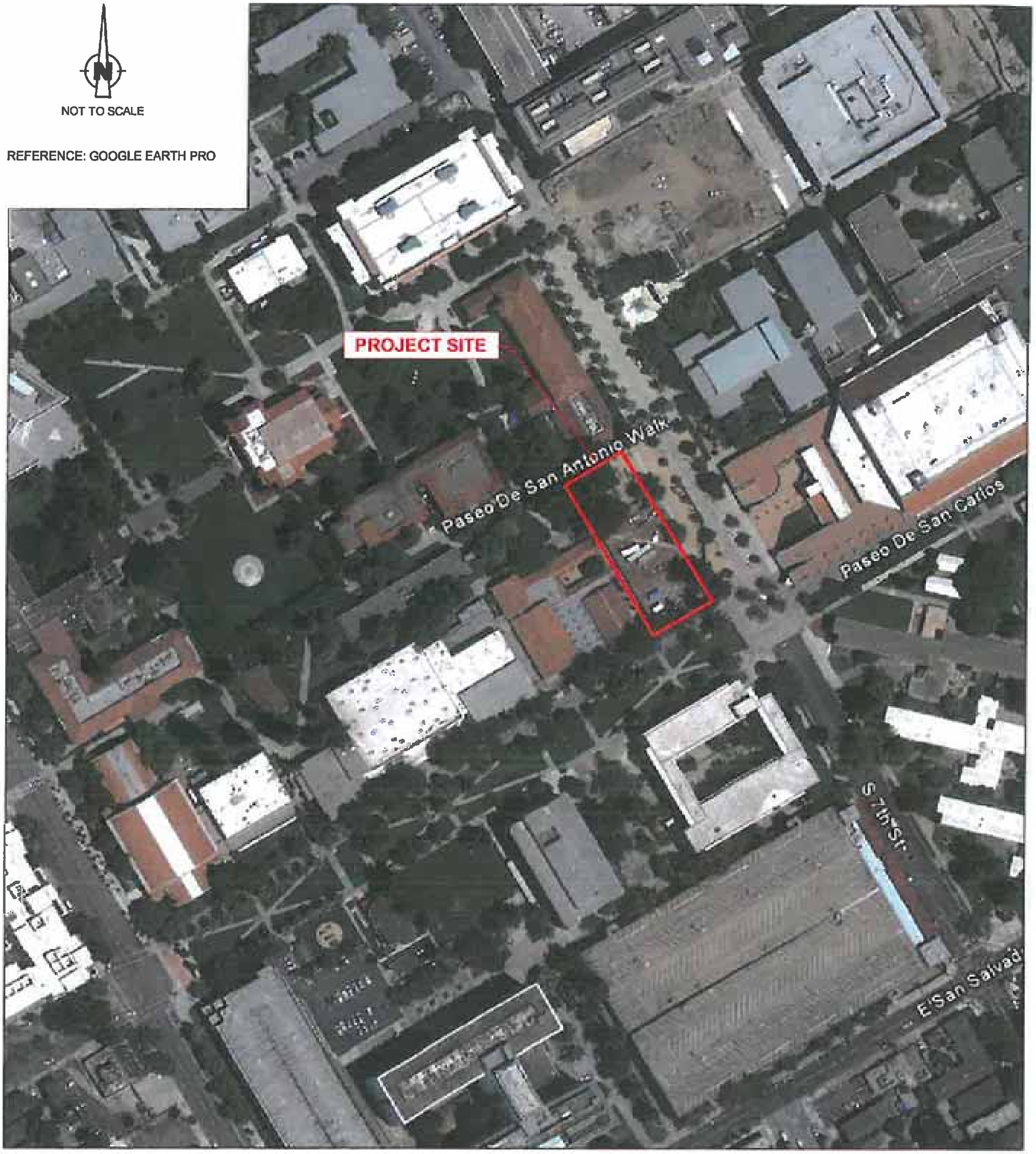
This report is written for the project described herein and is intended for use solely by San Jose State University and their design team. It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the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

2.0 SITE AND PROJECT DESCRIPTION

The proposed Student Health and Counseling Building is located at north side of Paseo De San Carlos and west side of 7th Street in the campus of San Jose State University, San Jose, California. The project site is depicted on Drawing No. 2, *Site Plan and Boring/CPT Locations*.

The project consists of construction of a 4-story building with associated hardscape. It is our understanding that no subterranean basement is proposed. The detailed structural information and loads are not available at this time. We assumed that the column load to be up to 300 kips (dead + live loads) for the purpose of this study.

The coordinates of the subject site are North Latitude: 37.3348 and West Longitude: 121.8814. These coordinates at the subject site were used to calculate the earthquake ground motions. Review of the California Geologic Survey (CGS) publication Engineering Geology and Seismology for Public Schools, Colleges and Hospitals in California, dated August 9, 2005 (page 32) indicates that accuracy to within a few hundred meters of these coordinates is sufficient for the computation of the earthquake ground motion of the project site.



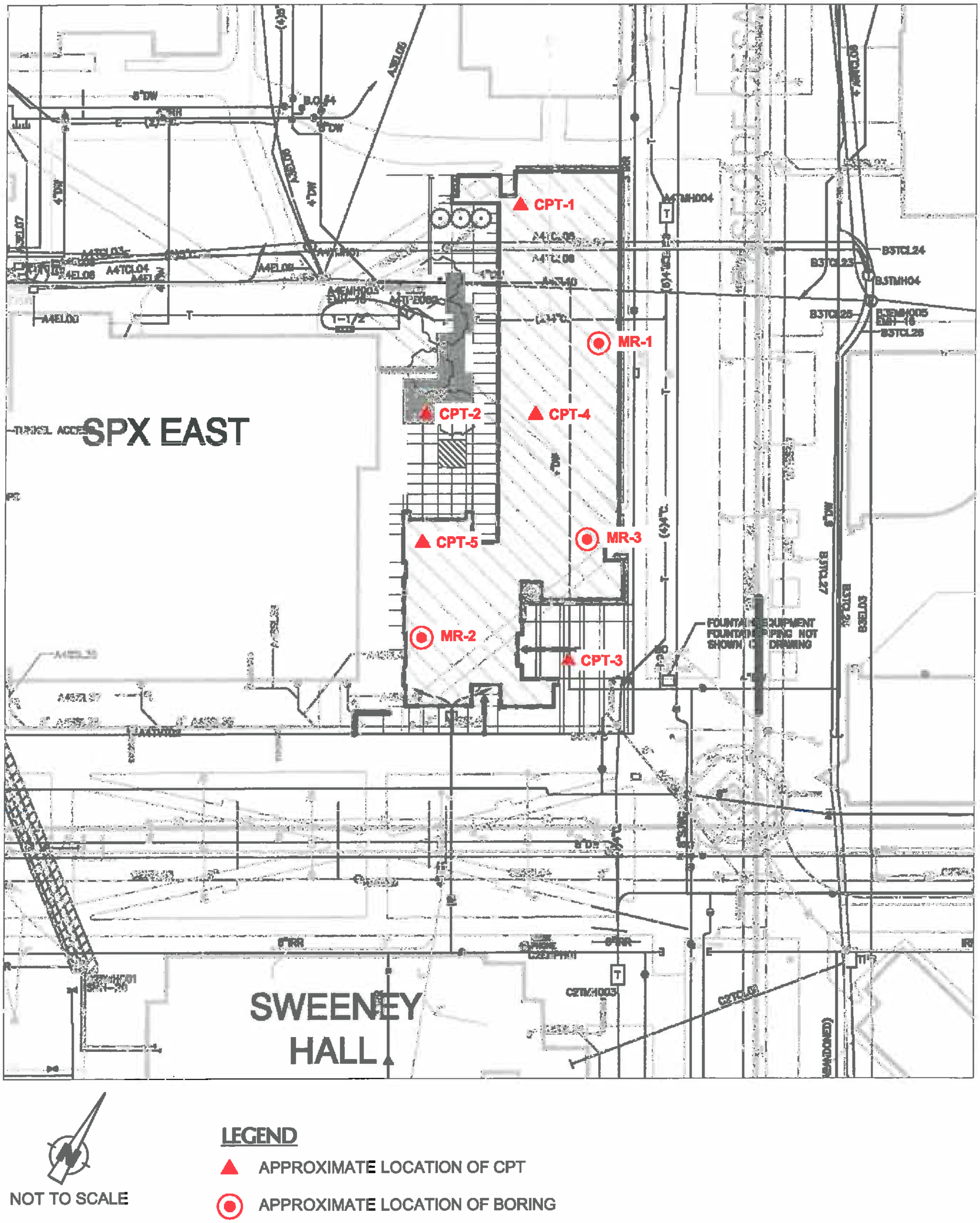
SITE LOCATION MAP

SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No.
11-13-105-01

Converse Consultants

Drawing No.
1



SITE PLAN AND BORING / CPT LOCATIONS

SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No.
11-13-105-01

Drawing No.
2

Converse Consultants

3.0 SCOPE OF WORK

Our scope of work consists of the tasks described in the following subsections.

3.1 Site Reconnaissance

A Converse representative visited the site prior to drilling to assess the accessibility and to mark the boring locations. Eight (8) boring/CPT locations were marked within the proposed project area. Underground Service Alert was notified of our proposed drilling locations 48 hours prior to initiation of the subsurface field work.

3.2 Subsurface Exploration

Three (3) exploratory borings (MR-1 through MR-3) and five (5) CPT soundings (CPT-1 through CPT-5) were drilled/advanced within the project site on March 5 and 6, 2012. The borings were advanced using truck-mounted mud-rotary wash rig with a 4-inch diameter tricone drill bit to depth of approximate 65 feet below the existing ground surface (bgs). The borings were visually logged by our field engineer and sampled at regular intervals in subsurface soils. Standard Penetration Tests (SPTs) were performed in selected borings at selected intervals using a standard (1.4 inches inside diameter and 2.0 inches outside diameter) split-barrel sampler. California Modified Sampler (Ring samples), Standard Penetration Test samples, and bulk soil samples were obtained for laboratory testing. The borings were grouted with bentonite grout to full depth following the completion of drilling of each boring.

The CPT soundings were advanced to depths ranging from approximate 77.9 to 100.6 feet. Open holes from the CPT soundings were grouted full depth with cement.

The approximate locations of the exploratory borings and CPT soundings are shown on Drawing No. 2, *Site Plan and Boring/CPT Locations*. For a description of the field exploration and sampling program see Appendix A, *Field Exploration.*

3.3 Laboratory Testing

Representative samples of the site soils were tested in the laboratory to aid in the classification and to evaluate relevant engineering properties. The tests performed included:

- *In situ* moisture contents and dry densities (ASTM Standard D2216)
- *Percent of Fines Passing No. 200 Sieve* (ASTM Standard D1140)
- Atterberg Limits (ASTM D4318)
- Direct Shear (ASTM Standard D3080)

- Consolidation (ASTM Standard D2435)
- Expansion Index (ASTM Standard D4829)
- Soil Corrosivity (Caltrans 643, 422, 417, and 532)

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

3.4 Analyses and Report

Data obtained from the exploratory fieldwork and laboratory-testing program were analyzed and evaluated with respect to the planned construction. This report was prepared to provide the findings, conclusions and recommendations developed during our study and evaluation.

4.0 GEOLOGIC CONDITIONS

4.1 Regional Geologic Setting

The subject site is located within the Coast Ranges geomorphic province of California. The Coast Ranges are generally characterized as a series of northwest-trending highly folded and faulted mountain ranges, and intervening alluvial valleys that are largely the results of the interaction of strike slip and tectonic uplift along the San Andreas Fault system.

The project site is located within the central portion of the Santa Clara Valley, a seismically active region bordered by the San Jose foothills of the Diablo mountain range to the east and the Silver Creek Hills to the south. Alluvial sediments in the valley are derived from flood plain deposits of the northwesterly flowing Guadalupe River drainage system, which includes Coyote Creek as a tributary. The valley is bordered by active faults of the San Andreas system including the San Andreas, the Hayward, and the Calaveras fault zones.

Drawing No. 3, *Geologic Map of Site Vicinity*, based on the Geologic Map presented in the Seismic Hazard Evaluation Report for the San Jose West 7.5-minute Quadrangle (2002) has been prepared to show the location of the project site with respect to the regional geology.

Review of the Seismic Hazard Evaluation Report for the San Jose West 7.5-minute Quadrangle (2002) indicates that the site is underlain by Holocene-age (last 11,000 years) alluvial fan deposits (map symbol Qhf) derived from the surrounding foothills that were

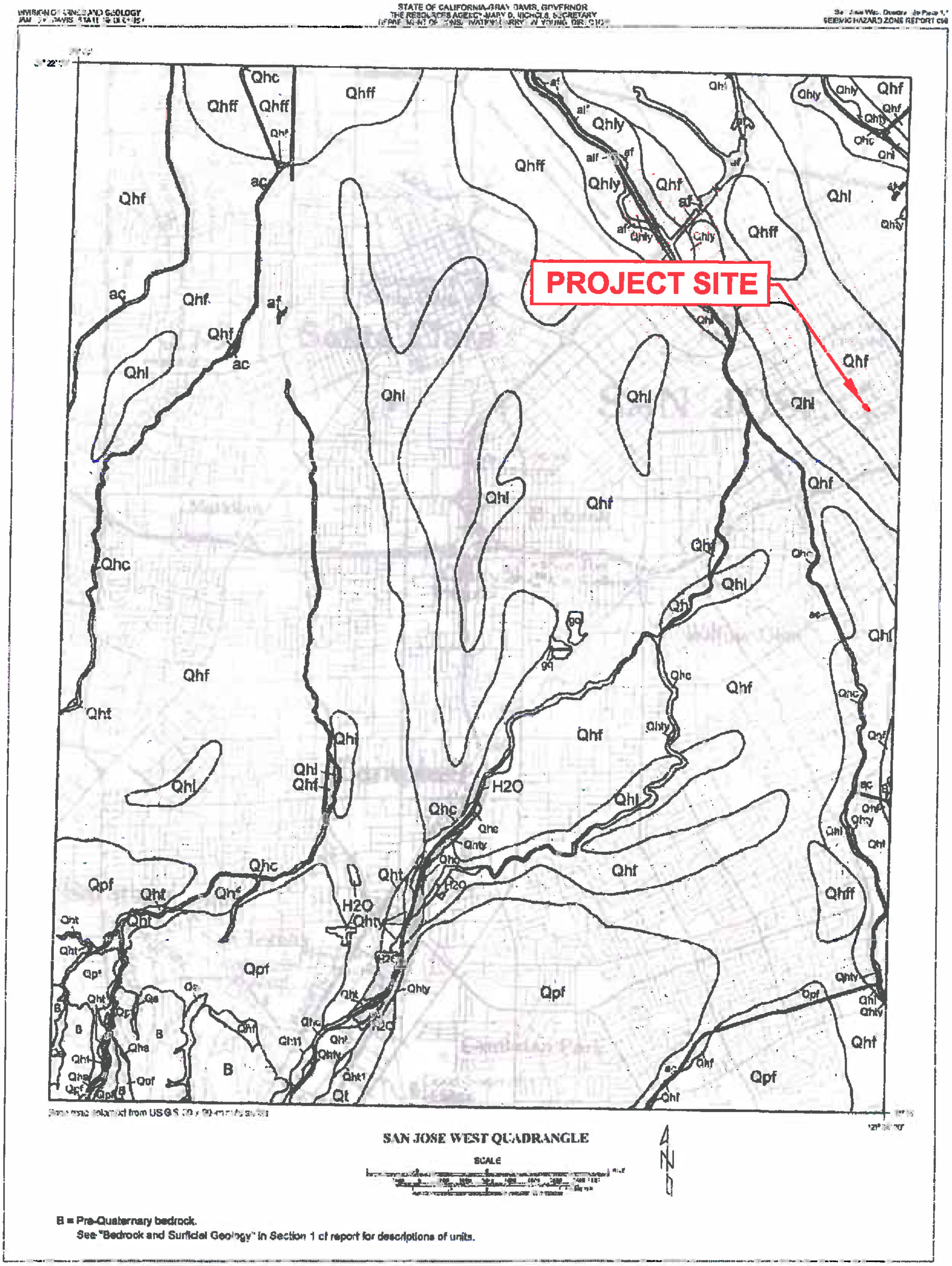


Plate 1.1. Quaternary geologic map of the San Jose West Quadrangle, California. *Modified from Knudsen and others (2000).*

GEOLOGIC MAP OF SITE VICINITY

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transported and deposited primarily by the Coyote Creek drainage system. Composition of these deposits is dependent on the source areas of the streams but in general consist of fine-grained sediments.

4.2 Subsurface Profile of Project Site

Borings drilled for this project indicate that the site is underlain by a thin layer of undocumented fill soils (Af). The fill material encountered is approximately 2 feet thick and generally consists of sandy silt and clayey silt. Alluvial fan deposits (Qhf) were encountered below the fill in both borings/CPTs drilled to the maximum depth explored of 100.6 feet bgs. The alluvial fan deposits mainly consist of clay and clayey silt to approximate 55 feet, silty sand and gravelly sand between 55 and 80 feet, and inter-bedded clay and sand layers below 80 feet.

For additional information on the subsurface conditions, see the Logs of Borings data in Appendix A, *Field Exploration*.

4.3 Groundwater

Groundwater was encountered at approximate 10 feet below ground surface during the drilling. Review of the Seismic Hazard Evaluation Report for the San Jose West 7.5-minute Quadrangle (2002) indicates the historic high groundwater level is about 10 feet below existing ground surface. Drawing No. 4, *Groundwater Contour Map* has been prepared to show the location of the project site with respect to the groundwater contours. For design purpose, we assumed groundwater level at 10 feet below ground surface for analysis.

The groundwater level beneath the site can vary depending upon the seasonal precipitation and groundwater basin activities including recharge, storage and pumping occurring in the general site vicinity.

4.4 Subsurface Variations

Based on results of the subsurface exploration and our experience, some variations in the continuity and nature of subsurface conditions within the project site should be anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth material at the site, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations. If, during construction, subsurface conditions differ significantly from those presented in this report, this office should be notified immediately so that recommendations can be modified, if necessary.

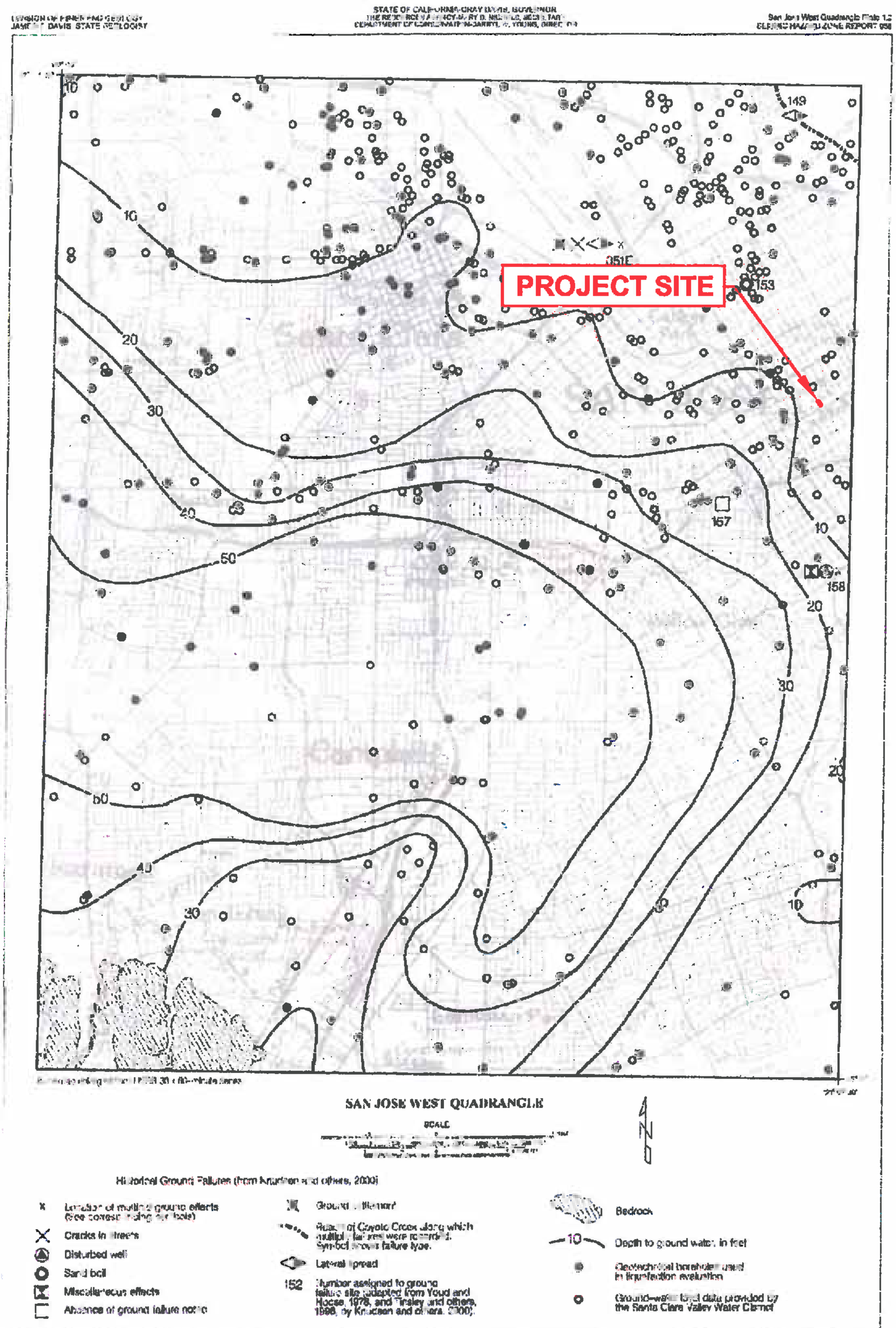

Plate 1.2 Depth to historically high ground water, historical liquefaction sites, and locations of boreholes, San Jose West 7.5-minute Quadrangle, California

GROUNDWATER CONTOUR MAP

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5.0 FAULTING AND SEISMIC ANALYSIS

The project site is not located within a currently designated State of California Earthquake Fault Zone (Alquist-Priolo Special Studies Zones) for surface fault rupture. No surface faults are known to project through or towards the site. The closest known fault to the project site with a mappable surface expression is the Hayward Fault, located approximately 8 kilometers to the east/northeast. The Monte Vista-Shannon blind thrust fault is modeled approximately 11 kilometers to the southwest. Other nearby seismic sources include the Calaveras Fault, located approximately 12 kilometers to the northeast and the San Andreas Fault located approximately 19 kilometers to the southwest.

5.1 Seismic History

An analysis of the seismic history of the site was conducted using the computer program EQSEARCH, (Blake, 2000), and attenuation relationships proposed by Bozorgnia et. al. (1999) for alluvium soil conditions. Based on the analysis of seismic history, the number of earthquakes and aftershocks with a moment magnitude of 5.0 or greater occurring within a distance of 100 kilometers was 94, since the Year 1800. These events include the major earthquakes in the Bay Area such as those in 1838 (magnitude 7.4 on the San Andreas fault), in 1868 (magnitude 7.0 on the Hayward fault) and 1906 (the magnitude 7.8 San Francisco earthquake on the San Andreas fault) and 1989 (Loma Prieta magnitude 6.9). The highest historical ground motion at the site is attributed to the magnitude 6.5 October 8, 1865 "Great San Francisco Earthquake", with the epicenter modeled approximately 15 kilometers south of the site based on the California Geological Survey online database.

5.2 California State University Seismic Parameters

The site is located within the California State University (CSU) campus at San Jose. The CSU Board of Trustees has enacted more stringent requirements for structural assessment of seismic performance of buildings within CSU campus locations than the current edition of the California Building Code (CBC 2010) as adopted by the California Building Standards Commission. According to the CSU Seismic Policy, dated January 2008, seismic ground parameters are required to be reported for CSU campus locations. This policy applies to all construction activity undertaken by CSU for new and existing buildings where university operations and activities occur.

Based on the results of our borings, laboratory testing, and in accordance with the *"California State University (CSU) Seismic Requirements"* dated January 6, 2011, the site seismic coefficients are provided below:

Table No. 1, CSU Seismic Design Parameters

Seismic Parameters	
Site Class	E
MCE 0.2-second period Spectral Response Acceleration for Site Class B, $S_{X.2s}$	1.550g
MCE 1-second period Spectral Response Acceleration for Site Class B, S_{X1s}	0.510g
Site Coefficient, F_a	0.85
Site Coefficient, F_v	2.40
MCE 0.2-sec period Spectral Response Acceleration, S_{XS}	1.275g
MCE 1-second period Spectral Response Acceleration, S_{X1}	1.224g
Design Spectral Response Acceleration for 0.2-second period, S_{XDS}	0.850g
Design Spectral Response Acceleration for 1-second period, S_{XD1}	1.816g

* where "X" represents the respective hazard level, BSE-2 (MCE)

6.0 SEISMIC HAZARDS

In addition to direct effects on structures, strong ground shaking from earthquakes can also produce other side effects that include surface fault rupture, soil liquefaction, lateral spreading, seismically induced settlement, ground lurching, landsliding, earthquake-induced flooding, seiches, and tsunamis. Drawing No. 5, *Seismic Hazard Zones Map*, has been prepared to show the mapped location of potential liquefaction and earthquake-induced landslide areas near the project site. The State of California Seismic Hazard Zone Map for the San Jose West Quadrangle (February 7, 2002) shows the project site is located within an area of potential liquefaction. The project site is not located within any earthquake-induced landslide areas due to the relatively flat condition of the site topography.

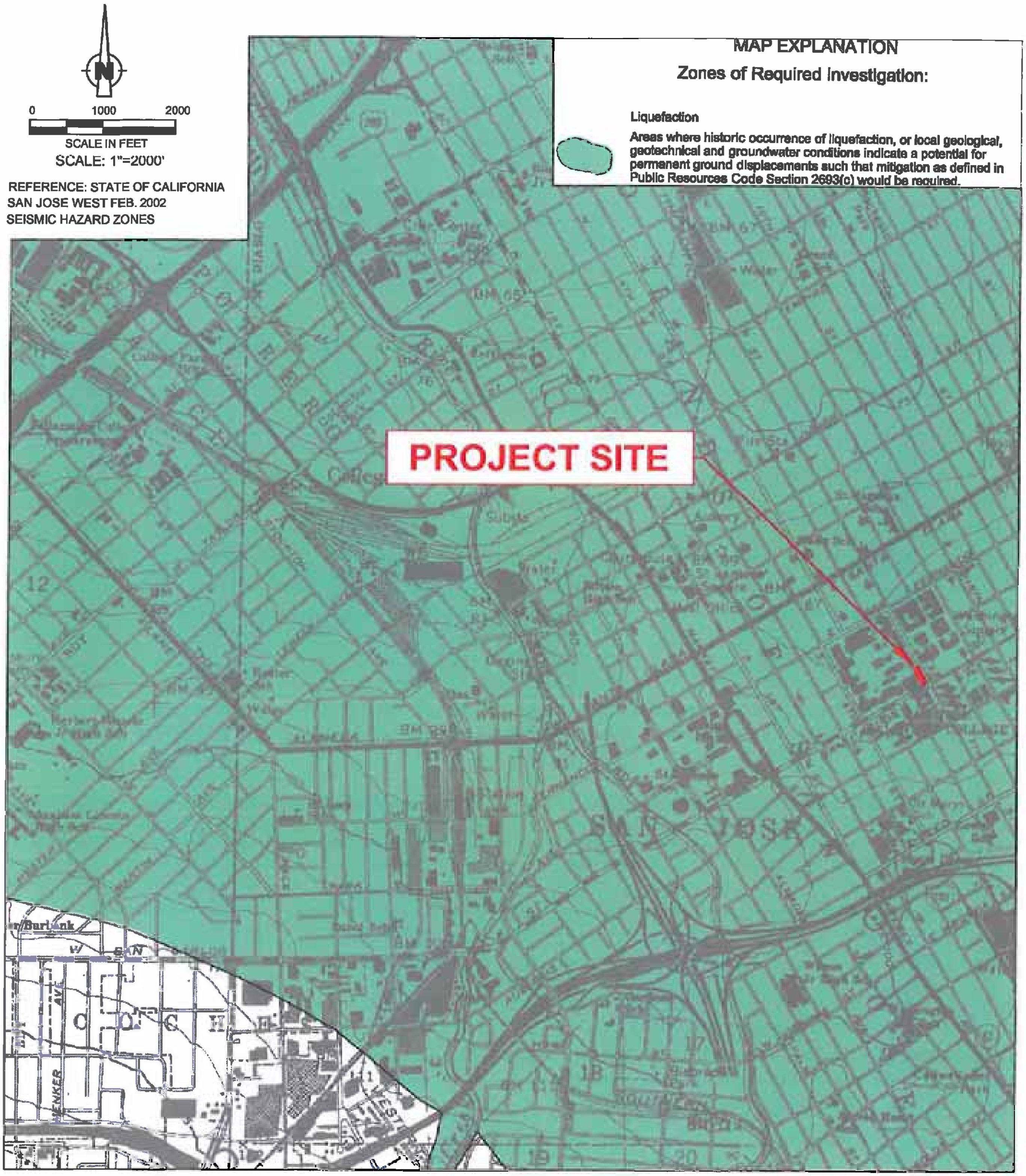
Results of a site-specific evaluation for each type of possible seismic hazard are explained below:

6.1 Surface Fault Rupture

The site is not located within a currently designated State of California Earthquake Fault Zone. Based on a review of existing geologic information, no known active surface fault zone crosses or projects toward the site. The potential for surface rupture resulting from the movement of the nearby major faults is considered remote.

6.2 Liquefaction and Seismically-Induced Settlement

Liquefaction is defined as the phenomenon where a soil mass exhibits a substantial reduction in its shear strength. This strength reduction is due to the development of excess pore pressure in a soil mass caused by earthquake induced ground motions.



SEISMIC HAZARD ZONES MAP

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Drawing No. 5

Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands and silts occur within 50 feet of the ground surface.

The subsurface data obtained from exploratory borings were used to evaluate the liquefaction/seismic settlement potential of the site. The Logs of Borings are presented in Appendix A, *Field Exploration.* The liquefaction potential and seismic settlement analyses were performed utilizing CPT data obtained from boring CPT-1 through CPT-5 for the upper 50 feet of soil. The analyses were performed using *LiquefyPro,* Version 5.8d, 2009, by Civil Tech Software. The liquefaction analysis is presented in Appendix C, *Liquefaction and Seismic-induced Settlement Analysis*.

The results of liquefaction analysis indicate certain thin lenses of soil at between approximate 25 and 30 feet below ground surface are prone to liquefaction. The potential liquefaction induced settlement is estimated to be 0.37 inch with a potential differential settlement of 0.25 inch. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.

6.3 Lateral Spreading

Seismically induced lateral spreading involves primarily lateral movement of earth materials due to ground shaking. It differs from the slope failure in that ground failure deep seated movement does not occur due to the relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with predominantly horizontal movement of the soil mass involved. The topography at the project site and in the immediate vicinity of the site is relatively flat, with no nearby slopes or embankments. Under these circumstances, the potential for lateral spreading at the subject site is considered very low.

6.4 Seismically-Induced Slope Instability

Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. The project site is very flat. In the absence of significant ground slopes, the potential for seismically induced landslides to affect the proposed site is considered to be nil.

6.5 Earthquake-Induced Flooding

This is flooding caused by failure of dams or other water-retaining structures as a result of earthquakes. There are no reservoir or water retaining structures in the immediate vicinity of the subject site. The Santa Clara County Geologic Hazard Zones Map indicates the site is not located within a failure hazard zone. The potential of earthquake induced flooding at the subject site is considered to be very low.

6.6 Tsunami and Seiches

Tsunamis are tidal waves generated by fault displacement or major ground movement. Based on the location of the site from the ocean, tsunamis do not pose a hazard. Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Based on site location away from lakes and reservoirs, seiches do not pose a hazard.

6.7 Volcanic Eruption Hazard

There are no known volcanoes near the site. According to Jennings (1994), Mono-Inyo Craters located at approximately 157 miles to the east of project site are the closest potentially active volcanoes to the site. The project site is not within the potential hazard area of the Mono-Inyo Crater Volcanic area.

7.0 DESIGN RECOMMENDATIONS

7.1 General Evaluation

The project site, from a geotechnical standpoint, is suitable for the proposed Student Health and Counseling Building project, provided that the recommendations presented in this report are incorporated in preparation of the foundation design, and construction of the project. The primary concerns for foundation design and construction of this project are:

- Potential settlement up to 4 inches due to compressible soils to the depth of 55 feet.
- Relative high groundwater level.
- Layers of potentially liquefiable sandy soils between 25 and 30 feet bgs.
- Granular soils were encountered at depths between 25 and 30 feet, and between 55 and 80 feet bgs. Caving within granular soils and below the groundwater table should be expected during construction of drilled piles.

The proposed building can be supported by deep piles penetrating the compressible and thin layers liquefiable soils into firm stratum. Pile foundation can be one of the following systems: (1) driven piles, (2) Continuous-Flight-Auger (CFA) piles, or (3) Cast-In-Drilled-Hole (CIDH) piles.

Pile group effects should be considered when the center-to-center (CTC) spacing is less than three (3) pile diameters for axial capacity. For in-line loading, reduction in lateral capacity of an individual pile in a group may be taken as follows:

CTC Spacing (B=pile diameter)	Reduction Factor
8B	1.00
7B	0.70
4B	0.40
3B	0.25

7.2 Driven Piles

The proposed building can be supported on driven piles deriving their capacities from skin friction and end bearing in firm non-liquefiable soil stratum.

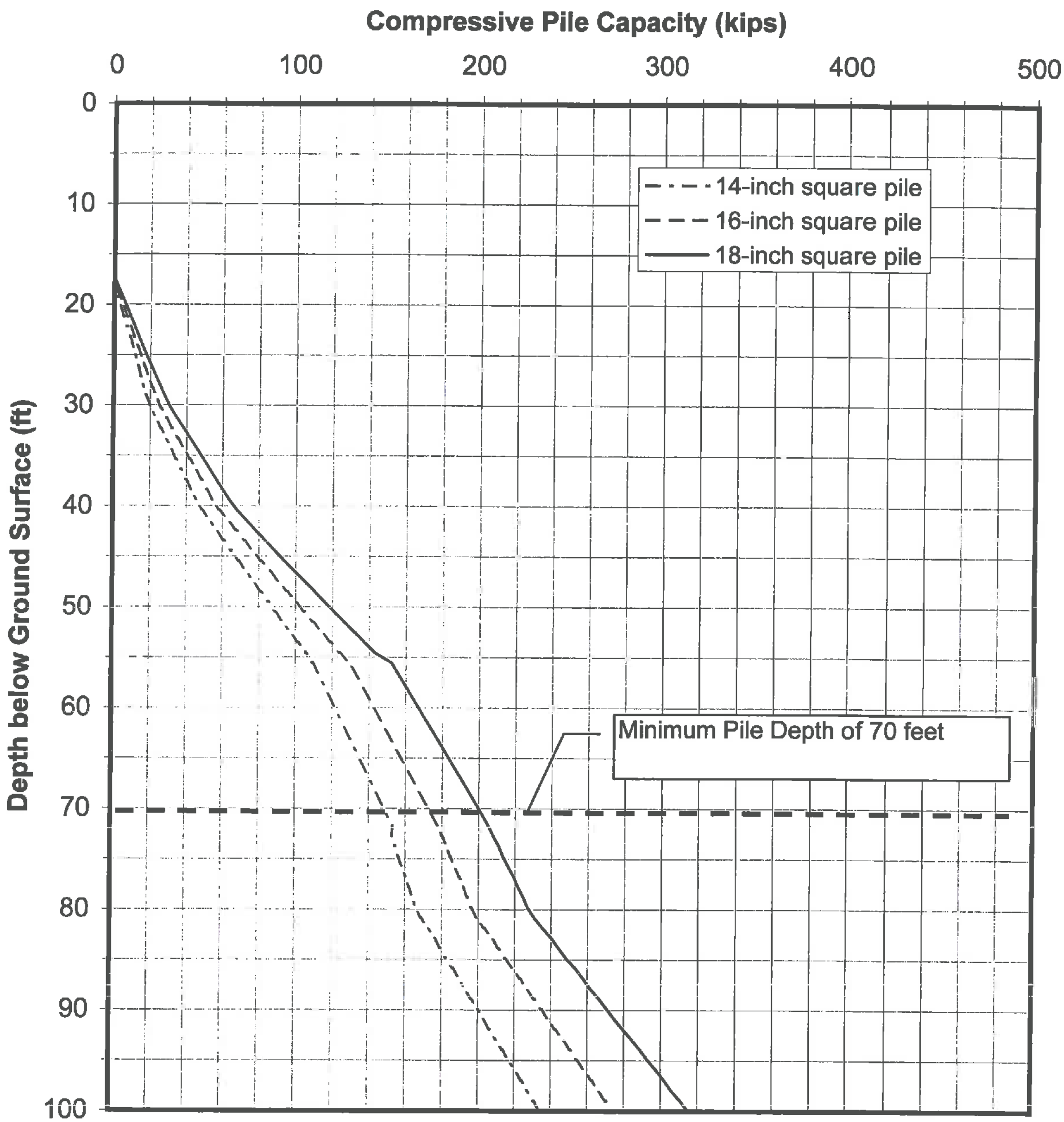
7.2.1 Axial Pile Capacity

The pile capacity was performed using a computer program, ALLPILE, Version 7.9a, by Civil Tech Software. The estimated downward compressive capacity can be obtained for 14-inch, 16-inch, and 18-inch square driven precast concrete piles using the Drawing No. 6, *Estimated Allowable Compressive Capacities of Driven Piles*. The pile capacity charts have considered the downdrag loads due to potential static and seismic settlements.

A minimum pile length should be 70 feet below existing ground surface to bypass the compressible and liquefiable soil stratum. A factor of safety of 2.0 has been applied to obtain the allowable values from the ultimate capacities. The Uplift capacities can be taken as one-half of compressive capacities for pile design. In order to eliminate reductions in capacities due to group efficiency and problems in construction, the minimum pile spacing, if any, should be 3 diameters on center.

Pile capacities for the skin friction value are based upon geotechnical considerations only and actual pile capacities may be limited by structural considerations such as the strength and rigidity of the reinforced concrete pile as a structural element.

Settlement of single piles designed and constructed in accordance with the recommendations presented herein is estimated to be on the order of 3/4 inch. Actual settlement would depend on the applied loads. Pile group settlement would depend on



Notes:

1. Pile capacities are calculated using ALLPILE program, version 7.9a
2. A factor of safety = 2.0 has been applied for allowable capacity
3. Downdrag loads of 37, 43 and 48 kips have been considered for 14, 16 and 18-inch sq. piles, respectively.
4. Minimum pile depth is 70 feet below ground surface.
5. Uplift capacities of piles can be taken as 1/2 of compressive capacities.

ESTIMATED ALLOWABLE COMPRESSIVE CAPACITIES OF DRIVEN PILES

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Drawing No.

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pile spacing, diameter, number of piles and/or the minimum dimensions of the pile group cap.

The allowable capacities may be increased by one-third for short-term transient loads, including wind or seismic forces. Short term uplift capacities can be assumed to be equal to half of the short term downward friction capacities.

Pile embedment requirements should also satisfy appropriate dynamic driving criteria. These criteria should be established after actual pile driving characteristics for the equipment used are known. Hammer and cushion selection should be based on the results of previous experience with the same size and type of pile at similar earth material profiles, or on the results of wave equation analyses for the specific hammer/cushion/pile/earth material profile.

An indicator program should be carried out in the planned building areas where pile foundations will be installed. Details of the program should be developed during final foundation design. In general, the indicator program should include about 10 percent of the number of production piles located across the proposed building site. The piles should be identical to the design piles and installed using the exact size and type of pile driving equipment, and using the same procedures as planned for the remainder of the foundations. These piling may be actual foundation piling driven to their final position.

Driving refusal above the designated pile tip elevations determined by the indicator test piles normally would be considered as unacceptable for full design load. However, the Geotechnical Consultant may, after reviewing the driving records, accept the pile at the reduced depth of penetration, provided that the estimated capacity of the pile is adequate to meet the design requirements for both downward and upward load capacity.

The criteria for determining the capacities of the piles should be based on the type of pile and the hammer selected and the driving conditions encountered. It is recommended that the actual pile driving criteria be established based on the recommended indicator test piles. All pile driving should be performed with the continuous observation of the Geotechnical Consultant.

Pre-drilling is not considered necessary to aid in installing the piles to their designed depths. However, we anticipate that pre-drilling will be only required to depths to penetrate the occasional sand lenses encountered during our field investigation. Pre-drilling should be performed with equipment that creates straight, constant-diameter pre-drilled holes with a maximum diameter of 90 percent of the pile width. The actual pre-drilling depths should be determined during a test pile program.

Care should be taken during pile driving so as not to detrimentally affect the nearby structure(s). Since the on-site soils may be sensitive to certain levels of ground vibrations, vibrations induced by pile driving could cause some areal subsidence. Pre-drilling of pile locations near the existing structure to reduce driving vibrations may be considered.

7.2.2 Lateral Pile Capacity

Analyses were performed to determine allowable lateral capacities for various diameter piles. The recommended allowable lateral pile capacities and related design parameters for free head and fixed head piles assuming pile top deflection of 1 inch are presented in the following table :

Table No. 2, Lateral Design Parameters for Driven Piles

Design Parameters for Lateral Loads (Free Head Condition)			
Pile Size	**14-inch square**	**16-inch square**	**18-inch square**
Pile Top Deflection (inches)	1	1	1
Allowable Lateral Load Capacity, P (kips)	21.5	28.6	36
Maximum Negative Moment (kip-ft)	6.7	9.6	11.6
Maximum Positive Moment (kip-ft)	96.7	135	176
Depth to Maximum Negative Moment (ft)	20.5	23.3	25.5
Depth to Maximum Positive Moment (ft)	6.4	7.1	7.8
1st Point of Zero Lateral Displacement (ft)	9.5	10.6	12.0
Depths to Zero Moments (ft)	0, 17.2	0, 19	0, 21
Design Parameters for Lateral Loads (Fixed Head Condition)			
Pile Size	**14-inch square**	**16-inch square**	**18-inch square**
Pile Top Deflection (inches)	1	1	1
Allowable Lateral Load Capacity, P (kips)	57.5	73	89
Maximum Negative Moment (kip-ft)	270	370	484
Maximum Positive Moment (kip-ft)	90.8	113	130.8
Depth to Maximum Negative Moment (ft)	0	0	0

Depth to Maximum Positive Moment (ft)	9.2	9.9	10.6
1st Point of Zero Lateral Displacement (ft)	12.7	14.8	17.7
Depths to Zero Moments (ft)	5, 19.8	5.5, 22.7	6.1, 25.5

7.3 Continuous-Flight-Auger (CFA) Piles

Another feasible alternative pile system is the Continuous-Flight-Auger (CFA) pile deriving their capacities primarily from the skin friction. CFA pile construction is accomplished by pumping grout through a hollow shaft continuous flight auger, which produces shafts of concrete grout through the soil upon auger withdrawal. This technique of installing piles not only produces greater capacities due to the lateral displacement and densification of surrounding soils but also avoids the need of casing or bentonite mud to stabilize the hole from caving.

7.3.1 Axial Pile Capacity

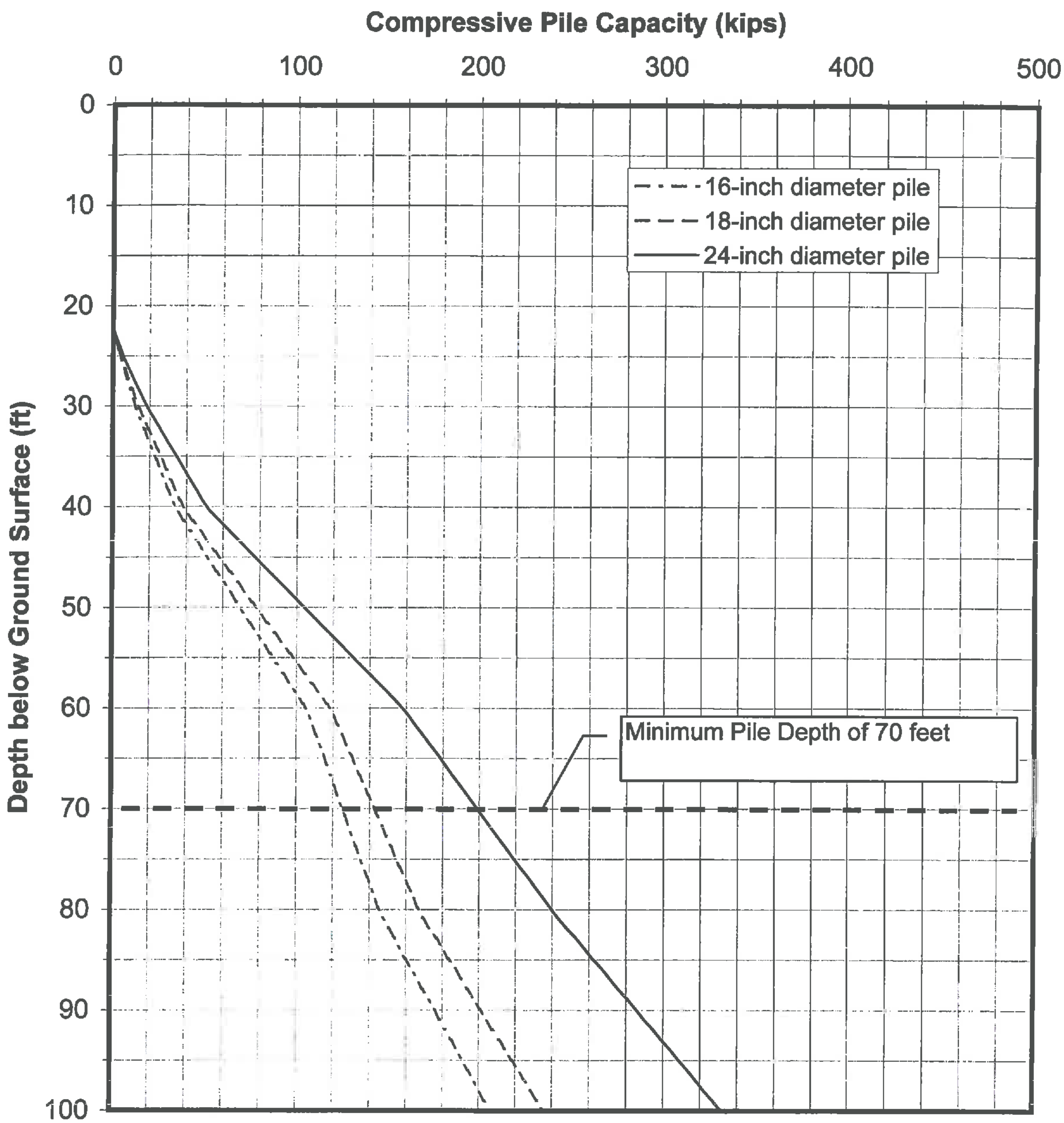
The pile capacity was performed using a computer program, ALLPILE, Version 7.9a, by Civil Tech Software. The Estimated downward compressive capacity of 16-inch, 18-inch and 24-inch diameter CFA piles can be obtained using the Drawing No. 7, *Estimated Allowable Compressive Capacities of CFA Piles*. The pile capacity charts have considered the downdrag loads due to potential static and seismic settlements. The pile capacities should be verified by pile load test verification during placement.

The minimum embedment of piles should be 70 feet below existing ground surface to bypass the liquefiable soil stratum. A factor of safety of 2.0 has been applied to obtain the allowable values from the ultimate capacities. The Uplift capacities can be taken as one-half of compressive capacities for pile design. In order to eliminate reductions in capacities due to group efficiency and problems in construction, the minimum pile spacing, if any, should be 3 diameters on center.

Settlement of single piles designed and constructed in accordance with the recommendations presented herein is estimated to be on the order of 3/4 inch. Actual settlement would depend on the applied loads. Pile group settlement would depend on pile spacing, diameter, number of piles and/or the minimum dimensions of the pile group cap.

The allowable capacities may be increased by one-third for short-term transient loads, including wind or seismic forces. Short term uplift capacities can be assumed to be equal to half of the short term downward friction capacities.

The center-to-center spacing between piles should not be less than three (3) times the pile diameter. Allowable axial loads of pile groups with center-to-center pile spacing of



Notes:

1. Pile capacities are calculated using ALLPILE program, version 7.9a
2. A factor of safety = 2.0 has been applied for allowable capacity
3. Downdrag loads of 34, 38 and 50 kips have been considered for 16, 18 and 24-inch dia. piles, respectively.
4. Minimum pile depth is 70 feet below ground surface.
5. Uplift capacities of piles can be taken as 1/2 of compressive capacities.

ESTIMATED ALLOWABLE COMPRESSIVE CAPACITIES OF CFA PILES

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Drawing No. 7

less than three (3) pile diameters should be determined by incorporating an efficiency reduction factor to the allowable axial loads for single piles.

We recommend a pile load test program shall be implemented in order to verify the design pile capacities. In general, the indicator program should include about 10 percent of the number of production piles located across the proposed building site. The pile load testing shall follow the 2010 CBC requirements for determining allowable compressive, tensile, and lateral pile capacities.

CFA piles require special equipment and experience to properly install the piles. Therefore, we recommend that specialty contractors with proven experience in the installation of such piles be considered. In addition, we recommend that the selected contractor be involved in the concrete mix design, reinforcement to be inserted into the wet concrete grout mix during installation, and other factors affecting the constructability of the piles. The proposed pile construction plan, equipments, construction procedures, and test pile program should be reviewed by the project structural engineer and geotechnical engineer prior to construction.

The installation of the piles should be observed by a representative of a geotechnical consultant. Observation of the grouting is an important aspect of the quality control process. We recommend that the grout take and the volume pumped in discrete element along the pile be recorded. As a minimum, the increments should be recorded every 5 feet.

7.3.2 Lateral Pile Capacity

Analyses were performed to determine allowable lateral capacities for various diameter piles. The recommended allowable lateral pile capacities and related design parameters for free head and fixed head piles assuming pile top deflection of 1 inch are presented in the following table:

Table No. 3, Lateral Design Parameters for CFA Piles

Design Parameters for Lateral Loads (Free Head Condition)			
Pile Size	**16-inch diameter**	**18-inch diameter**	**24-inch diameter**
Pile Top Deflection (inches)	1	1	1
Allowable Lateral Load Capacity, P (kips)	22.5	29	52
Maximum Negative Moment (kip-ft)	6.6	9.1	16.4
Maximum Positive Moment (kip-ft)	97.5	130.8	265.8
Depth to Maximum Negative Moment (ft)	20.5	22.6	28.3
Depth to Maximum Positive Moment (ft)	6.4	7.1	7.8
1st Point of Zero Lateral Displacement (ft)	9.9	10.6	14.1
Depths to Zero Moments (ft)	0, 17	0, 18.5	0, 23.5
Design Parameters for Lateral Loads (Fixed Head Condition)			
Pile Size	**16-inch diameter**	**18-inch diameter**	**24-inch diameter**
Pile Top Deflection (inches)	1	1	1
Allowable Lateral Load Capacity, P (kips)	59	73	115
Maximum Negative Moment (kip-ft)	273.3	360.8	675
Maximum Positive Moment (kip-ft)	90	110	164.2
Depth to Maximum Negative Moment (ft)	0	0	0
Depth to Maximum Positive Moment (ft)	9.2	9.9	14.1
1st Point of Zero Lateral Displacement (ft)	12.7	14.8	21.2
Depths to Zero Moments (ft)	5, 19.8	5.5, 22	6.8, 29.2

7.4 Cast-In-Drilled-Hole (CIDH) Piles

Another feasible alternative pile system is the Cast-In-Drilled-Hole (CIDH) pile deriving their capacities primarily from the skin friction.

7.4.1 Axial Pile Capacity

The pile capacity was performed using a computer program, ALLPILE, Version 7.9a, by Civil Tech Software. The estimated downward compressive capacity of cast-in-drilled-hole piles for 24-inch, 30-inch, and 36-inch diameter piles may be obtained using the Drawing No. 8, *Estimated Allowable Compressive Capacities of CIDH Piles*. The pile capacity charts have considered the downdrag loads due to potential static and seismic settlements.

The minimum embedment of piles should be 70 feet below existing ground surface to bypass the liquefiable soil stratum. A factor of safety of 2.0 has been applied to obtain the allowable values from the ultimate capacities. The Uplift capacities can be taken as one-half of compressive capacities for pile design. In order to eliminate reductions in capacities due to group efficiency and problems in construction, the minimum pile spacing, if any, should be 3 diameters on center.

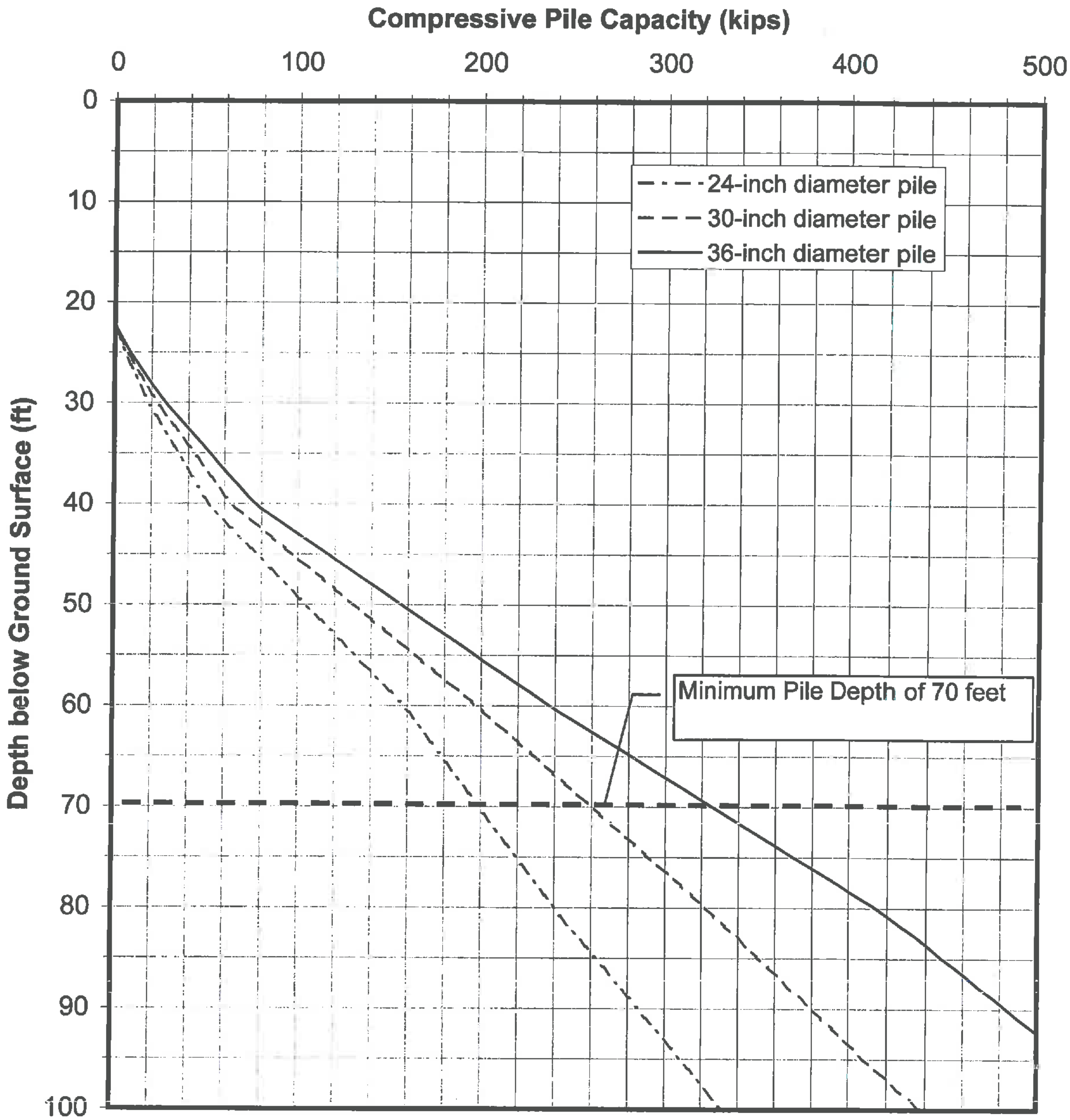
Pile capacities for the skin friction value are based upon geotechnical considerations only and actual pile capacities may be limited by structural considerations such as the strength and rigidity of the reinforced concrete pile as a structural element.

Settlement of single piles designed and constructed in accordance with the recommendations presented herein is estimated to be on the order of 3/4 inch. Actual settlement would depend on the applied loads. Pile group settlement would depend on pile spacing, diameter, number of piles and/or the minimum dimensions of the pile group cap.

The allowable capacities may be increased by one-third for short-term transient loads, including wind or seismic forces. Short term uplift capacities can be assumed to be equal to half of the short term downward friction capacities.

7.4.2 Lateral Pile Capacity

Analyses were performed to determine allowable lateral capacities for various diameter piles. The recommended allowable lateral pile capacities and related design parameters for free head and fixed head piles assuming pile top deflection of 1 inch are presented in the following table:



Notes:
1. Pile capacities are calculated using ALLPILE program, version 7.9a
2. A factor of safety = 2.0 has been applied for allowable capacity
3. Downdrag loads of 50, 63 and 75 kips have been considered for 24, 30 and 36-inch dia. piles, respectively.
4. Minimum pile depth is 70 feet below ground surface.
5. Uplift capacities of piles can be taken as 1/2 of compressive capacities.

ESTIMATED ALLOWABLE COMPRESSIVE CAPACITIES OF CIDH PILES

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Drawing No. 8

Table No. 4, Lateral Design Parameter for CIDH Piles

Design Parameters for Lateral Loads (Free Head Condition)			
Pile Size	**24-inch diameter**	**30-inch diameter**	**36-inch diameter**
Pile Top Deflection (inches)	1	1	1
Allowable Lateral Load Capacity, P (kips)	52	79	109
Maximum Negative Moment (kip-ft)	16.4	28.4	37.2
Maximum Positive Moment (kip-ft)	265.8	449.2	670.8
Depth to Maximum Negative Moment (ft)	28.3	32.5	37.5
Depth to Maximum Positive Moment (ft)	7.8	9.2	9.9
1st Point of Zero Lateral Displacement (ft)	14.1	17.7	21.2
Depths to Zero Moments (ft)	0, 23.5	0, 28	0, 32
Design Parameters for Lateral Loads (Fixed Head Condition)			
Pile Size	**24-inch diameter**	**30-inch diameter**	**36-inch diameter**
Pile Top Deflection (inches)	1	1	1
Allowable Lateral Load Capacity, P (kips)	115	160	209
Maximum Negative Moment (kip-ft)	675	1091	1633
Maximum Positive Moment (kip-ft)	164.2	255	405
Depth to Maximum Negative Moment (ft)	0	0	0
Depth to Maximum Positive Moment (ft)	14.1	18.4	23.3
1st Point of Zero Lateral Displacement (ft)	21.2	27.6	31.1
Depths to Zero Moments (ft)	6.8, 29.2	8.5, 35.8	10.4, 40.5

7.4.3 CIDH Pile Construction

Pile drilling and concrete placement should be performed in accordance with the recommendations presented herein and in the Appendix E, *Guide Specifications for Drilled Pile Installation* and the Standards and Specifications of ADSC: An International Association of Foundation Drilling Contractors.

It should be noted that subsurface sandy soils were encountered at depths between 25 and 30 feet, and between 55 and 80 feet bgs during our filed exploration. Construction of CIDH shafts through caving granular soils and below the groundwater table is expected to be difficult. Special techniques, such as the use of drilling slurry or casing may be required to prevent caving.

The drilling for piles should not be performed adjacent to recently excavated or recently poured piles until the concrete in the completed piles has been allowed to set for several hours. The minimum recommended spacing between adjacent pours may be taken as 6 times the pile diameters. Piles in groups should be drilled and poured in an alternating sequence to minimize the potential for fresh concrete flowing into adjacent open pile excavations.

Drilling of pile shafts should be observed by the Geotechnical Consultant to confirm that piles are extended to the proper depth and that material encountered is similar to that encountered in the borings drilled for this study. Pile lengths should be tabulated in the foundation plans based upon the embedment below the bottom of the pile cap or other point of reference that can be established in the field during construction.

7.5 Non-building Structure Footings

7.5.1 Vertical Capacity

For the non-building structures (e.g. trash enclosure, signs, fence walls, short retaining walls, etc.), shallow pad footing should be at least 18 inches square, and continuous footings should be at least 12 inches wide. Footings should be embedded at least 12 inches below lowest adjacent grade into compacted fill soils or dense native soils. Conventional spread footings founded on compacted fill soils may be designed for a net bearing pressure of 1,500 pounds per square foot (psf) for dead-plus-live-loads.

The net allowable bearing pressure can be increased by 250 psf for each additional foot of excavation depth and by 250 psf for each additional foot of excavation width up to a maximum value of 2,200 psf.

The net allowable bearing values indicated above are for the dead loads and frequently applied live loads and are obtained by applying a factor of safety of 3.0 to the net ultimate bearing capacity.

7.5.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.3 may be assumed with normal dead load forces. An allowable passive earth pressure of 250 psf per foot of depth up to a maximum of 2,000 psf may be used for footings poured against properly compacted fill or undisturbed stiff natural soils. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5.

7.5.3 Settlement

The static settlement of structures supported on continuous and/or spread footings founded on compacted fill will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than 0.5 inch. Differential settlement is expected to be up to one-half of the total settlement over a 30-foot span.

7.5.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

7.6 Slabs-on-grade

Slabs-on-grade should be supported on properly compacted non-expansive fill. Compacted fill used to support slabs-on-grade should be placed and compacted in accordance with report Section 8.0 – *Earthwork Recommendations*, and the general recommendations given in Appendix D, *Earthwork Specifications*.

Slabs-on-grade should have a minimum thickness of four (4) inches nominal for support of normal ground-floor live loads. Minimum reinforcement for slabs-on-grade should be No. 3 reinforcing bars, spaced at 18 inches on-center each way. The thickness and reinforcement of more heavily-loaded slabs will be dependent upon the anticipated loads and should be designed by a structural engineer. A static modulus of subgrade reaction equal to 150 pounds per square inch per inch may be used in structural design of concrete slabs-on-grade.

If approved by the owner, equivalent welded wire mesh may be used for reinforcement of concrete slabs-on-grade. However, to be effective, it is imperative that the reinforcement be located within the center third of the slab thickness. The commonly used procedure of “hooking” the reinforcement during concrete placement seldom, if ever, results in proper location of the slab reinforcing.

It is critical that the exposed subgrade soils should not be allowed to desiccate prior to the slab pour. Care should be taken during concrete placement to avoid slab curling. Slabs should be designed and constructed as promulgated by the ACI and Portland Cement Association (PCA). Prior to the slab pour, all utility trenches should be properly backfilled and compacted.

In areas where a moisture-sensitive floor covering (such as vinyl tile or carpet) is used, slabs should be protected by at least a 10-mil-thick moisture barrier between the slab and subgrade that meets the performance criteria of ASTM E 1745 Class A material. Polyethylene sheets should be overlapped a minimum of six inches, and should be taped or otherwise sealed.

7.7 Soil Corrosivity Evaluation

Converse retained the Environmental Geotechnology Laboratory, Inc., located in Arcadia, California, to test one (1) bulk soil samples taken in the general area of the proposed structures. The pH and chloride content of the sample tested are in the non-corrosive range. However, saturated resistivity is in the corrosive range to ferrous metal. The soluble sulfate concentration is in the non-corrosive range to concrete. Mitigation measures to protect concrete in contact with the soils are not anticipated.

A corrosion engineer may be consulted for appropriate mitigation procedures and construction design, if needed. Conventional corrosion mitigation measures may include the following:

- Steel and wire concrete reinforcement should have at least three inches of concrete cover where cast against soil, unformed.
- Below-grade ferrous metals should be given a high-quality protective coating, such as 18-mil plastic tape, extruded polyethylene, coal-tar enamel, or Portland cement mortar.
- Below-grade metals should be electrically insulated (isolated) from above-grade metals by means of dielectric fittings in ferrous utilities and/or exposed metal structures breaking grade.

7.8 Site Drainage

Adequate positive drainage should be provided away from the structure foundations to prevent ponding and to reduce percolation of water into the foundation soils. We recommend that any landscape areas immediately adjacent to the foundation shall be designed sloped away from the foundation with a minimum 2 percent slope gradient for at least 10 feet measured perpendicular to the face of the foundation. Impervious surfaces within 10 feet of the structure foundation shall be sloped a minimum of 1 percent away from the structure.

8.0 EARTHWORK RECOMMENDATIONS

8.1 General

Site preparation will require the removal of building demolition debris, buried foundations, utilities, etc., and remedial grading to provide a relatively uniform soil condition for support of future slabs, hardscape and pavement. To help reduce the potential for differential settlement, variations in the soil type, degree of compaction, and thickness of the compacted fill placed underneath the slab should be kept uniform. Site grading recommendations provided in this report are based on our experience with similar projects in the area and our site-specific geotechnical evaluation.

The existing native soils removed during over-excavation may be placed as compacted fill in structural areas after proper processing (free of vegetation, shrubs, roots and debris). The site soil materials may contain scattered demolition debris. Earthwork should be performed with suitable equipment and techniques to selectively screen/remove debris from soils placed as engineered fill.

Soils containing organic materials should not be used as structural fill. The extent of over-excavation removal should be further evaluated by the geotechnical representative based on observations during grading.

8.2 Over-Excavation/Removal

The planned building area should be over-excavated to depth of at least two (2) feet as measured from existing grades or to depth of undocumented fill or disturbed soils, whichever is deeper. Localized deeper removal may be needed where firm native soils are not exposed on the excavation bottom. The lateral limits of the over-excavation should extend at least 5 feet beyond the building footings, where feasible.

Pavement, non-building structure and hardscape areas should be over-excavated to a depth of at least 18 inches, as measured from existing grades, or 12 inches below the bottom of footings. Deeper removal will be needed if firm soil conditions are not exposed on the excavation bottom. The lateral limits of the over-excavation should extend at least 2 feet beyond the pavement/structures, where feasible.

The exposed bottom of the over-excavation area should be scarified at least 6 inches, moisture conditioned as needed to near-optimum moisture content, and compacted to 90 percent relative compaction. Over-excavation should not undermine adjacent off-site improvements. Remedial grading should not extend within a projected 1:1 (horizontal to vertical) plane projected down from the outer edge of adjacent off-site improvements.

If soft soils are encountered at the over-excavation bottom elevation and in-place compaction is unattainable, the bottom may be stabilized with aggregate base material and/or a layer of geofabric (i.e. Mirafi 600x, HP570 or equivalent) until a firm and unyielding condition is achieved. The base material thickness and lateral extent of the base/fabric will be dependent on the field conditions.

8.3 Engineered Fill

All engineered fill should be placed on competent, scarified and compacted native materials as evaluated by the geotechnical engineer and in accordance with the specifications presented in this section. Excavated site soils, free of deleterious materials and rock particles larger than three (3) inches in the largest dimension, should be suitable for placement as compacted fill. Any proposed import fill should be evaluated and approved by Converse prior to import to the site. Import fill material should have an expansion index less than 20.

For non-building structures, slab and concrete flat work, we recommend removing about two (2) feet of the underlying soils, and replacing with imported sandy material compacted fill (Expansion Index less than 20).

Prior to compaction, fill materials should be thoroughly mixed and moisture conditioned to at about three (3) percent above optimum moisture for fine-grained soils and within three (3) percent of the optimum moisture content for sandy soils. Fill soils shall be evenly spread in maximum 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer. All fill, if not specified otherwise elsewhere in this report, should be compacted to at least 90 percent of the laboratory dry density in accordance with the ASTM Standard D1557 test method. The upper 12 inches of subgrade below pavement areas should be compacted to 95 percent relative compaction.

8.4 Excavatability

Based on our field exploration, the earth materials at the site may be excavated with conventional heavy-duty earth moving and trenching equipment. The onsite materials may contain occasional demolition debris. Earthwork should be performed with suitable equipment and methods for removal of debris from the engineered fill.

8.5 Expansive Soil Mitigation

Based on soil classifications and laboratory test results, the recommendations contained in this report are based upon anticipated low to medium expansion soil conditions. Any proposed import fill should have an expansion index less than 20, and should be evaluated and approved by Converse prior to import to the site.

The soil materials with Expansion Index higher than 20 should be mitigated. There are several mitigation measures that can be utilized to improve expansive soils at the site. Some mitigation measures include:

- Pre-saturation of on-site compacted subgrade soils to at approximate three (3) percent above optimum moisture content.

- Removing about two (2) feet of the underlying soils, and replacing with imported sandy material compacted fill (Expansion Index less than 20).

- Reinforce footing and place thicker concrete slab with moisture barrier.

It is very important to keep the site soils moisture content around or under the edge of foundation, concrete slab, and asphalt concrete pavement at approximately the same moisture content before, during and after construction. This will reduce greatly the expansion potential of the site soils.

8.6 Shrinkage and Subsidence

Soil shrinkage and/or bulking as a result of remedial grading depends on several factors including the depth of over-excavation, and the grading method and equipment utilized, and average relative compaction. For preliminary estimation, bulking and shrinkage factors for various units of earth material at the site may be taken as presented below:

- The approximate shrinkage factor for the native alluvial soils is estimated to range from ten (10) to twenty (20) percent.
- For estimation purposes, ground subsidence may be taken as 0.2 feet as a result of remedial grading.

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

8.7 Pipeline Backfill Recommendations

Any soft and/or unsuitable material encountered at the pipe invert should be removed and replaced with an adequate bedding material.

8.7.1 Pipeline Subgrade Preparation

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

During the digging of depressions for proper sealing of the pipe joints, the pipe should rest on a prepared bottom for as near its full length as is practicable.

8.7.2 Pipeline Bedding

The bedding zone is defined as that portion of the pipe trench from four inches below the pipe invert to one foot above the top of pipe, in accordance with Section 306-1.2.1 of the 2009 Edition of the *Standard Specifications for Public Works Construction* (SSPWC) and Los Angeles County Department of Public Works Standard Plans, 3080-0, Case 3, Pipe Bedding in Trenches. On-site soils, in the upper soil profile, consisted primarily of silts and sands and may not be suited for use as bedding material. Sandy soil with a sand Equivalent (SE) no less than 30 should be used for bedding material. Bedding material should not contain rocks larger than one inch in maximum dimension. Sand materials stocked piled at the site during grading might be suitable for the pipe bedding after verification by the laboratory testing. Import sand materials for the bedding pipe might be necessary. Lean concrete consisting of two sacks of Portland cement per cubic yard of slurry can also be used, if vibrated in-place.

To provide uniform and firm support for the pipe, compacted granular materials such as clean sand, gravel or ¾-inch crushed aggregate base may be used as pipe bedding material. The type and thickness of the granular bedding placed underneath and around the pipe, if any, should be selected by the pipe designer. The load on the rigid pipes and deflection of flexible pipes and hence, the pipe design, depends on the type and the amount of bedding placed underneath and around the pipe. Care should be taken to densify the bedding material below the springline of the pipe.

Isolation of the granular material from the native soils can be accomplished by encasing the granular material in a layer of geofabric that will allow passage of water through the fabric but prevent soil movement. Compatibility of the granular material with native soils should be based upon the Terzaghi Filter Equation or other relation designed to prevent piping of soils. Terzaghi Filter Equation is presented below:

$$D_{15}(\text{filter})/d_{85}(\text{soil}) \leq 5$$

Where D_{15} and d_{85} represent particle sizes of the granular material and native soil, corresponding to 15 percent and 85 percent passing by weight. In addition, the granular material should not be gap graded to avoid material segregation.

Migration of fines from the surrounding native and/or fill soils must be considered in selecting the gradation of any imported bedding material. We recommend that the pipe bedding material above groundwater should satisfy the following criteria:

$$D_{15} < 2.5 \text{ mm (0.098-inch) and } D_{50} < 19.0 \text{ mm (0.75-inch)}$$

Where D_{15} and D_{50} represent particle sizes of the bedding material corresponding to 15 percent and 50 percent passing by weight, respectively. To minimize soil piping (transfer of fine particle from soil into gravel) and settlement, we recommend that below groundwater level bedding material gradation should be comparable with native soil per Terzaghi Filter Equation or other criteria designed to prevent soil piping.

8.7.3 Trench Zone Backfill

The trench zone is defined as the portion of the trench above the pipe bedding extending up to the final grade level of the trench surface.

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement. Excavated on-site soils free of oversize particles, defined as larger than one (1) inch in maximum dimension in the upper 12 inches of subgrade soils and larger than three (3) inches in the largest dimension in the trench backfill below, and deleterious matter after proper processing may be used to backfill the trench zone. Imported trench backfill, if used, should be approved by the project geotechnical consultant prior to delivery at the site. No more than 30 percent of the backfill volume should be larger than ¾ inch in the largest dimension.

Trench backfill shall be compacted to 90 percent of the laboratory maximum dry density as per ASTM Standard D1557 test method. At least the upper twelve (12) inches of trench underlying pavements should be compacted to at least 95 percent of the laboratory maximum dry density.

Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to within two (2) percent of optimum moisture content and then placed in horizontal layers if the expansion index is less than or equal to 30. Should the expansion index be greater than 30, backfill materials shall be brought to approximately 2 percent above optimum moisture content. The thickness of uncompacted layers should not exceed eight (8) inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work. The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D2922 test methods or equivalent. Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained. It should be the responsibility of the contractor to maintain safe conditions during cut and/or fill operations. Trench backfill shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

Imported soils, if any, used as compacted trench backfill should be predominantly granular and meet the following criteria:

- Expansion Index less than 20
- Free of all deleterious materials
- Contain no particles larger than 3 inches in the largest dimension
- Contain less than 30 percent by weight retained on ¾-inch sieve
- Contain at least 15 percent fines (passing #200 sieve)
- Have a Plasticity Index of 10 or less

Any import fill should be tested and approved by the geotechnical representative prior to delivery to the site.

9.0 CONSTRUCTION CONSIDERATIONS

9.1 Temporary Excavations

Based on the materials encountered in the exploratory borings, sloped temporary excavations may be constructed according to the slope ratios presented in the following table:

Table No. 5, Slope Ratios for Temporary Excavation

Maximum Depth of Cut (feet)	Maximum Slope Ratio* (horizontal: vertical)
0 – 4	vertical
4 - 8	1:1
8 +	1.5:1

*Slope ratio assumed to be uniform from top to toe of slope.

Surfaces exposed in slope excavations should be kept moist but not saturated to minimize raveling and sloughing during construction. Adequate provisions should be made to protect the slopes from erosion during periods of rainfall. Surcharge loads, including construction, should not be placed within five (5) feet of the unsupported trench edge. The above maximum slopes are based on a maximum height of six (6) feet of stockpiled soils placed at least five (5) feet from the trench edge. Temporary cuts encountering loose fill or loose dry sand should be constructed at a flatter gradient.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the project's geotechnical consultant. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

9.2 Special Consideration for Excavation Adjacent to Existing Structures

Various utility lines and existing structure foundations may be within the excavation limits for the proposed project. The depths and locations of the existing facilities may require special construction considerations during excavation to protect these facilities (if necessary) during excavation.

Temporary excavations for the proposed improvements should not extend below a 1:1 (horizontal: vertical) plane extending beyond and down from the bottom of the existing utility lines or foundations. The remedial grading excavations should not cause loss of bearing and/or lateral support for adjacent utilities or structures.

If remedial grading excavations less than 5 feet deep extend below a 1:1 horizontal:vertical (H:V) plane extending beyond and down from the bottom of adjacent utility lines or structure foundations, shoring (such as trench box) or slot cutting shall be employed. "A-B-C" slot cuts may be excavated with maximum 10 foot long slots prevent the existing adjacent footings/utility lines from becoming unstable. Backfill should be accomplished in the shortest period of time possible and in alternating sections.

9.3 Geotechnical Services During Construction

This report has been prepared to aid in the foundation plans and specifications, and to assist the architect, civil and structural engineers in the design of the proposed structures. It is recommended that this office be provided an opportunity to review final design drawings and specifications to verify that the recommendations of this report have been properly implemented.

Recommendations presented herein are based upon the assumption that adequate earthwork monitoring will be provided by a geotechnical consultant. Footing excavations should be observed by a geotechnical consultant prior to placement of steel and concrete so that footings are founded on satisfactory materials and excavations are free of loose and disturbed materials. Trench backfill should be placed and compacted with observation and field density testing provided by this office.

During construction, the geotechnical engineer and/or their authorized representatives should be present at the site to provide a source of advice to the client regarding the geotechnical aspects of the project and to observe and test the earthwork performed. Their presence should not be construed as an acceptance of responsibility for the performance of the completed work, since it is the sole responsibility of the contractor performing the work to ensure that it complies with all applicable plans, specifications, ordinances, etc.

This firm does not practice or consult in the field of safety engineering. We do not direct the contractor's operations, and cannot be responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the contractor. The contractor should notify the owner if he considers any recommended actions presented herein to be unsafe.

10.0 CLOSURE

The findings and recommendations of this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice. We make no other warranty, either expressed or implied. Our conclusions and recommendations are based on the results of the field and laboratory studies, combined with an interpolation and extrapolation of soil conditions between and beyond boring locations. If conditions encountered during construction appear to be different from those shown by the borings, this office should be notified.

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

This report was prepared for San Jose State University for the subject project described herein. We are not responsible for technical interpretations made by others of our exploratory information. Specific questions or interpretations concerning our findings and conclusions may require a written clarification to avoid future misunderstandings.

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APPENDIX A

FIELD EXPLORATION

APPENDIX A

FIELD EXPLORATION

Field exploration included a site reconnaissance and subsurface exploration program. During the site reconnaissance, the surface conditions were noted, and the approximate locations of the boring were determined. The exploratory borings were approximately located using existing boundary and other features as a guide and should be considered accurate only to the degree implied by the method used. The various field study methods performed are discussed below.

Exploratory Borings

Three (3) exploratory borings (MR-1 through MR-3) were drilled within the project site on March 5, and 6, 2012. The borings were advanced using truck-mounted mud-rotary wash rig with a 4-inch diameter tricone drill bit to depth of approximate 65 feet below the existing ground surface (bgs). The borings were visually logged by our field engineer and sampled at regular intervals in subsurface soils. Standard Penetration Tests (SPTs) were performed in selected borings at selected intervals using a standard (1.4 inches inside diameter and 2.0 inches outside diameter) split-barrel sampler. California Modified Sampler (Ring samples), Standard Penetration Test samples, and bulk soil samples were obtained for laboratory testing. The borings were grouted with bentonite grout to full depth following the completion of drilling of each boring.

Ring samples of the subsurface materials were obtained at frequent intervals in the exploratory borings using a drive sampler (2.4-inches inside diameter and 3.0-inches outside diameter) lined with sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops of a 140-pound driving weight falling 30 inches, using an automatic hammer. Samples are retained in brass rings (2.4-inches inside diameter and 1.0-inch in height). The central portion of the sample was retained and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Blow counts for each sample interval are presented on the logs of borings. Bulk samples of typical soil types were also obtained.

Standard Penetration Test (SPT) was also performed using a standard (1.4-inches inside diameter and 2.0-inches outside diameter) split-barrel sampler. The mechanically driven hammer for the SPT sampler was 140 pounds, failing 30 inches for each blow. The recorded blow counts for every six inches for a total of 1.5 feet of sampler penetration are shown on the Logs of Borings in the “BLOWS" column. The standard penetration test was performed in accordance with the ASTM Standard D1586 test method.

It should be noted that the exact depths at which material changes occur cannot always be established accurately. Changes in material conditions that occur between driven samples are indicated in the logs at the top of the next drive sample. A key to soil symbols and terms is presented as Drawing No. A-1, *Soil Classification Chart*. The log of the exploratory boring is presented in Drawing Nos. A-2a through A-4b, *Log of Borings*.

Cone Penetration Test (CPT) Soundings

Five (5) CPT soundings (CPT-1 through CPT-5) were advanced within the project site on March 5, 2012.

The purpose of the CPT soundings was to obtain a continuous profile of the subsurface conditions and use for evaluation of the classification of the site and liquefaction analysis. The tests were performed by Bristtsan CPT, Inc., located in Wilton, California. The CPT soundings were advanced to depths ranging 77.9 to 100.6 feet. Open holes from the CPT soundings were grouted full depth with cement.

The approximate locations of the exploratory borings and CPT soundings are shown on Drawing No. 2, *Site Plan and Boring/CPT Locations*. The CPT data is included at the end of this Appendix A.

SOIL CLASSIFICATION CHART

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

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

BORING LOG SYMBOLS

SAMPLE TYPE

STANDARD PENETRATION TEST
Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method

DRIVE SAMPLE 2.42" I.D. sampler.

DRIVE SAMPLE No recovery

BULK SAMPLE

GROUNDWATER WHILE DRILLING

GROUNDWATER AFTER DRILLING

LABORATORY TESTING ABBREVIATIONS

TEST TYPE
(Results shown in Appendix B)

CLASSIFICATION	
Plasticity	pi
Grain Size Analysis	ma
Passing No. 200 Sieve	wa
Sand Equivalent	se
Expansion Index	ei
Compaction Curve	max
Hydrometer	h

STRENGTH	
Pocket Penetrometer	p
Direct Shear	ds
Direct Shear (single point)	ds*
Unconfined Compression	uc
Triaxial Compression	tx
Vane Shear	vs
Consolidation	c
Collapse Test	col
Resistance (R) Value	r
Chemical Analysis	ca
Electrical Resistivity	er

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No. 11-13-105-01

Drawing No. A-1

Log of Boring No. MR-1

Dates Drilled: 3/5/2012 | Logged by: DA | Checked By: SCL

Equipment: MUD ROTARY WASH RIG | Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): N/A | Depth to Water (ft): 10

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SANDY SILT (ML):** fine-grained sand, trace of clay, grayish brown.						
		ALLUVIUM (Qhf): **SANDY SILT (ML):** few fine-grained sand, trace clay, grayish brown.						
5		-less sand, some clay			3/6/5	20	94	ds
10		**CLAYEY SILT (ML):** grayish brown to gray.			1/1/2			wa (fc=93.7%)
15		**CLAY (CL):** trace silt, dark gray.			4/7/8	20	109	c
20		-increasing silt content, grayish brown to gray			2/3/5			pi,wa (fc=87.8%)
25		**SILTY SAND (SM):** fine to medium-grained, dark gray.			7/7/7	24	97	
30		**Fat CLAY (CH):** some silt, trace of fine-grained sand, dark gray.			4/3/4			pi

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No. **11-13-105-01**

Drawing No. **A-2a**

Log of Boring No. MR-1

Dates Drilled: 3/5/2012 | Logged by: DA | Checked By: SCL

Equipment: MUD ROTARY WASH RIG | Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): N/A | Depth to Water (ft): 10

SUMMARY OF SUBSURFACE CONDITIONS

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

Depth (ft)	Graphic Log	Summary of Subsurface Conditions	Samples: Drive	Samples: Bulk	Blows	Moisture (%)	Dry Unit Wt. (pcf)	Other
		Fat CLAY (CH): some silt, trace of fine-grained sand, dark gray.	■		4/5/8	37	84	
40			☒		4/5/7			pi
45			■		4/6/10	32	90	
50		-increasing silt content	☒		4/5/7			
55		**SILTY SAND (SM):** fine to medium-grained, gray to grayish brown.	☒		5/13/14			
60		**GRAVELLY SAND (SP):** fine to coarse-grained, gravels up to 1" in maximum dimension, grayish brown.	☒		18/22/25			
65		End of boring at 65 feet due to caving sand. Groundwater encountered at 10 feet. Borehole backfilled with bentonite grout.						

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No. **11-13-105-01**

Drawing No. **A-2b**

Log of Boring No. MR-2

Dates Drilled: 3/6/2012 | Logged by: DA | Checked By: SCL

Equipment: MUD ROTARY WASH RIG | Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): N/A | Depth to Water (ft): 10

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAYEY SILT (ML):** some fine-grained sand, grayish brown.						
		ALLUVIUM (Qhf): **CLAYEY SILT (ML):** few fine-grained sand, grayish brown.						
5			■		4/4/5			dist. ca,er
		-more clay						
10		**CLAY (CL):** some silt, grayish brown.	■		0/0/2	39	84	ds
15		-increasing silt content	☒		0/0/1			
20		-trace of fine-grained sand, grayish brown	■		3/4/4	29	98	c
25		**SILTY SAND (SM):** fine to medium-grained, trace of clay, dark gray.	☒		3/5/6			wa (fc=41.9%)
30		**Fat CLAY (CH):** some silt, gray.	■		2/5/6	39	84	

Converse Consultants

Project Name: SAN JOSE STATE UNIVERSITY STUDENT HEALTH AND COUNSELING PROJECT SAN JOSE, CALIFORNIA

Project No. 11-13-105-01

Drawing No. A-3a

Log of Boring No. MR-2

Dates Drilled: 3/6/2012 | Logged by: DA | Checked By: SCL

Equipment: MUD ROTARY WASH RIG | Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): N/A | Depth to Water (ft): 10

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		Fat CLAY (CH): some silt, dark gray.	X		2/3/5			pi
40			X		4/4/6			
45			X		3/4/7			pi
50		-increasing silt content, trace of fine-grained sand	X		4/6/8			
55		**SILTY SAND TO SILT (SM-ML):** fine-grained, trace of clay, dark gray.	X		2/6/9			
60		**GRAVELLY SAND (SP):** fine to coarse-grained, gravels up to 1" in maximum dimension, grayish brown.	X		12/18/23			
65		End of boring at 65 feet due to caving sand. Groundwater encountered at 10 feet. Borehole backfilled with bentonite grout.						

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No. 11-13-105-01

Drawing No. A-3b

Log of Boring No. MR-3

Dates Drilled: 3/6/2012 | Logged by: DA | Checked By: SCL

Equipment: MUD ROTARY WASH RIG | Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): N/A | Depth to Water (ft): 10

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
0		**FILL (Af):** **SANDY SILT (ML):** fine-grained sand, trace of clay, brown.						
		ALLUVIUM (Qhf): **SANDY SILT (ML):** fine-grained sand, trace of clay, brown.						
5			■		4/4/4	20	101	c,ei
10		**CLAYEY SILT (ML):** grayish brown.	☒		0/0/2			
15		**CLAY (CL):** some silt, trace of fine-grained sand, dark gray.	■		3/3/5	26	98	
20		-increasing silt content, fine-grained sand, grayish brown	☒		3/3/4			
25		**SILTY SAND (SM):** fine to medium-grained, trace of clay, dark gray.	■		5/5/5	29	96	ds
30		**Fat CLAY (CH):** some silt, dark gray.	☒		1/2/2			

Converse Consultants

Project Name: SAN JOSE STATE UNIVERSITY STUDENT HEALTH AND COUNSELING PROJECT SAN JOSE, CALIFORNIA

Project No. 11-13-105-01

Drawing No. A-4a

Log of Boring No. MR-3

Dates Drilled: 3/6/2012 | Logged by: DA | Checked By: SCL

Equipment: MUD ROTARY WASH RIG | Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): N/A | Depth to Water (ft): 10

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		Fat CLAY (CH): slightly more silt, dark gray.	■		3/3/6	36	85	
40			☒		1/2/2			
45								
50		-increasing silt content, trace of fine-grained sand, gray	☒		2/3/5			
55								
60		**GRAVELLY SAND (SP):** fine to coarse-grained, gravels up to 1" in maximum dimension, grayish brown to brown.	☒		16/18/18			
65		End of boring at 65 feet due to caving sand. Groundwater encountered at 10 feet. Borehole backfilled with bentonite grout.						

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

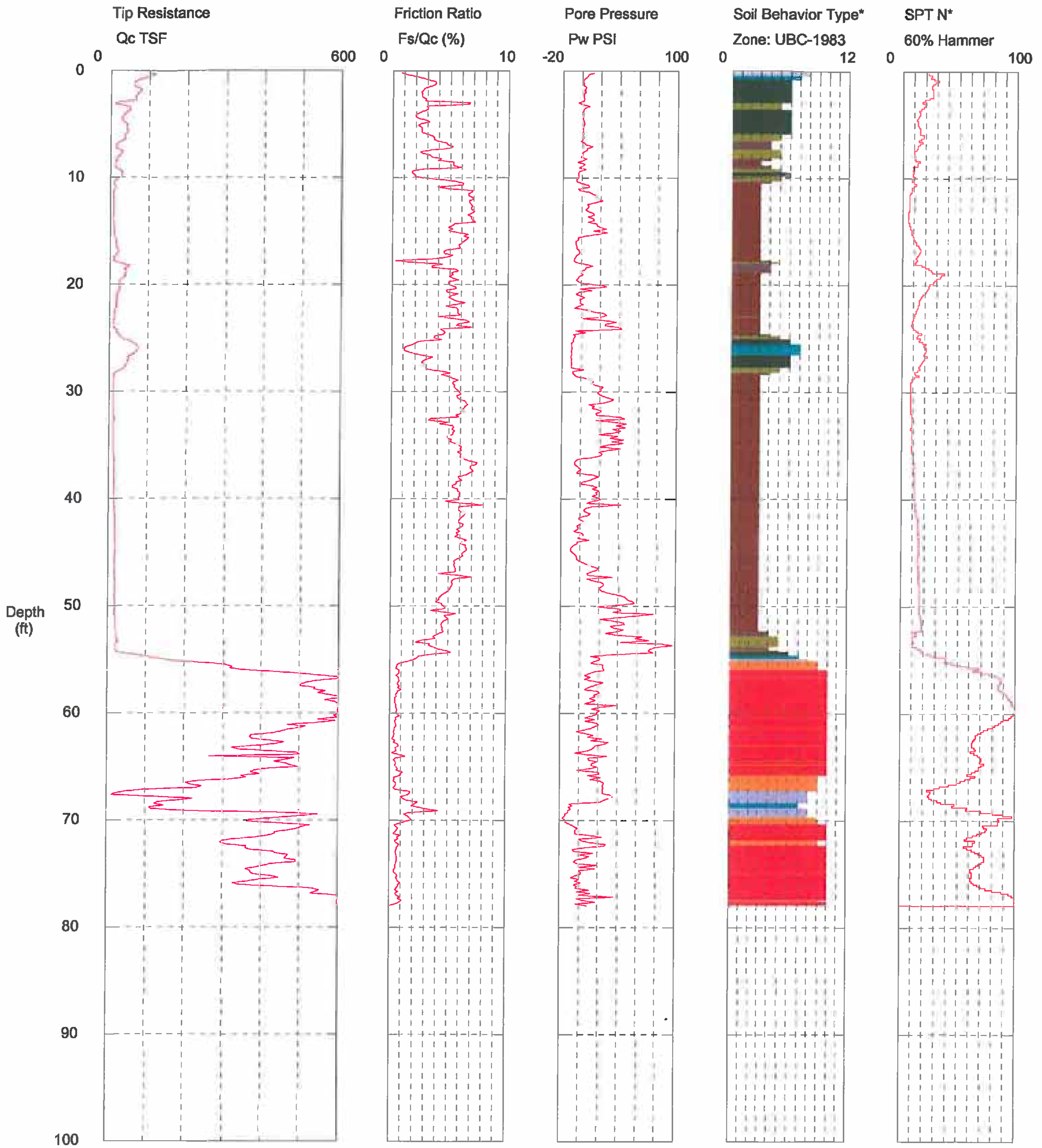
Project No. 11-13-105-01

Drawing No. A-4b

Converse Consultants

Operator: Doug
Sounding: CPT-1
Cone Used: DSG1150

CPT Date/Time: 3/5/2012 7:18:32 AM
Location: San Jose State University
Job Number: 408



Maximum Depth = 77.92 feet

Depth Increment = 0.164 feet

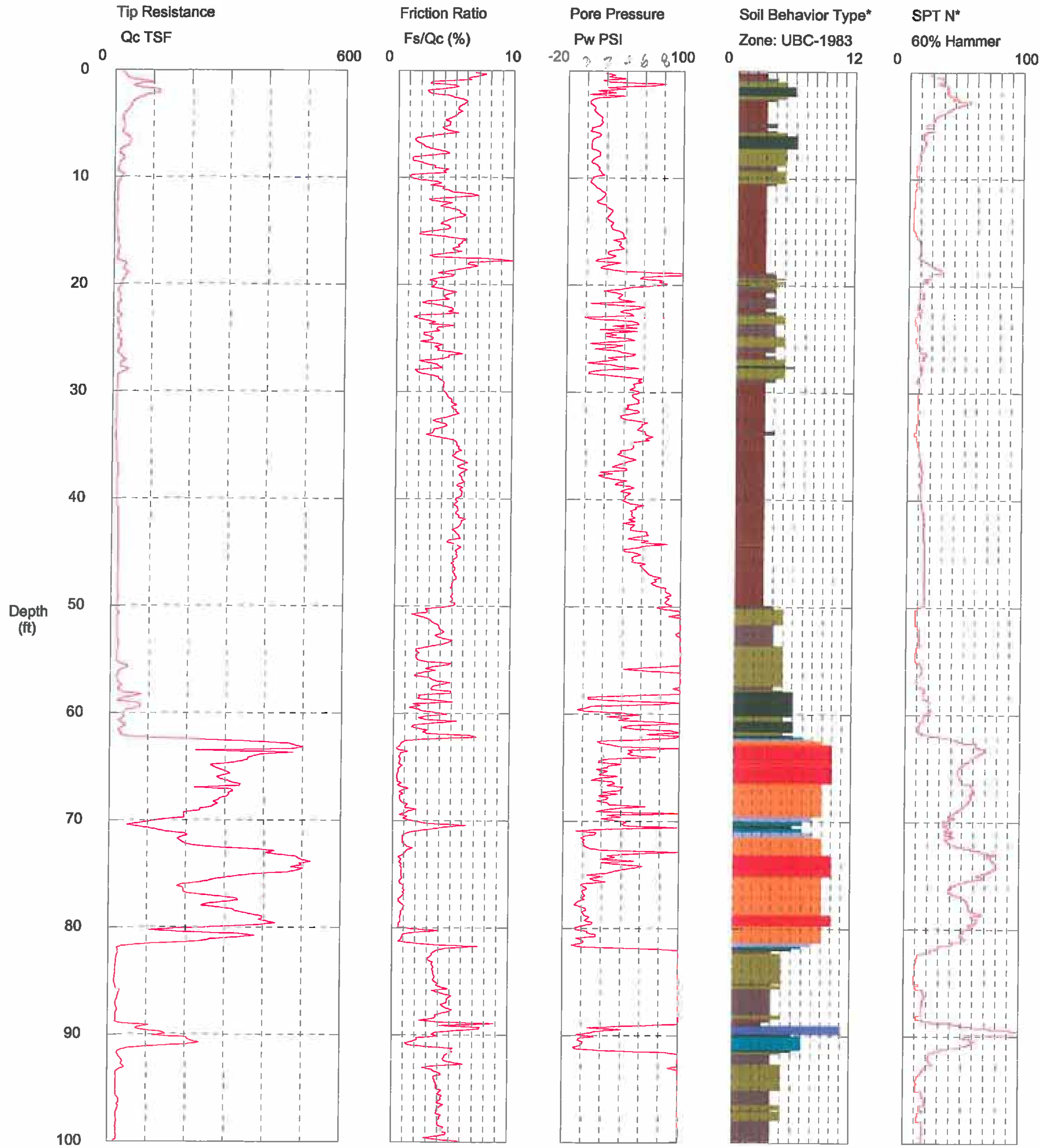
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

Converse Consultants

Operator: Doug
Sounding: CPT-2
Cone Used: DSG1150

CPT Date/Time: 3/5/2012 8:11:21 AM
Location: San Jose State University
Job Number: 408



Maximum Depth = 100.39 feet

Depth Increment = 0.164 feet

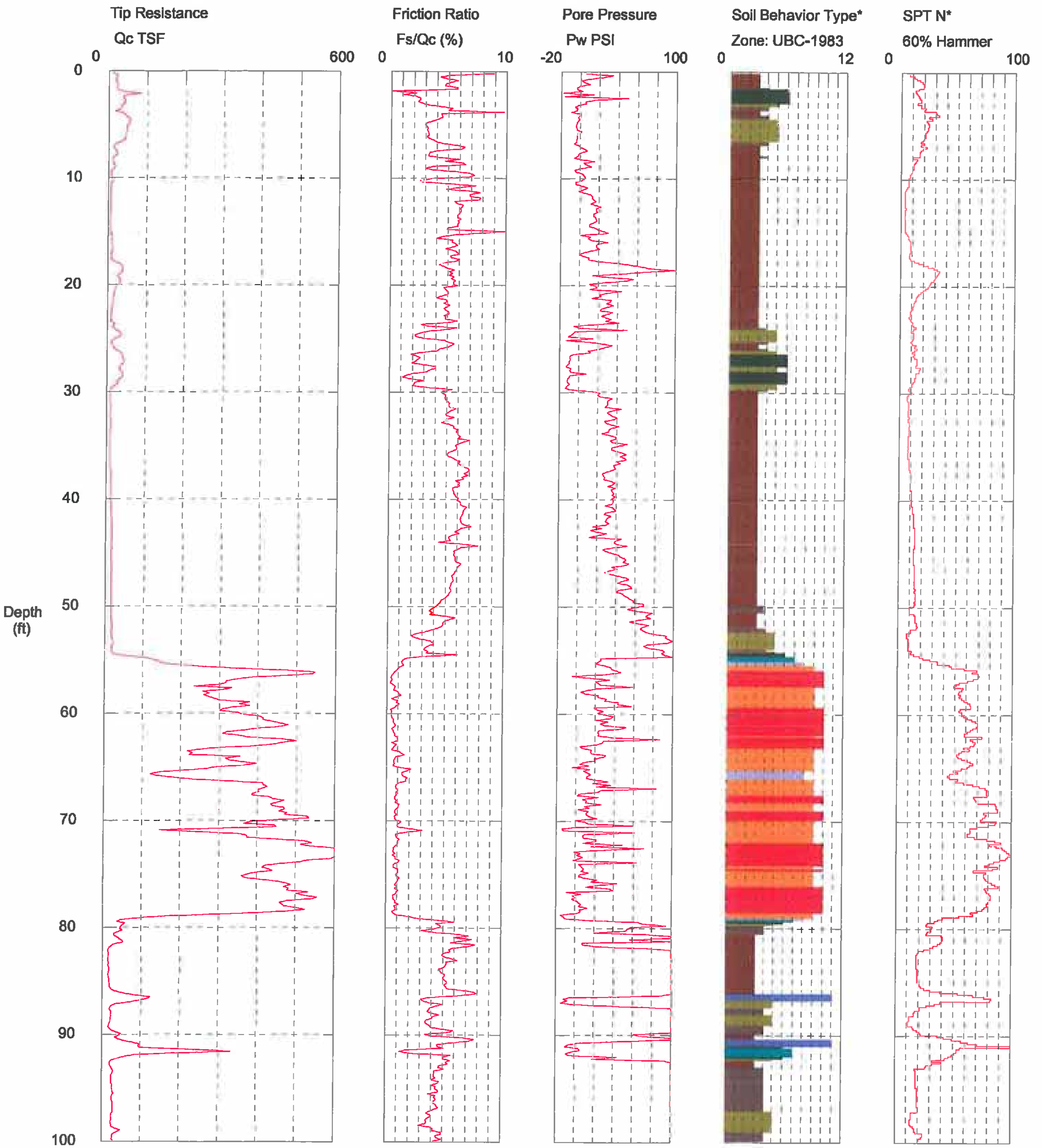
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

Converse Consultants

Operator: Doug
Sounding: CPT-3
Cone Used: DSG1150

CPT Date/Time: 3/5/2012 11:21:14 AM
Location: San Jose State University
Job Number: 408



Maximum Depth = 100.56 feet

Depth Increment = 0.164 feet

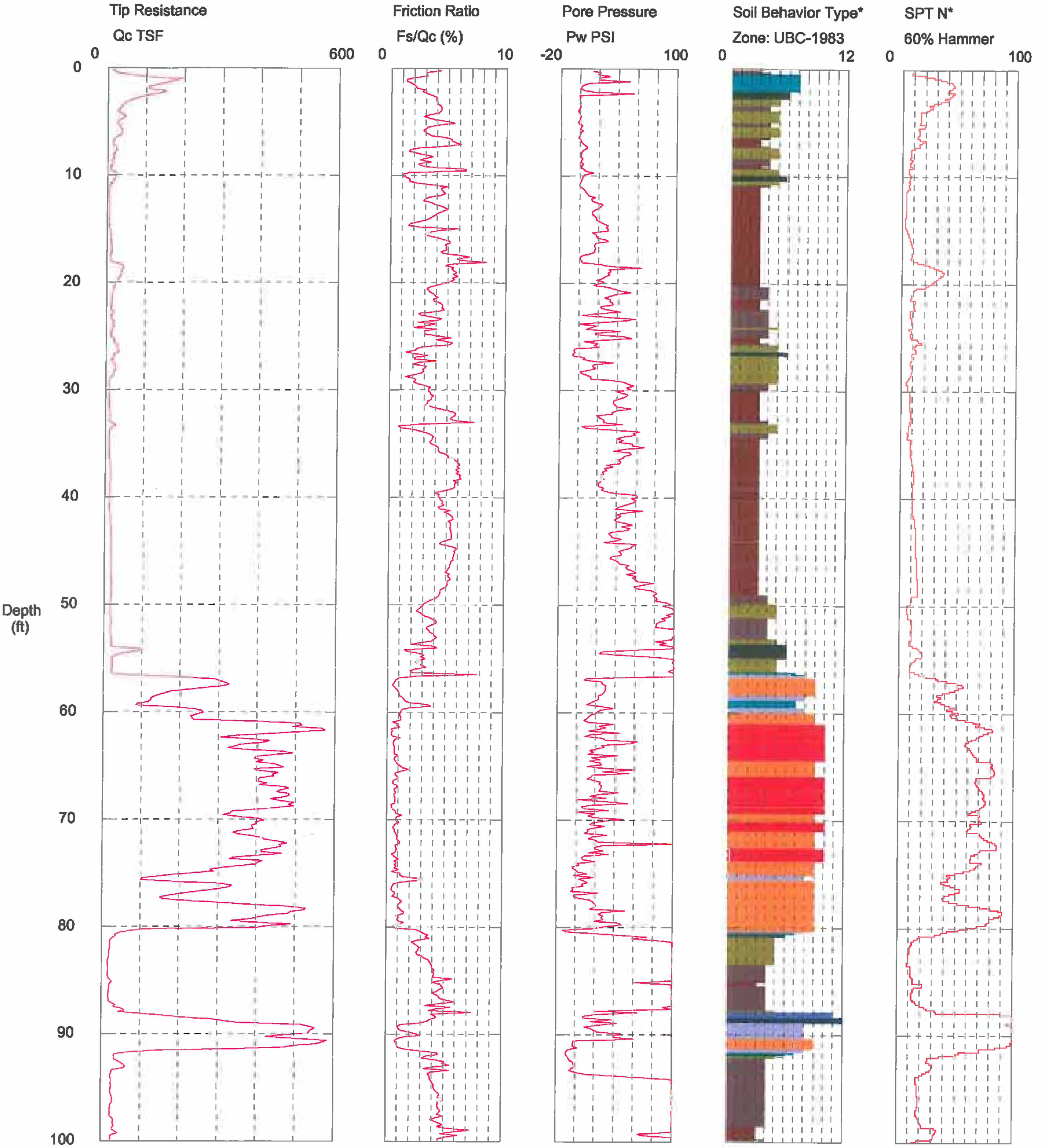
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

Converse Consultants

Operator: Doug
Sounding: CPT-4
Cone Used: DSG1150

CPT Date/Time: 3/5/2012 10:12:43 AM
Location: San Jose State University
Job Number: 408



Maximum Depth = 100.39 feet

Depth Increment = 0.164 feet

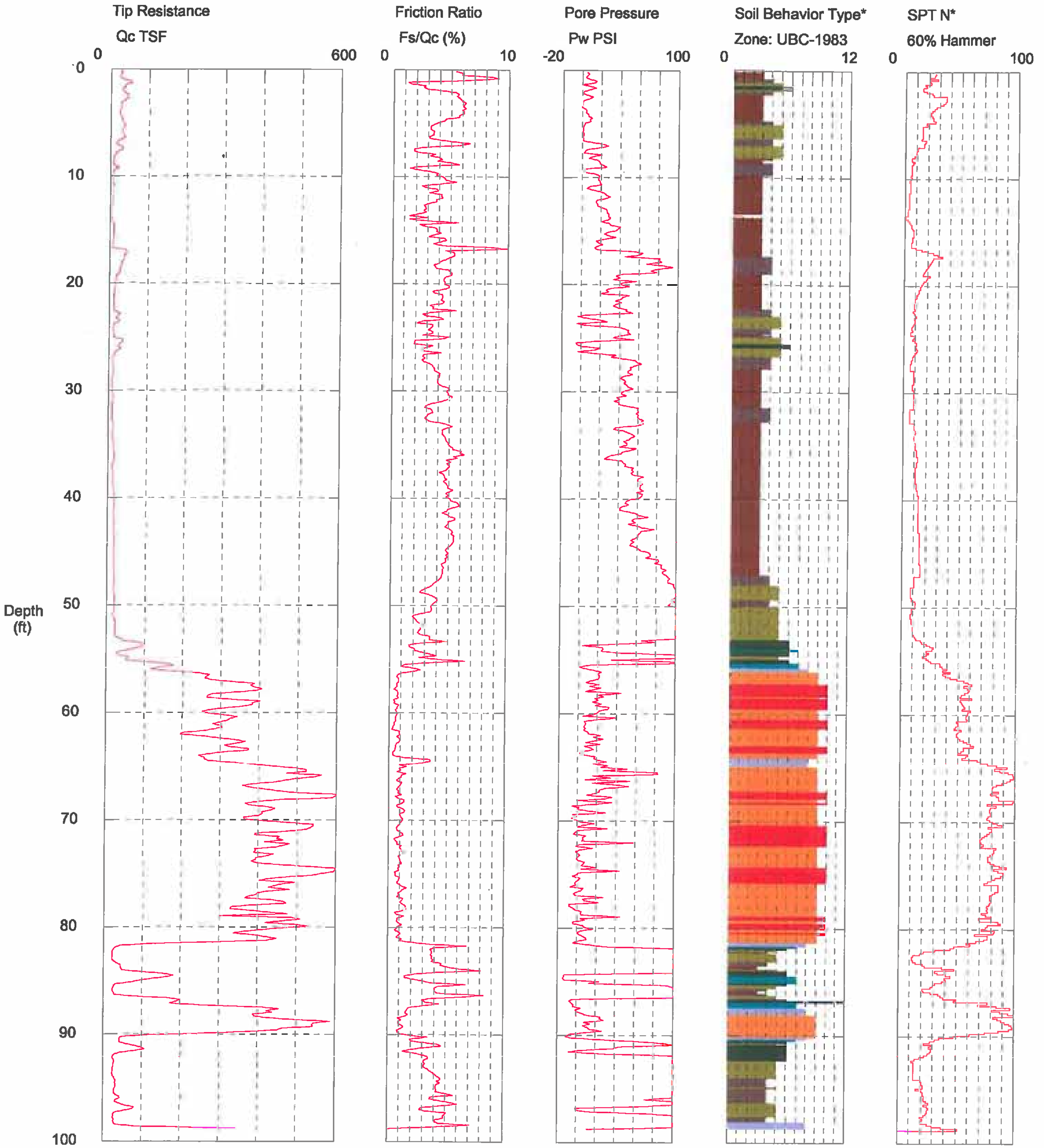
1 sensitive fine grained	4 silty clay to clay	7 silty sand to sandy silt	10 gravelly sand to sand
2 organic material	5 clayey silt to silty clay	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey silt	9 sand	12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

Converse Consultants

Operator: Doug
Sounding: CPT-5
Cone Used: DSG1150

CPT Date/Time: 3/5/2012 9:14:00 AM
Location: San Jose State University
Job Number: 408



Maximum Depth = 98.75 feet

Depth Increment = 0.164 feet

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 (*)

*Soil behavior type and SPT based on data from UBC-1983

Data File:CPT-1 3/5/2012 7:18:32 AM
Operator:Doug Location:San Jose State University
Cone ID:DSG1150 Job Number:408
Customer:Converse Consultants Units:

Depth (ft)	Qc TSF	Fs TSF	Fs/Qc (%)	Pw PSI	Zone	Soil Behavior Type UBC-1983	SPT N* 60% Hammer
0.16	92.54	0.7043	0.761	11.514	8	sand to silty sand	22
0.33	115.01	1.3547	1.178	6.038	8	sand to silty sand	25
0.49	103.36	1.9386	1.876	5.300	7	silty sand to sandy silt	24
0.66	88.20	2.2691	2.573	2.693	7	silty sand to sandy silt	27
0.82	73.72	2.2385	3.036	1.056	6	sandy silt to clayey silt	31
0.98	63.25	2.3116	3.655	0.356	6	sandy silt to clayey silt	28
1.15	58.00	2.1700	3.742	1.747	6	sandy silt to clayey silt	26
1.31	56.42	2.0359	3.609	0.881	6	sandy silt to clayey silt	25
1.48	61.52	1.9051	3.097	3.373	6	sandy silt to clayey silt	25
1.64	72.47	1.9602	2.705	3.203	6	sandy silt to clayey silt	26
1.80	78.25	2.0589	2.631	1.857	6	sandy silt to clayey silt	26
1.97	74.57	1.8248	2.447	3.653	6	sandy silt to clayey silt	26
2.13	68.37	1.7368	2.540	1.420	6	sandy silt to clayey silt	26
2.30	65.11	1.6165	2.483	1.417	6	sandy silt to clayey silt	26
2.46	62.46	1.6107	2.579	1.496	6	sandy silt to clayey silt	23
2.62	62.29	1.8000	2.890	1.953	6	sandy silt to clayey silt	19
2.79	62.37	1.7351	2.782	1.077	6	sandy silt to clayey silt	17
2.95	18.09	1.2049	6.661	-3.852	5	clayey silt to silty clay	20
3.12	9.58	0.6291	6.570	0.081	5	clayey silt to silty clay	19
3.28	35.46	1.0299	2.904	7.149	5	clayey silt to silty clay	18
3.44	46.83	1.4192	3.031	2.939	5	clayey silt to silty clay	16
3.61	48.34	1.4421	2.983	0.978	6	sandy silt to clayey silt	14
3.77	45.00	1.1474	2.550	0.505	6	sandy silt to clayey silt	15
3.94	37.80	0.8600	2.275	-0.141	6	sandy silt to clayey silt	15
4.10	33.91	0.6709	1.978	0.387	6	sandy silt to clayey silt	14
4.27	30.43	0.6019	1.978	0.672	6	sandy silt to clayey silt	13
4.43	26.73	0.5987	2.240	0.371	6	sandy silt to clayey silt	12
4.59	26.57	0.7670	2.887	0.954	6	sandy silt to clayey silt	13
4.76	31.35	0.9945	3.172	1.820	6	sandy silt to clayey silt	13
4.92	37.96	0.9248	2.436	2.403	6	sandy silt to clayey silt	13
5.09	42.33	0.9242	2.183	1.166	6	sandy silt to clayey silt	14
5.25	38.17	0.9430	2.470	0.494	6	sandy silt to clayey silt	15
5.41	39.03	0.9805	2.512	0.685	6	sandy silt to clayey silt	15
5.58	42.11	1.0376	2.464	0.960	6	sandy silt to clayey silt	15
5.74	42.08	1.0674	2.537	0.379	6	sandy silt to clayey silt	15
5.91	38.91	1.1587	2.978	0.144	5	clayey silt to silty clay	18
6.07	34.66	1.1899	3.433	0.152	5	clayey silt to silty clay	18
6.23	35.35	1.2743	3.605	0.771	5	clayey silt to silty clay	16
6.40	34.97	1.2412	3.550	0.110	5	clayey silt to silty clay	14
6.56	29.81	1.1683	3.919	-0.978	4	silty clay to clay	17
6.73	19.26	0.8956	4.651	1.830	4	silty clay to clay	15
6.89	14.94	0.7103	4.755	3.904	4	silty clay to clay	13
7.05	12.56	0.6534	5.202	10.692	4	silty clay to clay	13
7.22	12.10	0.6043	4.994	4.989	4	silty clay to clay	12
7.38	18.76	0.6286	3.351	4.942	5	clayey silt to silty clay	10
7.55	29.95	0.7134	2.382	1.009	5	clayey silt to silty clay	10
7.71	26.91	0.6984	2.595	-0.186	5	clayey silt to silty clay	10
7.87	23.51	0.7648	3.254	0.557	5	clayey silt to silty clay	10
8.04	18.02	0.6095	3.383	-1.130	5	clayey silt to silty clay	10
8.20	14.76	0.6223	4.217	4.448	4	silty clay to clay	11
8.37	17.05	0.6731	3.948	0.267	3	clay	15
8.53	11.04	0.5843	5.290	-4.770	3	clay	13
8.69	10.35	0.5386	5.202	2.759	3	clay	13
8.86	11.56	0.6110	5.287	0.298	4	silty clay to clay	9
9.02	9.19	0.5482	5.964	-3.219	4	silty clay to clay	10
9.19	17.64	0.4340	2.461	3.883	5	clayey silt to silty clay	9
9.35	25.09	0.4261	1.699	-2.633	5	clayey silt to silty clay	10
9.51	28.31	0.4713	1.665	-3.603	6	sandy silt to clayey silt	9
9.68	27.11	0.5143	1.897	-4.056	6	sandy silt to clayey silt	9
9.84	26.39	0.4988	1.890	-3.146	5	clayey silt to silty clay	11
10.01	26.02	0.6894	2.650	-3.993	5	clayey silt to silty clay	10
10.17	16.13	0.7035	4.361	-6.098	5	clayey silt to silty clay	8
10.33	9.98	0.5468	5.481	-5.635	4	silty clay to clay	10
10.50	7.61	0.4658	6.120	-0.418	3	clay	12
10.66	7.43	0.4482	6.034	6.349	3	clay	10
10.83	11.95	0.4649	3.891	7.531	3	clay	8
10.99	10.78	0.5162	4.788	-3.721	3	clay	8

11.15	7.07	0.4891	6.920	-2.293	3	clay	8
11.32	5.94	0.4085	6.883	7.458	3	clay	7
11.48	5.60	0.3683	6.572	10.818	3	clay	6
11.65	5.58	0.3679	6.592	15.467	3	clay	6
11.81	5.07	0.3485	6.876	13.344	3	clay	6
11.98	4.95	0.3487	7.044	17.470	3	clay	6
12.14	5.85	0.3877	6.630	21.730	3	clay	6
12.30	6.58	0.4394	6.679	12.256	3	clay	6
12.47	6.36	0.4318	6.788	5.423	3	clay	6
12.63	6.18	0.4281	6.930	7.254	3	clay	6
12.80	6.27	0.4249	6.782	5.907	3	clay	6
12.96	5.81	0.3983	6.860	3.820	3	clay	6
13.12	5.30	0.3773	7.113	6.527	3	clay	5
13.29	5.13	0.3519	6.864	11.425	3	clay	5
13.45	5.27	0.3432	6.513	12.583	3	clay	5
13.62	4.86	0.3331	6.861	6.088	3	clay	5
13.78	4.54	0.3099	6.821	11.474	3	clay	5
13.94	4.66	0.3226	6.921	13.030	3	clay	5
14.11	4.99	0.3589	7.190	6.461	3	clay	6
14.27	6.72	0.3636	5.411	15.292	3	clay	6
14.44	7.12	0.3705	5.202	15.820	3	clay	7
14.60	7.56	0.3665	4.846	19.513	3	clay	7
14.76	7.23	0.3782	5.233	25.336	3	clay	8
14.93	8.18	0.3986	4.870	12.178	3	clay	8
15.09	8.43	0.4664	5.536	26.557	3	clay	8
15.26	8.56	0.5598	6.539	15.883	3	clay	9
15.42	10.10	0.6257	6.195	2.790	3	clay	10
15.58	10.07	0.6626	6.583	-4.074	3	clay	10
15.75	11.79	0.7560	6.410	-3.530	3	clay	11
15.91	13.20	0.8156	6.179	-6.441	3	clay	12
16.08	13.20	0.7965	6.035	-6.495	3	clay	12
16.24	13.62	0.7846	5.762	-5.769	3	clay	14
16.40	14.19	0.8231	5.801	-5.389	3	clay	15
16.57	15.01	0.8804	5.866	-5.400	3	clay	16
16.73	19.19	0.9043	4.713	-2.866	3	clay	16
16.90	20.21	0.8971	4.440	-2.489	3	clay	15
17.06	18.68	0.8510	4.556	-2.555	3	clay	14
17.22	14.32	0.7470	5.217	-5.591	3	clay	13
17.39	10.70	0.5159	4.820	-6.294	3	clay	12
17.55	7.04	0.2616	3.713	-7.612	3	clay	13
17.72	6.27	0.0179	0.285	-8.127	4	silty clay to clay	12
17.88	13.14	0.2092	1.592	-5.959	5	clayey silt to silty clay	11
18.04	27.97	1.2183	4.356	3.752	4	silty clay to clay	17
18.21	49.18	1.6958	3.448	11.213	4	silty clay to clay	20
18.37	44.91	1.5471	3.445	4.498	4	silty clay to clay	23
18.54	34.68	1.9034	5.488	3.407	4	silty clay to clay	25
18.70	39.44	2.2594	5.729	-0.298	4	silty clay to clay	26
18.86	40.82	2.0877	5.114	-0.680	3	clay	37
19.03	38.70	2.0414	5.275	1.532	3	clay	34
19.19	37.85	1.8732	4.949	-2.228	3	clay	33
19.36	32.69	1.7009	5.203	-3.661	3	clay	30
19.52	25.48	1.4640	5.747	-5.423	3	clay	28
19.69	23.75	1.1706	4.928	-3.190	3	clay	27
19.85	22.77	1.1097	4.874	1.841	3	clay	24
20.01	23.87	1.1989	5.022	22.373	3	clay	23
20.18	26.87	1.4738	5.484	26.000	3	clay	23
20.34	22.48	1.2443	5.536	-1.825	3	clay	22
20.51	21.91	1.0276	4.691	10.870	3	clay	21
20.67	22.22	1.0640	4.789	-2.066	3	clay	20
20.83	17.10	0.9743	5.698	-5.627	3	clay	18
21.00	16.00	0.8251	5.157	-1.658	3	clay	17
21.16	17.44	0.8557	4.907	3.216	3	clay	16
21.33	16.30	0.8509	5.221	-1.412	3	clay	15
21.49	15.88	0.8841	5.569	-1.051	3	clay	15
21.65	14.18	0.8985	6.337	-1.339	3	clay	15
21.82	14.72	0.8068	5.481	1.956	3	clay	14
21.98	17.26	0.8070	4.676	-2.897	3	clay	14
22.15	13.61	0.7622	5.600	-6.883	3	clay	13
22.31	12.73	0.7283	5.720	5.606	3	clay	12
22.47	11.16	0.6351	5.692	10.300	3	clay	12
22.64	10.43	0.5953	5.710	23.174	3	clay	11
22.80	10.35	0.6136	5.929	26.136	3	clay	11
22.97	13.61	0.5411	3.977	22.206	3	clay	10
23.13	10.67	0.5618	5.264	1.420	3	clay	10
23.29	7.62	0.4947	6.489	25.401	3	clay	9

23.46	7.42	0.4960	6.683	36.536	3	clay	9
23.62	7.83	0.4535	5.792	25.694	3	clay	8
23.79	7.38	0.4117	5.578	24.774	3	clay	9
23.95	6.73	0.4653	6.912	39.731	3	clay	10
24.11	11.05	0.4661	4.218	42.595	3	clay	12
24.28	17.99	0.7987	4.440	-5.674	3	clay	14
24.44	15.52	0.7187	4.630	4.631	3	clay	17
24.61	21.75	0.9640	4.433	-8.057	4	silty clay to clay	14
24.77	21.45	0.7913	3.690	-5.745	5	clayey silt to silty clay	13
24.93	31.44	1.1476	3.651	-7.701	5	clayey silt to silty clay	16
25.10	33.21	1.4337	4.317	-8.334	6	sandy silt to clayey silt	15
25.26	50.55	1.1932	2.360	-7.949	6	sandy silt to clayey silt	18
25.43	57.83	1.1747	2.031	-10.332	6	sandy silt to clayey silt	21
25.59	65.77	1.1549	1.756	-10.156	7	silty sand to sandy silt	19
25.75	71.14	0.8910	1.253	-10.154	7	silty sand to sandy silt	21
25.92	71.81	0.7596	1.058	-9.644	7	silty sand to sandy silt	21
26.08	71.09	0.7556	1.063	-10.245	7	silty sand to sandy silt	21
26.25	67.94	0.9642	1.419	-10.245	7	silty sand to sandy silt	20
26.41	62.98	1.2548	1.992	-9.796	7	silty sand to sandy silt	19
26.57	55.96	1.4774	2.640	-10.243	6	sandy silt to clayey silt	22
26.74	46.43	1.6521	3.558	-10.737	6	sandy silt to clayey silt	20
26.90	47.36	1.4484	3.058	-9.921	6	sandy silt to clayey silt	19
27.07	45.84	1.2709	2.772	-10.303	6	sandy silt to clayey silt	18
27.23	43.65	1.1157	2.556	-10.141	6	sandy silt to clayey silt	17
27.40	43.41	1.2393	2.855	-10.180	6	sandy silt to clayey silt	16
27.56	40.08	1.0248	2.557	-10.379	6	sandy silt to clayey silt	15
27.72	37.25	1.0852	2.914	-10.203	5	clayey silt to silty clay	16
27.89	33.74	1.0681	3.166	3.059	5	clayey silt to silty clay	14
28.05	22.04	0.9749	4.423	-8.608	5	clayey silt to silty clay	11
28.22	14.02	0.7139	5.092	-8.593	4	silty clay to clay	12
28.38	11.41	0.4930	4.321	-6.854	3	clay	15
28.54	8.94	0.4406	4.929	-4.537	3	clay	11
28.71	8.50	0.4483	5.277	5.808	3	clay	9
28.87	8.20	0.4721	5.761	9.678	3	clay	9
29.04	8.45	0.4551	5.387	13.354	3	clay	8
29.20	8.43	0.4458	5.291	10.065	3	clay	8
29.36	8.03	0.4392	5.470	15.449	3	clay	8
29.53	7.99	0.4329	5.419	23.228	3	clay	8
29.69	8.04	0.4464	5.555	20.593	3	clay	8
29.86	7.82	0.4526	5.785	20.862	3	clay	8
30.02	7.75	0.4562	5.889	16.989	3	clay	8
30.18	7.39	0.4449	6.018	18.982	3	clay	8
30.35	7.42	0.4181	5.638	22.347	3	clay	8
30.51	7.32	0.4180	5.713	27.961	3	clay	8
30.68	7.53	0.4478	5.944	34.271	3	clay	8
30.84	7.59	0.4852	6.390	30.786	3	clay	8
31.00	8.04	0.5195	6.460	24.042	3	clay	8
31.17	8.24	0.5419	6.580	8.556	3	clay	8
31.33	8.28	0.5302	6.401	14.102	3	clay	8
31.50	8.20	0.5148	6.282	11.793	3	clay	8
31.66	8.26	0.4902	5.934	20.221	3	clay	8
31.82	8.41	0.5288	6.285	21.338	3	clay	8
31.99	8.64	0.5208	6.029	15.690	3	clay	9
32.15	8.36	0.4652	5.564	16.900	3	clay	9
32.32	8.67	0.5061	5.836	41.151	3	clay	9
32.48	12.54	0.4307	3.435	46.031	3	clay	9
32.64	11.69	0.3762	3.217	15.653	3	clay	9
32.81	7.63	0.3740	4.898	37.592	3	clay	9
32.97	8.32	0.3461	4.158	47.736	3	clay	9
33.14	7.57	0.4012	5.300	36.884	3	clay	9
33.30	7.96	0.4319	5.422	46.776	3	clay	8
33.46	8.33	0.4371	5.247	33.411	3	clay	9
33.63	8.45	0.4642	5.491	41.975	3	clay	9
33.79	9.22	0.4917	5.335	34.818	3	clay	9
33.96	9.22	0.4924	5.339	19.170	3	clay	9
34.12	8.86	0.4286	4.836	38.957	3	clay	9
34.28	8.84	0.4313	4.876	30.809	3	clay	9
34.45	8.38	0.4362	5.203	44.927	3	clay	9
34.61	8.50	0.4321	5.086	32.993	3	clay	9
34.78	8.24	0.4549	5.519	44.441	3	clay	9
34.94	8.78	0.5106	5.816	27.472	3	clay	9
35.10	8.44	0.5133	6.080	20.420	3	clay	9
35.27	8.47	0.5061	5.973	41.193	3	clay	9
35.43	8.94	0.5452	6.095	28.647	3	clay	9
35.60	9.64	0.5551	5.758	18.875	3	clay	9

35.76	9.37	0.5623	6.002	22.651	3	clay	10
35.93	9.79	0.5866	5.989	21.492	3	clay	10
36.09	11.04	0.6575	5.953	12.356	3	clay	10
36.25	11.49	0.7253	6.311	-2.165	3	clay	10
36.42	11.57	0.7815	6.755	-4.927	3	clay	10
36.58	10.83	0.8073	7.457	-6.124	3	clay	11
36.75	10.63	0.7821	7.357	-5.742	3	clay	11
36.91	10.67	0.7321	6.859	-3.290	3	clay	11
37.07	10.84	0.7409	6.832	-1.161	3	clay	10
37.24	11.26	0.7881	7.001	0.659	3	clay	10
37.40	11.47	0.8137	7.095	-2.696	3	clay	10
37.57	10.76	0.7289	6.777	-3.797	3	clay	11
37.73	10.25	0.6673	6.508	13.038	3	clay	11
37.89	10.67	0.6191	5.804	18.668	3	clay	11
38.06	11.03	0.6488	5.884	13.616	3	clay	11
38.22	11.69	0.7201	6.161	9.803	3	clay	11
38.39	12.09	0.6809	5.632	2.194	3	clay	11
38.55	11.32	0.6380	5.635	0.293	3	clay	11
38.71	11.65	0.6170	5.298	11.971	3	clay	11
38.88	11.43	0.6072	5.310	17.128	3	clay	11
39.04	10.99	0.6314	5.745	12.586	3	clay	11
39.21	11.05	0.6354	5.750	19.523	3	clay	11
39.37	11.08	0.6644	5.996	16.202	3	clay	11
39.53	11.25	0.6628	5.894	17.690	3	clay	11
39.70	11.36	0.6703	5.901	12.416	3	clay	11
39.86	11.27	0.6562	5.820	19.042	3	clay	11
40.03	11.76	0.6952	5.910	21.359	3	clay	11
40.19	12.24	0.5750	4.697	11.655	3	clay	11
40.35	12.10	0.7377	6.096	6.922	3	clay	12
40.52	9.58	0.7614	7.952	42.542	3	clay	12
40.68	13.32	0.7841	5.888	11.955	3	clay	12
40.85	13.57	0.7967	5.871	5.944	3	clay	12
41.01	13.32	0.7816	5.869	3.716	3	clay	12
41.17	12.63	0.7667	6.069	5.667	3	clay	13
41.34	13.00	0.8389	6.451	10.358	3	clay	13
41.50	14.41	0.9143	6.346	8.185	3	clay	13
41.67	14.79	0.9060	6.125	-0.677	3	clay	14
41.83	14.25	0.8592	6.028	-1.776	3	clay	14
41.99	14.51	0.8509	5.865	2.513	3	clay	14
42.16	15.07	0.8841	5.865	4.014	3	clay	14
42.32	14.89	0.9318	6.260	-0.078	3	clay	14
42.49	15.28	0.9520	6.230	-3.470	3	clay	14
42.65	15.72	0.9450	6.010	-1.728	3	clay	14
42.81	15.63	0.8908	5.697	-2.652	3	clay	14
42.98	14.13	0.8476	5.998	-6.629	3	clay	14
43.14	14.34	0.8133	5.670	1.213	3	clay	15
43.31	15.42	0.9025	5.854	3.538	3	clay	14
43.47	15.56	0.8641	5.554	0.314	3	clay	14
43.64	15.60	0.9406	6.030	-2.497	3	clay	15
43.80	14.68	0.9652	6.576	9.516	3	clay	15
43.96	15.80	0.9946	6.295	-3.107	3	clay	15
44.13	16.44	0.9876	6.008	-2.921	3	clay	15
44.29	16.11	1.0465	6.497	-6.511	3	clay	15
44.46	16.50	1.0651	6.457	-8.449	3	clay	15
44.62	16.14	1.0631	6.588	-9.811	3	clay	15
44.78	15.59	1.0172	6.526	-9.741	3	clay	15
44.95	15.33	0.9691	6.322	-8.187	3	clay	15
45.11	15.37	0.9468	6.161	-5.557	3	clay	15
45.28	15.07	0.9441	6.265	-4.184	3	clay	14
45.44	15.36	0.9188	5.980	-3.290	3	clay	14
45.60	14.93	0.8539	5.721	-3.394	3	clay	14
45.77	14.57	0.7978	5.477	-0.076	3	clay	14
45.93	15.00	0.8321	5.546	4.417	3	clay	14
46.10	14.79	0.8119	5.491	7.615	3	clay	14
46.26	14.40	0.7954	5.523	12.280	3	clay	15
46.42	14.84	0.8248	5.558	18.864	3	clay	15
46.59	15.85	0.8923	5.631	17.891	3	clay	15
46.75	16.10	0.9068	5.632	11.650	3	clay	15
46.92	15.89	0.6645	4.182	7.664	3	clay	15
47.08	15.79	0.9107	5.766	8.373	3	clay	15
47.24	13.20	0.9214	6.978	34.130	3	clay	15
47.41	16.17	0.9061	5.605	7.374	3	clay	15
47.57	15.75	0.8378	5.318	13.352	3	clay	15
47.74	15.78	0.8350	5.293	22.415	3	clay	15
47.90	15.97	0.8525	5.339	24.884	3	clay	16

48.06	16.37	0.8693	5.312	24.287	3	clay	16
48.23	16.46	0.8555	5.199	21.170	3	clay	16
48.39	16.17	0.8313	5.141	20.729	3	clay	16
48.56	15.84	0.7891	4.983	23.545	3	clay	16
48.72	15.55	0.7424	4.775	30.053	3	clay	16
48.88	15.52	0.7008	4.515	38.181	3	clay	16
49.05	15.55	0.6789	4.367	46.180	3	clay	16
49.21	15.51	0.6564	4.233	48.381	3	clay	16
49.38	15.58	0.6527	4.189	50.196	3	clay	16
49.54	16.11	0.6345	3.939	55.871	3	clay	16
49.70	16.55	0.7298	4.410	56.898	3	clay	16
49.87	17.53	0.7872	4.491	38.424	3	clay	16
50.03	16.65	0.7898	4.744	19.073	3	clay	16
50.20	16.41	0.7753	4.725	41.517	3	clay	16
50.36	16.68	0.5818	3.488	43.447	3	clay	16
50.52	16.41	0.7815	4.761	34.452	3	clay	16
50.69	13.27	0.7523	5.670	77.512	3	clay	16
50.85	16.87	0.7929	4.699	59.129	3	clay	17
51.02	17.82	0.8642	4.849	41.928	3	clay	17
51.18	17.78	0.8923	5.019	21.529	3	clay	17
51.35	17.74	0.8201	4.623	36.450	3	clay	18
51.51	17.75	0.8002	4.507	45.855	3	clay	18
51.67	18.32	0.8052	4.395	46.805	3	clay	18
51.84	18.21	0.8080	4.436	32.433	3	clay	18
52.00	17.99	0.8146	4.528	35.859	3	clay	18
52.17	18.32	0.8219	4.487	45.944	3	clay	18
52.33	19.02	0.8809	4.631	38.196	4	silty clay to clay	12
52.49	19.42	0.8347	4.298	27.051	4	silty clay to clay	13
52.66	18.93	0.7523	3.974	39.282	4	silty clay to clay	13
52.82	19.53	0.7260	3.718	65.551	5	clayey silt to silty clay	10
52.99	20.23	0.7951	3.930	58.310	5	clayey silt to silty clay	10
53.15	22.90	0.6160	2.690	72.499	5	clayey silt to silty clay	10
53.31	26.53	0.5886	2.218	42.676	5	clayey silt to silty clay	11
53.48	19.45	0.6634	3.412	86.507	5	clayey silt to silty clay	10
53.64	18.89	0.6289	3.330	96.917	5	clayey silt to silty clay	10
53.81	18.93	0.7218	3.812	79.117	4	silty clay to clay	14
53.97	19.17	0.7939	4.140	73.663	4	silty clay to clay	17
54.13	18.80	0.9327	4.962	72.007	5	clayey silt to silty clay	18
54.30	24.66	1.2964	5.257	76.950	6	sandy silt to clayey silt	19
54.46	55.22	1.9343	3.503	35.372	6	sandy silt to clayey silt	26
54.63	95.48	2.3630	2.475	11.404	7	silty sand to sandy silt	29
54.79	112.99	2.6381	2.335	20.922	7	silty sand to sandy silt	39
54.95	138.87	2.8264	2.035	21.173	8	sand to silty sand	39
55.12	175.84	2.6099	1.484	15.480	9	sand	38
55.28	254.39	2.2437	0.882	11.963	9	sand	45
55.45	303.35	1.8964	0.625	24.837	9	sand	51
55.61	324.46	1.9381	0.597	24.463	9	sand	59
55.77	318.77	1.7536	0.550	24.834	9	sand	68
55.94	352.76	2.8663	0.813	26.118	10	gravelly sand to sand	63
56.10	427.60	3.3974	0.795	14.395	10	gravelly sand to sand	70
56.27	499.36	3.8543	0.772	10.180	10	gravelly sand to sand	77
56.43	550.95	3.0858	0.560	5.745	10	gravelly sand to sand	82
56.59	609.42	4.5327	0.744	11.676	10	gravelly sand to sand	86
56.76	610.96	4.5552	0.746	5.609	10	gravelly sand to sand	88
56.92	546.30	4.4112	0.807	13.237	10	gravelly sand to sand	88
57.09	521.27	3.7254	0.715	25.130	10	gravelly sand to sand	87
57.25	505.08	3.2865	0.651	19.144	10	gravelly sand to sand	86
57.41	499.52	4.1870	0.838	13.127	10	gravelly sand to sand	85
57.58	540.19	3.7379	0.692	8.967	10	gravelly sand to sand	85
57.74	537.35	5.2543	0.978	5.687	10	gravelly sand to sand	86
57.91	568.11	3.7510	0.660	19.596	10	gravelly sand to sand	89
58.07	548.14	3.4804	0.635	21.131	10	gravelly sand to sand	91
58.23	574.06	2.9221	0.509	15.559	10	gravelly sand to sand	92
58.40	625.75	3.5812	0.572	16.793	10	gravelly sand to sand	93
58.56	601.99	2.5744	0.428	10.724	10	gravelly sand to sand	94
58.73	566.48	2.6276	0.464	16.976	10	gravelly sand to sand	96
58.89	591.12	2.6227	0.444	12.586	10	gravelly sand to sand	97
59.06	618.68	3.1134	0.503	6.051	10	gravelly sand to sand	97
59.22	620.29	3.3434	0.539	38.406	10	gravelly sand to sand	98
59.38	608.71	3.2323	0.531	21.965	10	gravelly sand to sand	100
59.55	656.34	3.9301	0.599	13.080	10	gravelly sand to sand	101
59.71	656.94	4.1607	0.633	21.649	10	gravelly sand to sand	100
59.88	654.66	3.6398	0.556	18.427	10	gravelly sand to sand	100
60.04	601.20	3.7422	0.622	18.454	10	gravelly sand to sand	99
60.20	589.59	5.1331	0.871	13.203	10	gravelly sand to sand	97

60.37	615.15	3.1012	0.504	6.346	10	gravelly sand to sand	95
60.53	548.22	3.0966	0.565	16.315	10	gravelly sand to sand	90
60.70	592.83	2.7312	0.461	6.634	10	gravelly sand to sand	88
60.86	545.84	2.7715	0.508	18.176	10	gravelly sand to sand	86
61.02	468.65	2.5794	0.550	20.634	10	gravelly sand to sand	83
61.19	516.32	2.7744	0.537	16.179	10	gravelly sand to sand	81
61.35	494.90	2.0070	0.406	12.311	10	gravelly sand to sand	77
61.52	467.50	1.8994	0.406	5.402	10	gravelly sand to sand	73
61.68	451.00	1.6303	0.361	-2.476	10	gravelly sand to sand	71
61.84	426.37	1.7237	0.404	7.562	10	gravelly sand to sand	68
62.01	375.72	1.4206	0.378	14.547	10	gravelly sand to sand	66
62.17	371.13	1.2247	0.330	9.160	10	gravelly sand to sand	66
62.34	376.19	0.8668	0.230	24.308	10	gravelly sand to sand	65
62.50	417.71	2.0299	0.486	12.068	10	gravelly sand to sand	64
62.66	460.60	1.6999	0.369	30.579	10	gravelly sand to sand	63
62.83	437.15	3.0527	0.698	26.434	10	gravelly sand to sand	63
62.99	386.04	3.1431	0.814	16.406	10	gravelly sand to sand	63
63.16	323.18	1.7032	0.527	15.564	10	gravelly sand to sand	65
63.32	340.72	1.8822	0.552	13.049	10	gravelly sand to sand	66
63.48	413.87	2.4048	0.581	7.698	10	gravelly sand to sand	62
63.65	495.52	1.0512	0.212	-4.053	10	gravelly sand to sand	65
63.81	502.00	4.3404	0.865	9.252	10	gravelly sand to sand	68
63.98	266.24	3.7023	1.391	29.413	10	gravelly sand to sand	70
64.14	487.57	2.6185	0.537	9.584	10	gravelly sand to sand	71
64.30	460.55	1.6965	0.368	10.428	10	gravelly sand to sand	71
64.47	434.53	2.2425	0.516	19.079	10	gravelly sand to sand	70
64.63	466.05	2.5967	0.557	13.783	10	gravelly sand to sand	74
64.80	477.02	2.2908	0.480	13.022	10	gravelly sand to sand	71
64.96	497.54	2.9826	0.599	18.997	10	gravelly sand to sand	69
65.12	414.04	2.8569	0.690	10.214	10	gravelly sand to sand	69
65.29	385.05	2.4110	0.626	-1.849	10	gravelly sand to sand	66
65.45	373.26	4.3509	1.166	20.637	10	gravelly sand to sand	63
65.62	397.72	3.6864	0.927	21.348	10	gravelly sand to sand	59
65.78	348.42	3.3016	0.948	9.445	9	sand	66
65.94	360.72	1.4111	0.391	22.896	9	sand	62
66.11	324.56	1.4105	0.435	11.856	9	sand	57
66.27	238.28	0.8946	0.375	22.287	9	sand	53
66.44	205.71	1.1463	0.557	25.778	9	sand	50
66.60	217.41	1.2209	0.562	25.592	9	sand	43
66.77	247.66	1.2408	0.501	24.481	9	sand	35
66.93	231.89	0.8038	0.347	26.003	9	sand	30
67.09	103.44	0.5971	0.577	24.646	9	sand	24
67.26	49.38	0.8733	1.769	24.800	8	sand to silty sand	27
67.42	24.50	0.4340	1.772	24.612	8	sand to silty sand	26
67.59	13.76	0.2177	1.582	32.572	8	sand to silty sand	25
67.75	117.20	1.1439	0.976	35.126	8	sand to silty sand	26
67.91	223.31	2.6194	1.173	30.571	8	sand to silty sand	28
68.08	190.30	2.7920	1.467	26.230	8	sand to silty sand	33
68.24	134.86	3.3309	2.470	22.405	8	sand to silty sand	36
68.41	125.52	2.7772	2.213	-9.688	7	silty sand to sandy silt	48
68.57	149.79	2.8658	1.913	-6.697	7	silty sand to sandy silt	46
68.73	112.09	2.8583	2.550	-10.230	7	silty sand to sandy silt	59
68.90	117.32	3.6747	3.132	-8.127	8	sand to silty sand	58
69.06	187.57	7.9858	4.258	-11.396	8	sand to silty sand	71
69.23	460.66	7.8869	1.712	-10.915	8	sand to silty sand	81
69.39	549.10	7.0929	1.292	-14.238	8	sand to silty sand	90
69.55	499.73	7.9004	1.581	-14.176	8	sand to silty sand	98
69.72	436.88	7.7505	1.774	-16.615	9	sand	86
69.88	371.26	7.1730	1.932	-14.557	9	sand	87
70.05	363.73	5.2464	1.442	-14.262	9	sand	86
70.21	447.97	4.1264	0.921	-11.480	9	sand	86
70.37	528.83	2.4353	0.461	-6.679	10	gravelly sand to sand	73
70.54	506.21	3.1829	0.629	-4.312	10	gravelly sand to sand	74
70.70	499.98	3.8557	0.771	-0.698	10	gravelly sand to sand	76
70.87	475.77	3.0891	0.649	-3.344	10	gravelly sand to sand	75
71.03	437.47	2.4011	0.549	-3.470	10	gravelly sand to sand	72
71.19	436.26	1.6984	0.389	-3.611	10	gravelly sand to sand	68
71.36	419.85	4.0963	0.976	12.696	10	gravelly sand to sand	64
71.52	386.82	2.6397	0.682	23.864	10	gravelly sand to sand	59
71.69	330.07	2.6169	0.793	0.667	10	gravelly sand to sand	57
71.85	301.31	1.5665	0.520	3.580	9	sand	66
72.01	295.53	1.7575	0.595	12.055	9	sand	64
72.18	311.95	2.6675	0.855	28.401	9	sand	64
72.34	362.81	2.8657	0.790	27.007	10	gravelly sand to sand	56
72.51	360.40	2.3544	0.653	5.010	10	gravelly sand to sand	59

72.67	370.75	2.3086	0.623	-5.758	10	gravelly sand to sand	63
72.83	431.66	2.4610	0.570	-5.076	10	gravelly sand to sand	66
73.00	440.44	2.5485	0.579	15.347	10	gravelly sand to sand	69
73.16	472.90	2.8994	0.613	1.841	10	gravelly sand to sand	72
73.33	467.77	3.0023	0.642	10.896	10	gravelly sand to sand	74
73.49	463.86	3.1682	0.683	5.630	10	gravelly sand to sand	74
73.65	491.75	3.2853	0.668	-2.427	10	gravelly sand to sand	74
73.82	493.67	2.9929	0.606	-4.547	10	gravelly sand to sand	72
73.98	428.40	2.5574	0.597	-0.716	10	gravelly sand to sand	69
74.15	411.82	2.2352	0.543	20.326	10	gravelly sand to sand	67
74.31	389.36	2.0988	0.539	0.907	10	gravelly sand to sand	65
74.48	361.58	1.8390	0.509	17.596	10	gravelly sand to sand	62
74.64	373.52	1.4796	0.396	0.847	10	gravelly sand to sand	62
74.80	374.52	1.6222	0.433	2.333	10	gravelly sand to sand	63
74.97	382.45	2.3880	0.624	2.254	10	gravelly sand to sand	63
75.13	430.08	3.2015	0.744	-3.457	10	gravelly sand to sand	63
75.30	447.36	2.7587	0.617	-7.557	10	gravelly sand to sand	62
75.46	397.73	2.7994	0.704	0.745	10	gravelly sand to sand	62
75.62	367.28	2.7813	0.757	-3.269	10	gravelly sand to sand	63
75.79	328.37	3.2691	0.996	2.335	10	gravelly sand to sand	65
75.95	346.35	2.8148	0.813	-4.338	10	gravelly sand to sand	68
76.12	439.41	3.4016	0.774	-1.616	10	gravelly sand to sand	71
76.28	533.52	3.4749	0.651	-2.895	10	gravelly sand to sand	75
76.44	552.59	3.0408	0.550	11.158	10	gravelly sand to sand	81
76.61	544.09	4.3194	0.794	-1.428	10	gravelly sand to sand	89
76.77	531.47	3.0302	0.570	12.512	10	gravelly sand to sand	95
76.94	599.41	3.7105	0.619	-0.209	10	gravelly sand to sand	98
77.10	693.90	6.5098	0.938	36.661	10	gravelly sand to sand	101
77.26	693.97	5.4995	0.792	-1.430	10	gravelly sand to sand	108
77.43	695.80	7.6756	1.103	4.827	9	sand	128
77.59	663.69	5.9277	0.893	17.682	10	gravelly sand to sand	105
77.76	660.91	4.0822	0.618	-2.986	10	gravelly sand to sand	105
77.92	653.99	-32767.8200	-5010.460	9.022	0	<out of range>	0

Data File:CPT-2 3/5/2012 8:11:21 AM
Operator:Doug Location:San Jose State University
Cone ID:DSG1150 Job Number:408
Customer:Converse Consultants Units:

Depth (ft)	Qc TSF	Fs TSF	Fs/Qc (%)	Pw PSI	Zone	Soil Behavior Type UBC-1983	SPT N* 60% Hammer
0.16	18.33	1.2189	6.649	18.482	3	clay	18
0.33	20.93	1.5860	7.576	27.959	3	clay	19
0.49	25.80	1.7696	6.859	21.555	3	clay	28
0.66	30.41	1.8223	5.992	39.093	4	silty clay to clay	28
0.82	35.29	2.2161	6.280	15.548	4	silty clay to clay	31
0.98	69.35	2.0339	2.933	23.500	5	clayey silt to silty clay	25
1.15	99.50	2.7815	2.795	80.898	5	clayey silt to silty clay	28
1.31	53.85	2.6230	4.871	69.155	5	clayey silt to silty clay	33
1.48	45.92	2.3831	5.190	20.383	6	sandy silt to clayey silt	31
1.64	64.59	2.7055	4.188	39.004	6	sandy silt to clayey silt	33
1.80	112.84	2.8829	2.555	10.656	6	sandy silt to clayey silt	32
1.97	114.96	2.9894	2.601	28.665	6	sandy silt to clayey silt	33
2.13	111.93	3.2953	2.944	2.121	6	sandy silt to clayey silt	34
2.30	80.92	3.6207	4.474	38.358	5	clayey silt to silty clay	41
2.46	72.79	3.5288	4.848	10.052	5	clayey silt to silty clay	37
2.62	60.10	3.3406	5.559	4.942	4	silty clay to clay	42
2.79	49.28	2.9189	5.923	2.672	3	clay	53
2.95	44.44	2.6155	5.886	2.636	3	clay	48
3.12	42.13	2.3868	5.665	4.861	3	clay	43
3.28	40.46	2.1597	5.338	7.120	3	clay	38
3.44	38.48	2.0098	5.223	7.850	3	clay	35
3.61	35.43	1.8537	5.232	6.407	3	clay	32
3.77	30.04	1.6660	5.545	8.336	3	clay	29
3.94	25.77	1.3423	5.209	9.662	3	clay	26
4.10	21.35	1.0882	5.098	12.301	3	clay	23
4.27	19.06	0.9190	4.821	14.753	3	clay	21
4.43	17.95	0.8029	4.474	14.544	3	clay	20
4.59	19.01	0.7711	4.056	14.275	3	clay	20
4.76	20.27	0.9163	4.520	15.501	3	clay	20
4.92	22.93	1.0301	4.492	14.400	4	silty clay to clay	14
5.09	22.01	0.9843	4.473	12.557	4	silty clay to clay	14
5.25	23.43	0.8988	3.836	4.477	3	clay	20
5.41	22.31	0.8933	4.005	4.592	3	clay	20
5.58	19.52	0.8649	4.431	3.138	4	silty clay to clay	14
5.74	16.22	0.8509	5.246	11.762	5	clayey silt to silty clay	11
5.91	20.12	0.7942	3.948	13.998	5	clayey silt to silty clay	12
6.07	25.22	0.7117	2.822	12.081	6	sandy silt to clayey silt	11
6.23	35.06	0.5832	1.663	7.154	6	sandy silt to clayey silt	12
6.40	37.81	0.5603	1.482	4.945	6	sandy silt to clayey silt	13
6.56	37.83	0.6055	1.601	4.592	6	sandy silt to clayey silt	13
6.73	38.20	0.7138	1.868	4.584	6	sandy silt to clayey silt	13
6.89	36.18	0.7893	2.182	3.956	6	sandy silt to clayey silt	12
7.05	32.96	0.7646	2.320	3.820	6	sandy silt to clayey silt	10
7.22	21.60	0.6183	2.862	4.519	5	clayey silt to silty clay	11
7.38	13.37	0.4667	3.491	10.405	5	clayey silt to silty clay	10
7.55	10.47	0.4389	4.193	12.944	5	clayey silt to silty clay	9
7.71	10.37	0.4615	4.452	13.059	5	clayey silt to silty clay	8
7.87	13.44	0.3786	2.817	12.714	5	clayey silt to silty clay	8
8.04	22.99	0.3079	1.339	8.543	5	clayey silt to silty clay	8
8.20	22.56	0.2853	1.265	6.169	5	clayey silt to silty clay	8
8.37	20.38	0.2689	1.319	4.694	5	clayey silt to silty clay	8
8.53	14.51	0.2950	2.033	4.474	5	clayey silt to silty clay	8
8.69	10.38	0.2512	2.419	9.202	5	clayey silt to silty clay	6
8.86	9.82	0.3187	3.246	11.145	4	silty clay to clay	7
9.02	9.39	0.2997	3.192	12.845	4	silty clay to clay	6
9.19	6.42	0.2805	4.370	11.702	4	silty clay to clay	6
9.35	6.81	0.2684	3.942	13.736	5	clayey silt to silty clay	6
9.51	7.29	0.3048	4.179	14.374	5	clayey silt to silty clay	6
9.68	19.45	0.2463	1.266	17.580	5	clayey silt to silty clay	7
9.84	21.86	0.2202	1.007	6.472	5	clayey silt to silty clay	7
10.01	18.44	0.2212	1.200	5.146	5	clayey silt to silty clay	7
10.17	16.72	0.3206	1.917	4.349	5	clayey silt to silty clay	7
10.33	10.14	0.3397	3.349	3.243	5	clayey silt to silty clay	6

10.50	6.37	0.2397	3.762	5.489	4	silty clay to clay	6
10.66	6.54	0.1849	2.826	7.952	3	clay	8
10.83	5.64	0.2297	4.072	9.189	3	clay	6
10.99	5.20	0.2008	3.864	13.483	3	clay	5
11.15	4.61	0.2059	4.463	14.539	3	clay	5
11.32	4.83	0.2284	4.733	17.933	3	clay	5
11.48	4.70	0.2978	6.341	18.919	3	clay	5
11.65	4.34	0.3038	7.006	17.847	3	clay	5
11.81	4.86	0.2498	5.138	16.045	3	clay	5
11.98	6.43	0.1750	2.721	13.872	3	clay	5
12.14	5.34	0.1610	3.016	9.756	3	clay	5
12.30	3.78	0.1787	4.733	12.486	3	clay	5
12.47	3.87	0.1583	4.091	19.751	3	clay	5
12.63	3.89	0.1451	3.732	19.806	3	clay	4
12.80	3.63	0.1649	4.538	22.917	3	clay	4
12.96	4.19	0.2155	5.136	26.186	3	clay	4
13.12	4.75	0.2590	5.453	26.319	3	clay	4
13.29	5.01	0.2716	5.415	24.434	3	clay	4
13.45	4.60	0.2718	5.906	23.056	3	clay	4
13.62	4.30	0.2427	5.651	21.197	3	clay	4
13.78	4.01	0.1919	4.782	20.700	3	clay	4
13.94	3.58	0.1571	4.387	23.479	3	clay	4
14.11	3.47	0.1359	3.916	27.368	3	clay	4
14.27	3.68	0.1382	3.754	26.411	3	clay	4
14.44	3.61	0.1587	4.396	24.667	3	clay	4
14.60	3.70	0.1696	4.584	25.673	3	clay	4
14.76	3.74	0.1644	4.394	26.508	3	clay	5
14.93	4.89	0.1513	3.098	33.994	3	clay	6
15.09	6.80	0.1425	2.095	37.067	3	clay	6
15.26	7.79	0.1487	1.909	37.901	3	clay	7
15.42	6.61	0.2540	3.844	37.710	3	clay	7
15.58	7.66	0.3637	4.745	40.526	3	clay	8
15.75	8.05	0.4881	6.065	27.418	3	clay	9
15.91	9.17	0.5142	5.608	34.684	3	clay	9
16.08	9.84	0.5517	5.610	35.359	3	clay	10
16.24	9.83	0.5204	5.295	33.628	3	clay	10
16.40	10.89	0.5896	5.416	35.966	3	clay	10
16.57	13.04	0.6282	4.815	38.740	3	clay	10
16.73	11.30	0.5561	4.919	26.094	3	clay	10
16.90	8.58	0.4802	5.594	21.644	3	clay	10
17.06	8.92	0.3574	4.006	22.352	3	clay	9
17.22	9.61	0.2708	2.817	30.040	3	clay	8
17.39	7.37	0.2360	3.200	26.589	3	clay	9
17.55	5.01	0.4108	8.191	11.867	3	clay	12
17.72	5.24	0.7894	15.068	9.084	3	clay	15
17.88	20.43	1.2915	6.323	35.032	3	clay	17
18.04	30.57	1.8639	6.096	24.774	3	clay	19
18.21	28.21	1.9723	6.992	16.885	3	clay	22
18.37	26.04	1.6440	6.314	14.251	3	clay	26
18.54	23.49	1.2522	5.331	26.944	3	clay	28
18.70	24.76	1.1237	4.538	40.048	3	clay	28
18.86	36.40	1.2887	3.540	99.569	4	silty clay to clay	18
19.03	32.34	1.6188	5.005	104.040	4	silty clay to clay	18
19.19	27.40	1.3038	4.758	58.956	4	silty clay to clay	18
19.36	25.79	0.9087	3.523	55.664	5	clayey silt to silty clay	13
19.52	24.62	0.6961	2.827	78.226	4	silty clay to clay	16
19.69	20.01	0.6825	3.411	75.760	5	clayey silt to silty clay	11
19.85	19.79	0.6688	3.380	83.607	5	clayey silt to silty clay	10
20.01	16.30	0.5286	3.242	70.054	5	clayey silt to silty clay	9
20.18	15.98	0.4692	2.935	46.240	4	silty clay to clay	10
20.34	11.94	0.4642	3.887	35.806	4	silty clay to clay	10
20.51	11.08	0.4716	4.256	17.847	4	silty clay to clay	9
20.67	10.47	0.5406	5.165	29.666	3	clay	13
20.83	14.15	0.6388	4.515	37.477	3	clay	12
21.00	14.50	0.5940	4.096	35.657	3	clay	13
21.16	13.65	0.5672	4.157	32.773	4	silty clay to clay	9
21.33	12.25	0.5522	4.508	36.253	4	silty clay to clay	9
21.49	15.92	0.4248	2.669	50.371	4	silty clay to clay	9
21.65	16.86	0.3718	2.205	4.673	4	silty clay to clay	8
21.82	10.11	0.3486	3.448	30.017	4	silty clay to clay	8
21.98	9.13	0.3718	4.074	60.818	4	silty clay to clay	8

22.15	9.30	0.4411	4.744	54.867	3	clay	11
22.31	9.10	0.4465	4.908	38.756	3	clay	11
22.47	9.10	0.4064	4.464	35.364	4	silty clay to clay	8
22.64	10.28	0.5499	5.350	46.661	4	silty clay to clay	9
22.80	18.98	0.3770	1.986	48.889	5	clayey silt to silty clay	6
22.97	21.72	0.3270	1.506	-1.402	5	clayey silt to silty clay	6
23.13	12.41	0.2497	2.013	6.903	5	clayey silt to silty clay	6
23.29	8.16	0.2261	2.771	45.387	5	clayey silt to silty clay	7
23.46	8.45	0.2851	3.372	53.164	5	clayey silt to silty clay	6
23.62	10.54	0.2942	2.792	54.576	4	silty clay to clay	8
23.79	12.44	0.6279	5.048	27.773	4	silty clay to clay	8
23.95	12.93	0.4612	3.566	52.450	4	silty clay to clay	8
24.11	14.48	0.5022	3.467	14.620	4	silty clay to clay	9
24.28	12.38	0.4606	3.721	53.159	4	silty clay to clay	9
24.44	17.69	0.4204	2.377	19.996	4	silty clay to clay	9
24.61	14.46	0.3356	2.321	31.222	4	silty clay to clay	9
24.77	9.94	0.2874	2.891	19.612	5	clayey silt to silty clay	7
24.93	10.12	0.3224	3.186	43.188	5	clayey silt to silty clay	7
25.10	11.28	0.3456	3.064	50.254	5	clayey silt to silty clay	7
25.26	22.54	0.4606	2.043	25.561	5	clayey silt to silty clay	8
25.43	17.51	0.5910	3.376	4.009	5	clayey silt to silty clay	8
25.59	16.05	0.6360	3.963	37.828	5	clayey silt to silty clay	8
25.75	20.22	0.6712	3.319	28.529	4	silty clay to clay	11
25.92	14.70	0.5458	3.714	9.304	4	silty clay to clay	10
26.08	14.35	0.5100	3.555	32.851	4	silty clay to clay	10
26.25	10.55	0.4970	4.711	37.545	3	clay	15
26.41	9.39	0.5396	5.745	51.281	3	clay	15
26.57	15.82	0.7149	4.518	48.034	4	silty clay to clay	12
26.74	21.28	0.9629	4.526	23.283	4	silty clay to clay	13
26.90	23.77	0.8847	3.722	32.637	5	clayey silt to silty clay	10
27.07	31.05	0.6053	1.950	17.902	5	clayey silt to silty clay	10
27.23	24.06	0.6503	2.703	1.679	5	clayey silt to silty clay	10
27.40	16.46	0.5795	3.521	25.637	5	clayey silt to silty clay	12
27.56	16.58	0.6056	3.651	34.703	6	sandy silt to clayey silt	10
27.72	16.53	0.6693	4.048	54.738	5	clayey silt to silty clay	12
27.89	37.51	0.6146	1.639	15.682	5	clayey silt to silty clay	11
28.05	34.15	0.6194	1.814	3.470	5	clayey silt to silty clay	11
28.22	23.85	0.4973	2.085	2.712	5	clayey silt to silty clay	10
28.38	14.69	0.4193	2.854	21.325	5	clayey silt to silty clay	10
28.54	9.92	0.3572	3.600	41.138	5	clayey silt to silty clay	8
28.71	9.22	0.3374	3.661	58.564	4	silty clay to clay	8
28.87	9.38	0.3668	3.910	54.367	4	silty clay to clay	7
29.04	9.42	0.3860	4.096	58.337	3	clay	10
29.20	9.70	0.4026	4.151	49.391	3	clay	10
29.36	9.88	0.4004	4.054	50.471	3	clay	10
29.53	9.69	0.4000	4.127	50.740	3	clay	10
29.69	9.48	0.3810	4.021	45.824	3	clay	10
29.86	9.12	0.3701	4.058	54.200	3	clay	10
30.02	9.12	0.3899	4.277	55.978	3	clay	9
30.18	8.89	0.3878	4.365	48.240	3	clay	9
30.35	8.87	0.3931	4.430	48.808	3	clay	9
30.51	8.98	0.4097	4.562	51.546	3	clay	9
30.68	8.32	0.4012	4.819	54.955	3	clay	9
30.84	8.80	0.4190	4.763	54.806	3	clay	9
31.00	9.29	0.4518	4.865	54.942	3	clay	9
31.17	9.26	0.4875	5.266	43.230	3	clay	9
31.33	9.63	0.4627	4.806	44.574	3	clay	9
31.50	9.32	0.4556	4.891	41.808	3	clay	10
31.66	8.90	0.4656	5.230	54.443	3	clay	10
31.82	9.20	0.4786	5.203	55.931	3	clay	9
31.99	9.10	0.4969	5.462	45.725	3	clay	9
32.15	9.48	0.4676	4.935	36.248	3	clay	9
32.32	9.27	0.4154	4.482	36.588	3	clay	9
32.48	8.46	0.3129	3.698	41.614	3	clay	9
32.64	7.37	0.2382	3.229	54.396	3	clay	9
32.81	7.12	0.2660	3.735	64.320	3	clay	8
32.97	7.59	0.3262	4.296	58.564	3	clay	8
33.14	7.89	0.3504	4.438	58.747	3	clay	8
33.30	8.49	0.3339	3.933	56.124	3	clay	8
33.46	8.67	0.2835	3.269	53.951	3	clay	8
33.63	8.23	0.2685	3.262	61.647	4	silty clay to clay	6

33.79	7.75	0.2458	3.171	61.987	4	silty clay to clay	6
33.96	7.20	0.1892	2.628	63.313	3	clay	8
34.12	6.96	0.2352	3.381	69.861	3	clay	8
34.28	7.36	0.3081	4.185	62.646	3	clay	8
34.45	8.20	0.4069	4.961	66.367	3	clay	9
34.61	9.20	0.4803	5.218	50.063	3	clay	9
34.78	9.34	0.4956	5.306	46.295	3	clay	9
34.94	9.09	0.4793	5.275	49.880	3	clay	10
35.10	9.35	0.5158	5.516	50.361	3	clay	10
35.27	9.85	0.5358	5.441	47.558	3	clay	10
35.43	10.21	0.5842	5.723	36.204	3	clay	10
35.60	10.46	0.5473	5.232	37.493	3	clay	10
35.76	10.24	0.5313	5.187	33.641	3	clay	10
35.93	10.09	0.4945	4.901	39.501	3	clay	10
36.09	9.84	0.5101	5.183	46.154	3	clay	11
36.25	10.18	0.5541	5.444	52.694	3	clay	11
36.42	10.53	0.6174	5.863	45.129	3	clay	11
36.58	11.25	0.7035	6.253	39.177	3	clay	11
36.75	12.14	0.6949	5.723	33.147	3	clay	12
36.91	11.78	0.6322	5.368	28.440	3	clay	12
37.07	12.21	0.6863	5.622	42.589	3	clay	12
37.24	12.99	0.8078	6.220	43.204	3	clay	13
37.40	13.40	0.7950	5.933	15.368	3	clay	13
37.57	13.94	0.7931	5.689	28.260	3	clay	12
37.73	13.43	0.7421	5.527	14.115	3	clay	12
37.89	11.51	0.6626	5.756	19.751	3	clay	12
38.06	10.74	0.6179	5.754	29.925	3	clay	12
38.22	10.86	0.6324	5.825	43.196	3	clay	11
38.39	10.77	0.6457	5.997	34.551	3	clay	11
38.55	10.58	0.5784	5.468	31.146	3	clay	11
38.71	10.70	0.5709	5.334	46.120	3	clay	11
38.88	10.96	0.6407	5.845	51.096	3	clay	11
39.04	11.47	0.6391	5.572	41.499	3	clay	11
39.21	11.22	0.6454	5.751	37.485	3	clay	11
39.37	11.14	0.6449	5.790	47.519	3	clay	11
39.53	11.39	0.6520	5.723	44.668	3	clay	11
39.70	11.67	0.6656	5.703	41.551	3	clay	11
39.86	11.40	0.6087	5.337	42.840	3	clay	12
40.03	11.43	0.5954	5.208	38.275	3	clay	12
40.19	11.50	0.6220	5.406	43.214	3	clay	12
40.35	11.39	0.5908	5.189	48.073	3	clay	12
40.52	12.09	0.6192	5.120	61.221	3	clay	12
40.68	12.31	0.6591	5.353	52.432	3	clay	13
40.85	12.93	0.7012	5.424	53.209	3	clay	13
41.01	13.20	0.7224	5.471	47.827	3	clay	13
41.17	13.62	0.7162	5.259	49.658	3	clay	14
41.34	13.69	0.7214	5.270	48.426	3	clay	14
41.50	13.72	0.7605	5.544	48.967	3	clay	14
41.67	14.35	0.7879	5.491	52.296	3	clay	14
41.83	14.45	0.8831	6.109	45.521	3	clay	14
41.99	14.98	0.8606	5.745	52.665	3	clay	14
42.16	14.78	0.8458	5.723	39.564	3	clay	15
42.32	14.24	0.8091	5.681	52.131	3	clay	14
42.49	14.53	0.8092	5.571	49.676	3	clay	14
42.65	14.33	0.7679	5.358	47.542	3	clay	14
42.81	13.80	0.6830	4.949	47.537	3	clay	14
42.98	13.00	0.6774	5.212	64.424	3	clay	14
43.14	13.47	0.7155	5.312	64.095	3	clay	14
43.31	13.88	0.7635	5.502	66.053	3	clay	14
43.47	14.72	0.8175	5.554	52.270	3	clay	14
43.64	14.25	0.8083	5.673	45.118	3	clay	14
43.80	14.03	0.6559	4.675	65.972	3	clay	15
43.96	15.22	0.6820	4.482	58.661	3	clay	15
44.13	14.12	0.7203	5.100	85.914	3	clay	15
44.29	15.21	0.8255	5.427	61.825	3	clay	15
44.46	14.99	0.8610	5.743	56.242	3	clay	15
44.62	15.17	0.8289	5.465	40.545	3	clay	15
44.78	14.69	0.7702	5.245	41.617	3	clay	15
44.95	14.16	0.7592	5.362	53.287	3	clay	15
45.11	14.35	0.7622	5.310	58.624	3	clay	15
45.28	14.46	0.7858	5.434	51.096	3	clay	15

45.44	14.89	0.7933	5.327	49.166	3	clay	15
45.60	14.76	0.7448	5.046	51.023	3	clay	15
45.77	14.24	0.7300	5.126	49.148	3	clay	15
45.93	14.31	0.6989	4.885	63.532	3	clay	15
46.10	14.30	0.7289	5.097	57.798	3	clay	15
46.26	14.41	0.7272	5.047	59.662	3	clay	15
46.42	14.40	0.7566	5.253	60.917	3	clay	15
46.59	14.57	0.7570	5.194	63.292	3	clay	15
46.75	14.61	0.7319	5.008	65.054	3	clay	15
46.92	14.38	0.7452	5.180	67.107	3	clay	15
47.08	14.36	0.7478	5.208	70.768	3	clay	15
47.24	14.44	0.7706	5.337	79.627	3	clay	15
47.41	14.28	0.7623	5.337	72.716	3	clay	15
47.57	14.79	0.7454	5.040	74.944	3	clay	15
47.74	14.72	0.7401	5.028	69.649	3	clay	15
47.90	14.20	0.6989	4.921	71.830	3	clay	15
48.06	13.71	0.6858	5.004	76.468	3	clay	15
48.23	14.14	0.6858	4.849	84.525	3	clay	15
48.39	14.48	0.7257	5.012	84.271	3	clay	15
48.56	14.74	0.7353	4.989	84.248	3	clay	15
48.72	14.90	0.7454	5.004	88.767	3	clay	15
48.88	15.19	0.7614	5.013	90.351	3	clay	15
49.05	15.40	0.7493	4.866	84.387	3	clay	16
49.21	15.00	0.7472	4.982	88.296	3	clay	15
49.38	14.87	0.7513	5.051	85.775	3	clay	15
49.54	14.56	0.7066	4.853	83.858	3	clay	15
49.70	14.08	0.7429	5.275	85.906	3	clay	15
49.87	14.03	0.7243	5.163	91.259	4	silty clay to clay	10
50.03	14.65	0.6446	4.400	75.721	4	silty clay to clay	10
50.20	13.75	0.3676	2.674	83.521	5	clayey silt to silty clay	8
50.36	13.43	0.3779	2.814	98.693	5	clayey silt to silty clay	8
50.52	15.20	0.4312	2.836	111.122	5	clayey silt to silty clay	8
50.69	19.84	0.3031	1.528	100.259	5	clayey silt to silty clay	8
50.85	15.57	0.3248	2.086	88.257	5	clayey silt to silty clay	8
51.02	13.42	0.3457	2.576	117.013	5	clayey silt to silty clay	8
51.18	13.95	0.4220	3.026	107.521	5	clayey silt to silty clay	8
51.35	14.58	0.4640	3.181	108.114	5	clayey silt to silty clay	8
51.51	14.90	0.5048	3.389	106.676	5	clayey silt to silty clay	8
51.67	14.93	0.5624	3.767	105.233	4	silty clay to clay	10
51.84	15.07	0.5829	3.867	109.090	4	silty clay to clay	10
52.00	14.48	0.5600	3.868	104.114	4	silty clay to clay	11
52.17	14.71	0.5918	4.024	113.480	4	silty clay to clay	11
52.33	15.51	0.6713	4.329	113.820	4	silty clay to clay	11
52.49	15.73	0.6443	4.096	95.542	4	silty clay to clay	11
52.66	15.44	0.5499	3.562	96.614	4	silty clay to clay	11
52.82	14.64	0.5516	3.767	106.893	4	silty clay to clay	11
52.99	14.81	0.6375	4.303	121.166	4	silty clay to clay	11
53.15	15.66	0.7934	5.065	117.374	4	silty clay to clay	11
53.31	16.77	0.7894	4.708	105.717	4	silty clay to clay	11
53.48	18.04	0.7738	4.291	114.330	4	silty clay to clay	12
53.64	18.20	0.6353	3.491	104.237	5	clayey silt to silty clay	9
53.81	16.81	0.4518	2.687	103.975	5	clayey silt to silty clay	9
53.97	16.25	0.3065	1.886	115.575	5	clayey silt to silty clay	9
54.13	14.79	0.2827	1.911	120.765	5	clayey silt to silty clay	8
54.30	14.68	0.3220	2.193	127.781	5	clayey silt to silty clay	8
54.46	15.42	0.2958	1.918	123.310	5	clayey silt to silty clay	8
54.63	14.92	0.2811	1.885	117.207	5	clayey silt to silty clay	8
54.79	14.42	0.2825	1.959	121.521	5	clayey silt to silty clay	8
54.95	14.43	0.2981	2.066	123.179	5	clayey silt to silty clay	9
55.12	14.81	0.4071	2.749	122.387	5	clayey silt to silty clay	11
55.28	17.78	0.8815	4.959	124.298	5	clayey silt to silty clay	13
55.45	27.99	1.3095	4.679	136.181	5	clayey silt to silty clay	13
55.61	43.22	1.4159	3.276	66.479	5	clayey silt to silty clay	14
55.77	40.31	1.1069	2.746	41.319	5	clayey silt to silty clay	14
55.94	25.77	0.9210	3.574	67.952	5	clayey silt to silty clay	14
56.10	18.76	0.4993	2.661	108.946	5	clayey silt to silty clay	13
56.27	16.83	0.3370	2.003	115.277	5	clayey silt to silty clay	11
56.43	16.21	0.2886	1.780	122.421	5	clayey silt to silty clay	9
56.59	15.48	0.4716	3.047	125.880	5	clayey silt to silty clay	9
56.76	15.78	0.5149	3.264	131.508	5	clayey silt to silty clay	9
56.92	16.38	0.6070	3.705	124.706	5	clayey silt to silty clay	10

57.09	16.79	0.8171	4.868	120.373	5	clayey silt to silty clay	10
57.25	24.27	0.9910	4.084	128.336	5	clayey silt to silty clay	10
57.41	27.91	0.9494	3.401	116.129	4	silty clay to clay	14
57.58	21.69	0.7035	3.243	93.445	4	silty clay to clay	16
57.74	17.94	0.5903	3.290	102.124	5	clayey silt to silty clay	16
57.91	20.63	1.0160	4.924	122.157	6	sandy silt to clayey silt	15
58.07	33.56	1.6462	4.905	139.360	6	sandy silt to clayey silt	15
58.23	79.40	1.7279	2.176	45.777	6	sandy silt to clayey silt	15
58.40	62.71	1.4280	2.277	5.115	6	sandy silt to clayey silt	15
58.56	38.21	0.7937	2.077	5.468	6	sandy silt to clayey silt	18
58.73	22.74	0.8605	3.785	38.358	6	sandy silt to clayey silt	20
58.89	17.52	0.8934	5.098	103.104	6	sandy silt to clayey silt	20
59.06	70.97	1.2048	1.698	77.522	6	sandy silt to clayey silt	20
59.22	76.08	1.7610	2.315	8.352	6	sandy silt to clayey silt	20
59.38	77.01	1.0601	1.377	4.524	6	sandy silt to clayey silt	21
59.55	63.61	1.3610	2.139	-5.936	6	sandy silt to clayey silt	22
59.71	40.95	0.9816	2.397	3.250	6	sandy silt to clayey silt	20
59.88	36.28	1.3285	3.662	42.265	6	sandy silt to clayey silt	17
60.04	28.75	1.3272	4.616	58.174	6	sandy silt to clayey silt	15
60.20	32.99	0.9399	2.849	24.994	5	clayey silt to silty clay	15
60.37	34.56	0.7449	2.156	48.013	5	clayey silt to silty clay	15
60.53	29.75	0.8496	2.855	36.967	5	clayey silt to silty clay	15
60.70	19.06	1.0426	5.471	77.457	6	sandy silt to clayey silt	12
60.86	26.59	0.9086	3.417	99.503	6	sandy silt to clayey silt	12
61.02	38.86	0.7116	1.831	47.699	6	sandy silt to clayey silt	11
61.19	35.98	0.5699	1.584	40.696	6	sandy silt to clayey silt	11
61.35	27.78	0.5947	2.141	55.471	6	sandy silt to clayey silt	11
61.52	20.73	0.6038	2.913	90.707	6	sandy silt to clayey silt	11
61.68	22.02	0.5660	2.571	106.681	5	clayey silt to silty clay	14
61.84	28.89	0.8613	2.982	66.202	5	clayey silt to silty clay	20
62.01	22.49	1.4835	6.596	113.185	6	sandy silt to clayey silt	29
62.17	41.15	2.9541	7.180	95.521	7	silty sand to sandy silt	40
62.34	122.57	3.5745	2.916	61.383	8	sand to silty sand	46
62.50	256.38	2.6696	1.041	15.120	9	sand	49
62.66	387.71	3.0676	0.791	18.176	9	sand	62
62.83	465.86	2.8791	0.618	29.392	10	gravelly sand to sand	61
62.99	481.57	2.7302	0.567	38.518	10	gravelly sand to sand	64
63.16	499.13	1.5394	0.308	99.870	10	gravelly sand to sand	69
63.32	471.79	1.8658	0.395	47.349	10	gravelly sand to sand	69
63.48	222.75	2.8143	1.263	51.668	10	gravelly sand to sand	67
63.65	475.03	2.8766	0.606	47.074	10	gravelly sand to sand	64
63.81	395.37	2.4693	0.625	52.129	10	gravelly sand to sand	61
63.98	373.82	1.8566	0.497	75.519	10	gravelly sand to sand	58
64.14	357.23	2.1628	0.605	27.023	10	gravelly sand to sand	60
64.30	356.48	2.1330	0.598	17.368	10	gravelly sand to sand	55
64.47	341.58	1.8788	0.550	16.440	10	gravelly sand to sand	52
64.63	313.15	1.5115	0.483	39.791	10	gravelly sand to sand	50
64.80	261.72	2.0737	0.792	26.649	10	gravelly sand to sand	48
64.96	268.55	1.6376	0.610	25.686	10	gravelly sand to sand	47
65.12	277.58	1.1550	0.416	14.267	10	gravelly sand to sand	46
65.29	291.18	1.3736	0.472	26.000	10	gravelly sand to sand	46
65.45	303.90	1.1994	0.395	20.749	10	gravelly sand to sand	46
65.62	311.88	1.1703	0.375	17.504	10	gravelly sand to sand	47
65.78	294.05	0.9322	0.317	36.162	10	gravelly sand to sand	47
65.94	278.39	0.8407	0.302	16.981	10	gravelly sand to sand	48
66.11	286.38	1.1403	0.398	9.288	10	gravelly sand to sand	49
66.27	305.06	1.1206	0.367	30.678	10	gravelly sand to sand	49
66.44	315.61	2.2723	0.720	33.510	9	sand	57
66.60	337.74	1.3518	0.400	25.464	9	sand	58
66.77	336.24	2.2468	0.668	41.808	9	sand	59
66.93	219.86	2.9028	1.320	40.244	9	sand	59
67.09	314.82	2.8035	0.890	38.847	9	sand	59
67.26	319.84	1.7201	0.538	20.025	9	sand	58
67.42	307.92	2.6994	0.877	36.191	9	sand	56
67.59	309.43	1.9001	0.614	16.683	9	sand	58
67.75	304.90	1.6570	0.543	27.172	9	sand	57
67.91	285.42	1.7025	0.596	24.622	9	sand	56
68.08	283.33	1.8078	0.638	15.174	9	sand	55
68.24	269.61	2.2026	0.817	26.311	9	sand	54
68.41	281.03	3.5807	1.274	27.938	9	sand	52
68.57	270.67	2.8945	1.069	65.287	9	sand	50

68.73	263.51	2.7951	1.061	37.315	9	sand	48
68.90	234.72	4.7422	2.020	23.469	9	sand	46
69.06	234.37	3.1198	1.331	14.508	9	sand	43
69.23	195.20	2.1618	1.107	100.698	9	sand	41
69.39	192.56	1.1416	0.593	25.642	9	sand	38
69.55	193.34	2.4528	1.269	39.870	8	sand to silty sand	43
69.72	194.95	1.7380	0.892	19.560	8	sand to silty sand	38
69.88	140.61	1.8867	1.342	35.079	8	sand to silty sand	33
70.05	112.25	2.3318	2.077	45.845	7	silty sand to sandy silt	39
70.21	82.03	2.4627	3.002	41.070	7	silty sand to sandy silt	34
70.37	46.59	2.9515	6.336	45.061	6	sandy silt to clayey silt	37
70.54	72.43	3.3272	4.594	98.358	6	sandy silt to clayey silt	38
70.70	100.57	3.7091	3.688	26.680	7	silty sand to sandy silt	35
70.87	125.99	3.1197	2.476	-6.001	7	silty sand to sandy silt	41
71.03	148.34	2.1973	1.481	14.675	8	sand to silty sand	35
71.19	195.37	2.0068	1.027	13.362	8	sand to silty sand	39
71.36	203.63	1.7495	0.859	2.432	8	sand to silty sand	42
71.52	187.94	1.6055	0.854	-0.816	9	sand	35
71.69	178.71	1.5667	0.877	2.636	9	sand	37
71.85	184.10	1.5812	0.859	1.022	9	sand	38
72.01	190.78	1.6593	0.870	2.123	9	sand	40
72.18	199.83	2.2226	1.112	1.778	9	sand	45
72.34	225.93	2.7773	1.229	4.215	9	sand	52
72.51	282.74	4.8843	1.727	8.499	9	sand	58
72.67	381.89	4.9838	1.305	21.905	9	sand	65
72.83	428.40	4.8580	1.134	159.140	9	sand	72
73.00	406.64	4.2513	1.045	49.684	9	sand	80
73.16	434.57	3.7884	0.872	26.725	10	gravelly sand to sand	71
73.33	482.90	2.4852	0.515	33.871	10	gravelly sand to sand	75
73.49	490.11	3.3902	0.692	19.013	10	gravelly sand to sand	76
73.65	499.10	3.4812	0.697	53.434	10	gravelly sand to sand	78
73.82	521.48	2.9955	0.574	19.970	10	gravelly sand to sand	79
73.98	492.25	4.0099	0.815	40.683	10	gravelly sand to sand	79
74.15	499.27	3.3068	0.662	62.858	10	gravelly sand to sand	79
74.31	470.72	3.6458	0.775	52.976	10	gravelly sand to sand	78
74.48	501.63	3.9467	0.787	42.127	10	gravelly sand to sand	75
74.64	486.05	3.7559	0.773	33.037	10	gravelly sand to sand	72
74.80	462.86	3.4863	0.753	25.896	10	gravelly sand to sand	67
74.97	380.31	2.8879	0.759	5.421	10	gravelly sand to sand	63
75.13	337.06	2.6671	0.791	21.479	9	sand	68
75.30	301.51	2.4887	0.825	8.493	9	sand	61
75.46	272.68	1.9343	0.709	12.486	9	sand	54
75.62	255.10	1.4961	0.586	24.465	9	sand	48
75.79	226.08	1.4874	0.658	0.983	9	sand	44
75.95	187.86	1.8008	0.959	-0.889	9	sand	41
76.12	177.97	1.6813	0.945	3.543	9	sand	39
76.28	192.54	1.7182	0.892	5.436	9	sand	38
76.44	193.44	2.0552	1.062	0.225	9	sand	38
76.61	193.13	1.7268	0.894	1.093	9	sand	41
76.77	201.43	2.0453	1.015	1.621	9	sand	45
76.94	247.43	2.2282	0.901	3.716	9	sand	49
77.10	297.08	2.2563	0.760	0.000	9	sand	52
77.26	331.64	1.7498	0.528	2.955	9	sand	54
77.43	333.50	1.7501	0.525	-3.292	9	sand	55
77.59	292.19	1.9963	0.683	-5.669	9	sand	55
77.76	253.25	2.1842	0.862	-7.502	9	sand	56
77.92	240.24	2.5113	1.045	-1.279	9	sand	56
78.08	279.66	2.6521	0.948	3.538	9	sand	56
78.25	321.51	2.8099	0.874	4.610	9	sand	58
78.41	326.76	2.4729	0.757	0.110	9	sand	62
78.58	346.87	2.5477	0.734	1.637	9	sand	67
78.74	369.05	2.7569	0.747	2.636	10	gravelly sand to sand	58
78.90	395.86	2.6122	0.660	8.164	10	gravelly sand to sand	60
79.07	399.43	2.8406	0.711	5.460	10	gravelly sand to sand	63
79.23	388.81	2.7487	0.707	3.358	10	gravelly sand to sand	63
79.40	411.07	2.8167	0.685	10.902	10	gravelly sand to sand	61
79.56	431.21	2.3709	0.550	10.384	10	gravelly sand to sand	56
79.72	386.50	2.1234	0.549	0.123	9	sand	60
79.89	283.44	1.4714	0.519	-6.584	9	sand	54
80.05	173.66	3.2671	1.881	-6.187	9	sand	52
80.22	107.96	4.3754	4.053	5.758	9	sand	51

80.38	192.56	3.7305	1.937	5.983	9	sand	49
80.54	335.21	3.2180	0.960	14.398	9	sand	49
80.71	377.51	3.3005	0.874	14.377	9	sand	51
80.87	331.05	2.7223	0.822	-5.468	9	sand	53
81.04	265.48	2.0763	0.782	0.811	9	sand	50
81.20	246.31	1.3432	0.545	2.346	9	sand	42
81.36	199.46	3.0327	1.520	-0.248	8	sand to silty sand	41
81.53	88.29	2.9785	3.374	-10.104	8	sand to silty sand	30
81.69	34.80	2.5810	7.416	0.429	7	silty sand to sandy silt	29
81.86	22.45	1.0440	4.650	74.405	6	sandy silt to clayey silt	23
82.02	24.00	0.9438	3.932	121.728	4	silty clay to clay	23
82.19	24.18	0.8864	3.666	142.530	4	silty clay to clay	17
82.35	25.39	0.8725	3.437	152.205	5	clayey silt to silty clay	12
82.51	23.13	0.7916	3.422	126.733	5	clayey silt to silty clay	12
82.68	21.05	0.6861	3.259	131.526	5	clayey silt to silty clay	11
82.84	20.48	0.6262	3.058	128.558	5	clayey silt to silty clay	11
83.01	19.75	0.6311	3.196	126.979	5	clayey silt to silty clay	11
83.17	19.74	0.7014	3.554	125.812	5	clayey silt to silty clay	10
83.33	20.05	0.6867	3.425	128.848	5	clayey silt to silty clay	10
83.50	18.84	0.6656	3.532	142.516	5	clayey silt to silty clay	10
83.66	18.16	0.6521	3.591	152.103	5	clayey silt to silty clay	10
83.83	18.22	0.6373	3.498	159.793	5	clayey silt to silty clay	10
83.99	17.78	0.6287	3.537	160.382	5	clayey silt to silty clay	10
84.15	17.79	0.6380	3.587	156.101	5	clayey silt to silty clay	10
84.32	17.53	0.6320	3.605	160.907	5	clayey silt to silty clay	9
84.48	17.10	0.6284	3.675	157.053	5	clayey silt to silty clay	9
84.65	16.60	0.6081	3.664	158.122	5	clayey silt to silty clay	9
84.81	16.53	0.5887	3.561	161.433	5	clayey silt to silty clay	9
84.97	16.24	0.6010	3.702	159.134	5	clayey silt to silty clay	9
85.14	16.52	0.6597	3.993	161.041	4	silty clay to clay	13
85.30	18.48	0.7109	3.846	165.884	5	clayey silt to silty clay	10
85.47	18.89	0.7935	4.200	144.964	5	clayey silt to silty clay	11
85.63	20.92	1.0170	4.862	150.808	4	silty clay to clay	16
85.79	29.13	1.0137	3.480	161.064	4	silty clay to clay	17
85.96	29.51	1.1676	3.957	124.934	4	silty clay to clay	17
86.12	26.67	1.1927	4.472	167.591	4	silty clay to clay	18
86.29	25.12	1.3023	5.184	144.465	4	silty clay to clay	18
86.45	24.53	1.2082	4.926	157.293	4	silty clay to clay	17
86.61	23.84	1.1371	4.769	159.409	4	silty clay to clay	16
86.78	21.84	1.0357	4.743	159.689	4	silty clay to clay	16
86.94	19.72	0.9384	4.759	171.296	4	silty clay to clay	16
87.11	19.75	0.8377	4.242	184.708	4	silty clay to clay	15
87.27	20.47	0.9116	4.454	188.973	4	silty clay to clay	15
87.43	22.51	1.0671	4.741	190.990	4	silty clay to clay	15
87.60	24.38	1.2734	5.223	148.303	4	silty clay to clay	15
87.76	22.71	1.1232	4.946	144.384	4	silty clay to clay	15
87.93	20.33	0.8808	4.334	192.836	4	silty clay to clay	15
88.09	19.74	0.7425	3.761	211.101	5	clayey silt to silty clay	11
88.25	19.13	0.7300	3.815	220.742	5	clayey silt to silty clay	11
88.42	19.80	0.7125	3.598	214.574	4	silty clay to clay	16
88.58	19.19	0.4626	2.411	218.896	4	silty clay to clay	23
88.75	18.83	0.7772	4.128	221.937	3	clay	42
88.91	32.31	2.8631	8.860	193.984	3	clay	49
89.07	106.02	4.3740	4.126	42.796	11	very stiff fine grained (*)	59
89.24	77.19	5.8858	7.625	6.919	11	very stiff fine grained (*)	75
89.40	71.31	5.3986	7.570	41.554	11	very stiff fine grained (*)	93
89.57	97.55	5.1128	5.241	15.355	11	very stiff fine grained (*)	104
89.73	139.42	5.2574	3.771	8.925	11	very stiff fine grained (*)	117
89.90	149.46	5.2520	3.514	-4.291	6	sandy silt to clayey silt	54
90.06	118.17	4.7774	4.043	13.621	7	silty sand to sandy silt	52
90.22	202.84	4.4319	2.185	-2.476	7	silty sand to sandy silt	58
90.39	206.43	4.5464	2.202	-3.240	7	silty sand to sandy silt	61
90.55	217.54	3.8955	1.791	1.964	7	silty sand to sandy silt	59
90.72	235.93	2.8113	1.192	1.328	7	silty sand to sandy silt	56
90.88	202.57	2.9630	1.463	0.039	7	silty sand to sandy silt	49
91.04	114.02	3.4937	3.064	-7.766	7	silty sand to sandy silt	40
91.21	53.78	2.8777	5.351	-5.871	7	silty sand to sandy silt	32
91.37	33.65	1.6523	4.910	22.444	6	sandy silt to clayey silt	27
91.54	25.98	1.3730	5.285	85.644	5	clayey silt to silty clay	22
91.70	24.14	1.1807	4.890	124.160	4	silty clay to clay	22
91.86	26.74	1.2341	4.614	157.071	4	silty clay to clay	21

92.03	29.46	1.3490	4.579	179.868	4	silty clay to clay	21
92.19	33.86	1.5135	4.470	193.364	4	silty clay to clay	22
92.36	37.30	1.7000	4.558	195.019	4	silty clay to clay	23
92.52	38.03	1.9855	5.222	204.522	4	silty clay to clay	25
92.68	34.93	2.1760	6.229	163.433	5	clayey silt to silty clay	19
92.85	39.02	1.3859	3.552	165.371	5	clayey silt to silty clay	18
93.01	43.52	1.1745	2.699	90.239	5	clayey silt to silty clay	17
93.18	31.41	1.1001	3.503	101.350	5	clayey silt to silty clay	16
93.34	25.26	0.9245	3.660	132.284	5	clayey silt to silty clay	15
93.50	20.29	0.8425	4.153	173.119	5	clayey silt to silty clay	14
93.67	20.25	0.8744	4.317	181.254	5	clayey silt to silty clay	12
93.83	22.55	0.8302	3.682	175.091	5	clayey silt to silty clay	12
94.00	22.63	0.8295	3.665	154.054	5	clayey silt to silty clay	11
94.16	21.81	0.8186	3.754	176.824	5	clayey silt to silty clay	11
94.32	21.32	0.8113	3.805	181.029	5	clayey silt to silty clay	12
94.49	20.67	0.8013	3.877	179.000	5	clayey silt to silty clay	11
94.65	20.66	0.8137	3.940	185.893	5	clayey silt to silty clay	11
94.82	21.58	0.8316	3.854	179.089	5	clayey silt to silty clay	11
94.98	21.28	0.8412	3.954	165.266	5	clayey silt to silty clay	11
95.14	20.35	0.8832	4.340	163.854	4	silty clay to clay	15
95.31	20.90	0.8665	4.145	178.307	4	silty clay to clay	16
95.47	22.05	0.8859	4.017	175.690	4	silty clay to clay	16
95.64	22.65	0.9989	4.410	177.669	4	silty clay to clay	17
95.80	25.73	1.0994	4.273	179.016	4	silty clay to clay	18
95.96	28.01	1.2046	4.300	169.741	4	silty clay to clay	18
96.13	29.06	1.1899	4.094	167.079	4	silty clay to clay	19
96.29	29.09	1.1525	3.961	169.199	4	silty clay to clay	19
96.46	25.46	1.1516	4.522	174.884	5	clayey silt to silty clay	14
96.62	27.40	1.1692	4.267	177.431	5	clayey silt to silty clay	14
96.78	26.87	1.0857	4.041	164.330	5	clayey silt to silty clay	14
96.95	25.19	0.9902	3.931	179.384	4	silty clay to clay	17
97.11	23.64	0.9398	3.976	172.661	5	clayey silt to silty clay	13
97.28	22.82	0.8831	3.870	185.720	5	clayey silt to silty clay	13
97.44	21.97	0.9550	4.347	178.461	5	clayey silt to silty clay	12
97.60	22.70	0.9485	4.179	187.219	5	clayey silt to silty clay	12
97.77	23.30	0.9824	4.216	183.746	5	clayey silt to silty clay	12
97.93	23.52	0.9405	3.998	179.044	4	silty clay to clay	16
98.10	23.37	0.9390	4.018	163.569	4	silty clay to clay	16
98.26	22.07	0.8895	4.031	166.841	4	silty clay to clay	16
98.43	21.59	0.8817	4.083	168.953	4	silty clay to clay	16
98.59	21.05	0.9604	4.562	186.275	4	silty clay to clay	16
98.75	22.03	0.9356	4.247	181.620	4	silty clay to clay	16
98.92	22.36	0.9279	4.150	167.596	4	silty clay to clay	16
99.08	21.17	1.0002	4.725	189.941	4	silty clay to clay	16
99.25	22.40	1.0550	4.710	179.819	4	silty clay to clay	16
99.41	23.42	0.9451	4.036	164.335	4	silty clay to clay	15
99.57	23.13	0.6577	2.843	170.185	4	silty clay to clay	16
99.74	22.67	0.9493	4.187	184.282	4	silty clay to clay	16
99.90	15.82	0.9341	5.903	181.100	5	clayey silt to silty clay	12
100.07	25.05	0.8682	3.467	173.475	5	clayey silt to silty clay	13
100.23	24.40	0.9026	3.699	187.363	5	clayey silt to silty clay	13
100.39	25.81	-32768	-32768	203.120	0	<out of range>	0

Data F ile:CPT-3 3/5/2012 11:21:14 AM
Opera tor:Doug Locatio n:San Jos e State University
Cone ID:DSG1150 Job Numbe r:408
Custo mer:Converse Consultants Unit s:

Depth (ft)	Qc TSF	Fs TSF	Fs/Qc (%)	Pw PSI	Zone	Soil Behavior T ype UBC-1 983	SPT N* 60% Hammer
0.16	7.36	0.6566	8.924	6.192	3	clay	7
0.33	15.4	0.8017	5.204	34.07	3	clay	11
0.49	20.93	0.8952	4.278	23.963	3	clay	13
0.66	19.12	0.9305	4.866	8.538	3	clay	16
0.82	16.63	0.9691	5.827	1.043	3	clay	18
0.98	17.19	0.8911	5.185	4.581	3	clay	19
1.15	20.63	0.9811	4.755	10.099	3	clay	19
1.31	22.87	1.0728	4.691	0.018	3	clay	19
1.48	20	1.1515	5.759	-3.745	4	silty clay to cla y	15
1.64	19.38	1.1185	5.773	-3.517	6	sandy silt to clayey silt	12
1.8	21.01	0.015	0.071	2.027	6	sandy silt to clayey silt	13
1.97	39.13	0.8644	2.209	-17.653	6	sandy silt to clayey silt	14
2.13	80.78	0.8867	1.098	14.149	6	sandy silt to clayey silt	15
2.3	39.51	0.8552	2.164	-16.424	6	sandy silt to clayey silt	16
2.46	34.17	0.8728	2.555	49.958	6	sandy silt to clayey silt	17
2.62	38.35	0.9761	2.545	15.726	6	sandy silt to clayey silt	17
2.79	41.57	0.9696	2.333	5.225	6	sandy silt to clayey silt	14
2.95	41.83	1.147	2.742	5.962	5	clayey silt to silty clay	17
3.12	36.96	1.2156	3.289	-1.815	5	clayey silt to silty clay	17
3.28	30.54	1.3633	4.464	-5.667	4	silty clay to cla y	21
3.44	30.88	1.6558	5.362	-2.604	4	silty clay to cla y	20
3.61	28.53	1.4211	4.982	-3.865	3	clay	30
3.77	15.27	1.4975	9.808	-9.207	3	clay	31
3.94	35.31	1.549	4.387	0.502	3	clay	33
4.1	40.19	1.7693	4.402	-0.722	4	silty clay to cla y	24
4.27	44.07	1.9702	4.471	-2.173	4	silty clay to cla y	27
4.43	50.37	2.068	4.106	-0.863	5	clayey silt to silty clay	22
4.59	52.78	1.9544	3.703	-2.032	5	clayey silt to silty clay	23
4.76	53.54	1.6955	3.167	-3.653	5	clayey silt to silty clay	24
4.92	51.17	1.5175	2.966	-4.121	5	clayey silt to silty clay	24
5.09	48	1.4906	3.105	-4.526	5	clayey silt to silty clay	23
5.25	44.57	1.4291	3.206	-3.847	5	clayey silt to silty clay	23
5.41	44.87	1.4145	3.153	-3.687	5	clayey silt to silty clay	22
5.58	44.99	1.4418	3.205	1.66	5	clayey silt to silty clay	21
5.74	44.73	1.4613	3.267	-2.759	5	clayey silt to silty clay	21
5.91	42.93	1.4364	3.346	-3.371	5	clayey silt to silty clay	21
6.07	43.87	1.3705	3.124	-3.318	5	clayey silt to silty clay	20
6.23	42.96	1.4403	3.353	-3.742	5	clayey silt to silty clay	19
6.4	39.03	1.4488	3.712	-4.058	5	clayey silt to silty clay	17
6.56	36.13	1.434	3.97	-3.915	4	silty clay to cla y	20
6.73	25.92	1.173	4.526	-6.548	4	silty clay to cla y	17
6.89	15.76	0.9055	5.746	-1.357	3	clay	22
7.05	12.27	0.7882	6.426	0.821	3	clay	19
7.22	11.94	0.7354	6.158	4.728	3	clay	17
7.38	17.68	0.7244	4.097	7.371	3	clay	16
7.55	21.29	0.719	3.377	0.63	3	clay	16
7.71	21.51	0.7143	3.322	-1.854	3	clay	16
7.87	19.79	0.6507	3.288	-2.327	4	silty clay to cla y	10
8.04	12.83	0.5591	4.359	-6.007	3	clay	14
8.2	8.28	0.4941	5.964	1.483	3	clay	13
8.37	9.82	0.4625	4.708	14.973	3	clay	12
8.53	10.48	0.6542	6.24	3.713	3	clay	11
8.69	10.25	0.6659	6.498	6.896	3	clay	11
8.86	15.33	0.5647	3.684	11.903	3	clay	11
9.02	16.22	0.4839	2.983	-0.099	3	clay	10
9.19	11.62	0.4226	3.638	-5.489	3	clay	10
9.35	6.56	0.3786	5.771	-4.257	3	clay	9
9.51	5.04	0.3486	6.91	1.943	3	clay	8
9.68	5.02	0.3664	7.298	3.758	3	clay	8
9.84	5.46	0.3729	6.826	5.146	3	clay	7
10.01	9.84	0.3526	3.585	4.469	3	clay	7
10.17	11.76	0.3033	2.579	1.253	3	clay	7
10.33	9.55	0.266	2.785	-4.751	3	clay	7

10.5	5.09	0.2661	5.233	-4.571	3	clay	7
10.66	4.55	0.3363	7.394	1.904	3	clay	6
10.83	5.12	0.303	5.916	8.138	3	clay	5
10.99	5.93	0.2872	4.844	3.692	3	clay	4
11.15	4.16	0.2881	6.927	-1.083	3	clay	4
11.32	3.39	0.2636	7.785	4.291	3	clay	4
11.48	3.88	0.2659	6.859	11.302	3	clay	4
11.65	3.82	0.263	6.879	13.02	3	clay	4
11.81	3.53	0.2767	7.829	12.761	3	clay	4
11.98	3.56	0.275	7.718	14.565	3	clay	4
12.14	4.68	0.2616	5.59	16.804	3	clay	4
12.3	5.03	0.2896	5.755	11.621	3	clay	4
12.47	4.29	0.2703	6.302	16.011	3	clay	4
12.63	4.47	0.2786	6.229	21.785	3	clay	5
12.8	4.45	0.2704	6.07	16.861	3	clay	4
12.96	4.3	0.2646	6.153	16.947	3	clay	4
13.12	4.32	0.2633	6.089	18.631	3	clay	4
13.29	4.04	0.2413	5.981	14.312	3	clay	4
13.45	3.75	0.2185	5.832	14.199	3	clay	4
13.62	3.59	0.209	5.815	16.597	3	clay	4
13.78	3.35	0.2053	6.138	16.767	3	clay	4
13.94	3.89	0.2282	5.862	17.523	3	clay	4
14.11	3.83	0.2285	5.959	13.953	3	clay	4
14.27	3.68	0.2153	5.848	9.989	3	clay	4
14.44	3.33	0.1958	5.884	9.989	3	clay	4
14.6	3.38	0.1688	4.994	16.443	3	clay	4
14.76	3.52	0.1739	4.937	19.194	3	clay	4
14.93	3.65	0.363	9.941	25.707	3	clay	5
15.09	4.83	0.3799	7.872	29.98	3	clay	6
15.26	7.25	0.4032	5.561	0.677	3	clay	7
15.42	9.22	0.4153	4.507	11.195	3	clay	7
15.58	10.55	0.4258	4.036	8.964	3	clay	8
15.75	7.85	0.427	5.441	12.337	3	clay	9
15.91	8.98	0.4804	5.349	29.57	3	clay	9
16.08	9.65	0.5464	5.661	18.911	3	clay	9
16.24	9.01	0.5265	5.844	17.371	3	clay	9
16.4	9.45	0.5067	5.364	17.797	3	clay	9
16.57	10.83	0.5212	4.811	20.608	3	clay	9
16.73	9.86	0.5551	5.627	11.752	3	clay	9
16.9	8.79	0.5109	5.816	4.859	3	clay	8
17.06	7.02	0.42	5.981	-0.515	3	clay	8
17.22	6.26	0.3271	5.226	4.006	3	clay	8
17.39	6.54	0.3471	5.304	9.989	3	clay	9
17.55	6.99	0.4233	6.055	9.317	3	clay	12
17.72	9.91	0.5661	5.715	19.994	3	clay	16
17.88	18.38	0.8588	4.672	39.708	3	clay	20
18.04	29.08	1.2391	4.261	52.814	3	clay	24
18.21	35.2	1.6559	4.704	65.483	3	clay	29
18.37	37.13	1.839	4.952	72.821	3	clay	32
18.54	36.13	2.0274	5.612	117.779	3	clay	34
18.7	39.1	2.0228	5.174	67	3	clay	33
18.86	34.24	1.8591	5.43	46.154	3	clay	32
19.03	28.47	1.4737	5.177	13.901	3	clay	31
19.19	24.27	1.3519	5.571	28.296	3	clay	30
19.36	28.15	1.5005	5.33	56.187	3	clay	29
19.52	30.8	1.7594	5.712	48.75	3	clay	27
19.69	31.85	1.7586	5.521	27.773	3	clay	26
19.85	28.99	1.6024	5.528	10.264	3	clay	25
20.01	23.04	1.3528	5.872	17.345	3	clay	24
20.18	20.24	0.9529	4.707	18.331	3	clay	22
20.34	18.21	0.878	4.822	11.064	3	clay	20
20.51	18.58	0.9254	4.981	44.255	3	clay	18
20.67	17.4	0.8931	5.131	29.167	3	clay	16
20.83	15.92	0.7951	4.995	21.184	3	clay	15
21	14.3	0.6362	4.45	22.559	3	clay	14
21.16	13.37	0.5403	4.042	13.362	3	clay	14
21.33	11.85	0.5806	4.899	33.343	3	clay	13
21.49	11.65	0.5861	5.032	32.302	3	clay	12
21.65	13.51	0.6317	4.676	28.406	3	clay	12
21.82	10.78	0.5634	5.227	35.696	3	clay	11
21.98	10.87	0.541	4.978	29.766	3	clay	11

22.15	10.04	0.4741	4.724	23.362	3	clay	10	
22.31	8.93	0.4368	4.89	21.963	3	clay	9	
22.47	8.85	0.4563	5.156	34.896	3	clay	9	
22.64	8.65	0.445	5.145	29.4	3	clay	9	
22.8	8.15	0.3851	4.727	23.312	3	clay	8	
22.97	8.03	0.3913	4.873	27.679	3	clay	9	
23.13	8.37	0.4046	4.836	33.437	3	clay	10	
23.29	7.68	0.4522	5.891	27.724	3	clay	11	
23.46	10.06	0.5135	5.104	41.719	3	clay	11	
23.62	16.39	0.4471	2.728	13.679	3	clay	12	
23.79	16.87	0.5458	3.235	-5.204	3	clay	14	
23.95	10.34	0.6041	5.844	1.357	4	silty clay to cla	y	12
24.11	18.04	0.863	4.783	49.82	5	clayey silt to silty	clay	10
24.28	23.53	0.7863	3.342	-3.69	5	clayey silt to silty	clay	12
24.44	31.26	0.8262	2.643	-5.716	5	clayey silt to silty	clay	12
24.61	34.77	0.759	2.183	-8.049	5	clayey silt to silty	clay	12
24.77	34.4	0.7929	2.305	-11.197	5	clayey silt to silty	clay	12
24.93	25.65	0.7626	2.973	14.332	5	clayey silt to silty	clay	11
25.1	13.55	0.6502	4.798	-13.66	5	clayey silt to silty	clay	10
25.26	10.72	0.5394	5.032	11.276	4	silty clay to cla	y	11
25.43	9.9	0.5553	5.609	25.744	3	clay	14	
25.59	10.95	0.5915	5.401	34.486	3	clay	13	
25.75	13.13	0.665	5.066	27.193	3	clay	15	
25.92	17.23	0.7506	4.357	20.585	4	silty clay to cla	y	13
26.08	19.25	0.7999	4.155	9.751	5	clayey silt to silty	clay	11
26.25	30.11	0.8402	2.79	12.322	5	clayey silt to silty	clay	13
26.41	37.16	0.6923	1.863	-5.957	6	sandy silt to clayey	silt	12
26.57	39.04	0.9083	2.326	-9.463	6	sandy silt to clayey	silt	13
26.74	38.45	1.0325	2.685	-9.484	6	sandy silt to clayey	silt	15
26.9	40	0.9722	2.43	-8.833	6	sandy silt to clayey	silt	15
27.07	41.64	0.9567	2.298	-10	6	sandy silt to clayey	silt	15
27.23	43.65	0.8478	1.942	-9.586	6	sandy silt to clayey	silt	15
27.4	40.38	1.1702	2.898	-11.697	6	sandy silt to clayey	silt	14
27.56	33.62	1.3418	3.991	-13.344	5	clayey silt to silty	clay	18
27.72	31.08	1.2494	4.02	-7.934	5	clayey silt to silty	clay	17
27.89	31.82	1.1065	3.478	-9.338	5	clayey silt to silty	clay	17
28.05	34.73	1.1307	3.256	-7.965	6	sandy silt to clayey	silt	14
28.22	39.34	0.7967	2.025	8.2	6	sandy silt to clayey	silt	14
28.38	39.28	0.6042	1.538	-9.124	6	sandy silt to clayey	silt	14
28.54	39.45	0.4593	1.164	-9.811	6	sandy silt to clayey	silt	13
28.71	35.37	0.6415	1.814	-11.718	6	sandy silt to clayey	silt	13
28.87	29.61	0.882	2.979	-12.073	6	sandy silt to clayey	silt	12
29.04	24.66	0.5433	2.203	-11.5	6	sandy silt to clayey	silt	11
29.2	28.63	0.6233	2.177	-9.403	5	clayey silt to silty	clay	11
29.36	24.66	0.498	2.019	-11.961	5	clayey silt to silty	clay	9
29.53	14.66	0.4919	3.357	-13.718	5	clayey silt to silty	clay	8
29.69	8.14	0.4454	5.474	-9.526	4	silty clay to cla	y	9
29.86	7.84	0.3627	4.629	14.27	3	clay	11	
30.02	7.96	0.3656	4.59	22.627	3	clay	8	
30.18	7.32	0.3567	4.875	19.978	3	clay	7	
30.35	6.99	0.3445	4.931	22.044	3	clay	7	
30.51	6.87	0.3326	4.843	35.286	3	clay	7	
30.68	7.27	0.3584	4.927	31.301	3	clay	8	
30.84	7.62	0.3868	5.078	29.962	3	clay	8	
31	7.85	0.4138	5.27	30.697	3	clay	8	
31.17	8.46	0.4397	5.197	30.04	3	clay	8	
31.33	8.53	0.4461	5.233	27.784	3	clay	8	
31.5	7.71	0.4492	5.825	44.927	3	clay	8	
31.66	8.34	0.4512	5.408	34.494	3	clay	8	
31.82	8.32	0.4328	5.199	30.059	3	clay	8	
31.99	8.2	0.4061	4.955	32.268	3	clay	8	
32.15	8.01	0.4002	4.995	35.228	3	clay	9	
32.32	7.84	0.445	5.675	40.275	3	clay	8	
32.48	9.06	0.4612	5.089	36.797	3	clay	8	
32.64	8.99	0.4492	4.996	27.159	3	clay	9	
32.81	8.38	0.3844	4.585	29.068	3	clay	9	
32.97	8.18	0.4312	5.269	34.075	3	clay	9	
33.14	9.11	0.5154	5.658	41.996	3	clay	9	
33.3	9.81	0.5516	5.625	34.093	3	clay	9	
33.46	9.14	0.5527	6.048	31.74	3	clay	9	
33.63	8.75	0.512	5.851	31.711	3	clay	9	

33.79	8.14	0.4882	6	24.625	3	clay	9
33.96	7.63	0.4606	6.033	32.454	3	clay	8
34.12	7.72	0.4811	6.229	39.368	3	clay	8
34.28	8.02	0.4796	5.981	39.274	3	clay	8
34.45	7.62	0.5366	7.045	33.735	3	clay	8
34.61	7.44	0.481	6.466	35.176	3	clay	8
34.78	7.63	0.4633	6.068	51.509	3	clay	8
34.94	8.33	0.4822	5.788	43.35	3	clay	8
35.1	8.32	0.4937	5.934	35.278	3	clay	8
35.27	7.84	0.4616	5.887	34.496	3	clay	8
35.43	7.73	0.4333	5.606	39.394	3	clay	8
35.6	8.04	0.4192	5.213	46.585	3	clay	8
35.76	8.57	0.4358	5.087	50.055	3	clay	8
35.93	8.59	0.4419	5.144	43.86	3	clay	8
36.09	7.79	0.4344	5.578	48.41	3	clay	9
36.25	8.02	0.4623	5.766	50.199	3	clay	9
36.42	8.77	0.5473	6.242	39.755	3	clay	9
36.58	9.33	0.5601	6.004	43.787	3	clay	9
36.75	8.9	0.5615	6.311	36.988	3	clay	9
36.91	8.75	0.5662	6.471	37.932	3	clay	9
37.07	9.23	0.6403	6.935	39.25	3	clay	10
37.24	10.07	0.7061	7.015	35.066	3	clay	10
37.4	10.45	0.7183	6.875	28.963	3	clay	10
37.57	10.22	0.6698	6.551	25.313	3	clay	10
37.73	10.11	0.6966	6.889	26.343	3	clay	10
37.89	11.15	0.7115	6.381	28.155	3	clay	10
38.06	10.29	0.6711	6.522	26.819	3	clay	10
38.22	10.33	0.6017	5.824	34.065	3	clay	10
38.39	10	0.6176	6.175	38.398	3	clay	10
38.55	10.32	0.6281	6.083	36.029	3	clay	10
38.71	9.91	0.6143	6.201	31.256	3	clay	10
38.88	10.37	0.5789	5.585	39.234	3	clay	10
39.04	10.83	0.6048	5.583	34.543	3	clay	11
39.21	10.83	0.6121	5.653	35.908	3	clay	11
39.37	10.58	0.6013	5.684	37.663	3	clay	11
39.53	10.53	0.6072	5.765	35.639	3	clay	11
39.7	10.53	0.6146	5.839	38.923	3	clay	11
39.86	10.56	0.6446	6.107	35.553	3	clay	11
40.03	10.68	0.6343	5.94	36.897	3	clay	11
40.19	10.93	0.6806	6.225	36.554	3	clay	11
40.35	11.32	0.7077	6.254	35.631	3	clay	11
40.52	11.45	0.7242	6.324	28.558	3	clay	12
40.68	11.54	0.7887	6.834	36.264	3	clay	12
40.85	12.27	0.8141	6.634	37.757	3	clay	12
41.01	12.94	0.8462	6.54	39.917	3	clay	12
41.17	12.76	0.8257	6.473	29.389	3	clay	13
41.34	12.54	0.8127	6.482	27.815	3	clay	13
41.5	12.87	0.8197	6.37	34.894	3	clay	13
41.67	13.4	0.8426	6.286	30.987	3	clay	13
41.83	13.01	0.8104	6.229	29.815	3	clay	13
41.99	13.06	0.8234	6.307	28.691	3	clay	13
42.16	14.14	0.8966	6.342	32.551	3	clay	13
42.32	13.83	0.9074	6.561	29.387	3	clay	13
42.49	13.3	0.9597	7.213	15.988	3	clay	14
42.65	14.21	0.9049	6.367	25.388	3	clay	14
42.81	14.3	0.8798	6.154	13.462	3	clay	14
42.98	14.4	0.8344	5.796	20.885	3	clay	14
43.14	14.24	0.8809	6.187	30.333	3	clay	14
43.31	15.04	0.8345	5.549	20.313	3	clay	14
43.47	14.45	0.7627	5.278	11.966	3	clay	14
43.64	13.81	0.7297	5.283	45.79	3	clay	14
43.8	14.08	0.7676	5.453	39.648	3	clay	14
43.96	13.62	0.5973	4.387	38.322	3	clay	14
44.13	13.73	0.8777	6.393	40.882	3	clay	14
44.29	11.95	0.9367	7.84	52.003	3	clay	14
44.46	14.58	0.9309	6.383	36.763	3	clay	13
44.62	14.4	0.8754	6.081	26.345	3	clay	13
44.78	13.6	0.7781	5.721	29.904	3	clay	13
44.95	13.05	0.7588	5.815	34.941	3	clay	13
45.11	13.19	0.7526	5.705	42.72	3	clay	13
45.28	13.17	0.7652	5.811	44.276	3	clay	13

45.44	12.91	0.7533	5.836	49.297	3	clay	13	
45.6	12.82	0.7479	5.834	50.607	3	clay	13	
45.77	13.13	0.7724	5.884	47.474	3	clay	13	
45.93	13.25	0.8353	6.303	53.925	3	clay	14	
46.1	13.74	0.8613	6.268	49.328	3	clay	14	
46.26	14.2	0.8569	6.034	35.812	3	clay	14	
46.42	14.08	0.8487	6.029	41.74	3	clay	14	
46.59	14.61	0.8677	5.938	33.38	3	clay	14	
46.75	14.6	0.8489	5.816	28.602	3	clay	14	
46.92	14.18	0.8146	5.744	36.002	3	clay	14	
47.08	13.88	0.7706	5.551	42.678	3	clay	14	
47.24	13.49	0.7624	5.652	51.109	3	clay	14	
47.41	14.01	0.7921	5.655	53.889	3	clay	14	
47.57	14.56	0.833	5.72	46.29	3	clay	14	
47.74	14.77	0.8189	5.543	42.247	3	clay	14	
47.9	14	0.7683	5.488	52.437	3	clay	14	
48.06	13.77	0.7497	5.444	55.641	3	clay	14	
48.23	14.57	0.7856	5.391	57.165	3	clay	15	
48.39	14.62	0.8034	5.495	43.988	3	clay	14	
48.56	14.76	0.8104	5.492	40.456	3	clay	15	
48.72	14.77	0.7858	5.319	47.43	3	clay	15	
48.88	14.4	0.7611	5.287	48.656	3	clay	15	
49.05	14.17	0.7218	5.093	52.479	3	clay	15	
49.21	14.3	0.7097	4.965	54.804	3	clay	15	
49.38	14.53	0.674	4.64	58.475	3	clay	14	
49.54	14.27	0.655	4.59	58.331	3	clay	15	
49.7	14.11	0.6302	4.468	69.283	3	clay	14	
49.87	14.28	0.616	4.314	69.429	4	silty clay to cla	y	10
50.03	14.33	0.5872	4.099	59.605	4	silty clay to cla	y	10
50.2	13.97	0.5332	3.816	52.589	4	silty clay to cla	y	10
50.36	13.81	0.5031	3.644	63.394	4	silty clay to cla	y	10
50.52	13.53	0.5342	3.947	78.372	3	clay	14	
50.69	14.07	0.5187	3.688	73.825	3	clay	15	
50.85	14.68	0.7416	5.052	71.461	3	clay	15	
51.02	13.86	0.816	5.888	76.667	3	clay	15	
51.18	15.76	0.8453	5.362	64.55	3	clay	15	
51.35	15.51	0.7666	4.944	54.874	3	clay	16	
51.51	15.24	0.7342	4.818	63.577	3	clay	16	
51.67	16.53	0.7955	4.812	74.677	3	clay	17	
51.84	17.15	0.8075	4.71	68.922	3	clay	16	
52	17.27	0.7443	4.31	65.781	4	silty clay to cla	y	11
52.17	16.67	0.628	3.766	68.909	4	silty clay to cla	y	11
52.33	15.43	0.4954	3.209	72.481	5	clayey silt to silty	clay	8
52.49	15.56	0.3935	2.528	80.26	5	clayey silt to silty	clay	8
52.66	16.21	0.3361	2.073	93.463	5	clayey silt to silty	clay	8
52.82	16.07	0.3674	2.287	92.268	5	clayey silt to silty	clay	9
52.99	16.94	0.4789	2.826	95.422	5	clayey silt to silty	clay	9
53.15	18.43	0.6847	3.716	105.965	5	clayey silt to silty	clay	9
53.31	20.39	0.8067	3.956	93.813	5	clayey silt to silty	clay	9
53.48	19.69	0.7987	4.055	73.976	5	clayey silt to silty	clay	9
53.64	18.1	0.6449	3.563	69.683	5	clayey silt to silty	clay	9
53.81	16.63	0.5513	3.316	74.978	5	clayey silt to silty	clay	9
53.97	16.06	0.5125	3.191	88.685	4	silty clay to cla	y	12
54.13	16.29	0.5742	3.525	91.347	5	clayey silt to silty	clay	11
54.3	18.07	0.6141	3.399	88.34	6	sandy silt to clayey	silt	14
54.46	20.53	1.2548	6.113	91.572	6	sandy silt to clayey	silt	19
54.63	53.14	1.5138	2.849	135.103	7	silty sand to sandy	silt	22
54.79	102.02	1.6856	1.652	25.072	7	silty sand to sandy	silt	28
54.95	122.38	1.7038	1.392	25.553	7	silty sand to sandy	silt	35
55.12	140.01	1.7856	1.275	22.355	8	sand to silty san	d	35
55.28	147.05	1.9614	1.334	20.185	8	sand to silty san	d	45
55.45	174.62	2.5842	1.48	28.908	9	sand	47	
55.61	272.17	2.8915	1.062	35.911	9	sand	58	
55.77	359.15	3.463	0.964	36.287	9	sand	69	
55.94	485.88	4.034	0.83	42.417	10	gravelly sand to s	and	65
56.1	547.4	3.5003	0.639	46.25	10	gravelly sand to s	and	70
56.27	540.53	3.0145	0.558	30.14	10	gravelly sand to s	and	71
56.43	464.32	1.8604	0.401	-4.249	10	gravelly sand to s	and	70
56.59	380.01	1.3861	0.365	10.635	10	gravelly sand to s	and	66
56.76	344.13	1.6952	0.493	34.786	10	gravelly sand to s	and	61
56.92	317.51	1.1705	0.369	20.015	10	gravelly sand to s	and	54

57.09	317.39	1.0055	0.317	22.813	10	gravelly sand to s		and	51
57.25	302.01	1.7195	0.569	25.31	10	gravelly sand to s		and	49
57.41	233.82	1.8164	0.777	58.556	9	sand	57		
57.58	333.23	2.2397	0.672	23.244	9	sand	56		
57.74	309.8	1.8433	0.595	11.736	9	sand	54		
57.91	256.74	2.4654	0.96	4.83	9	sand	53		
58.07	273.76	2.7968	1.022	9.05	9	sand	55		
58.23	259.69	3.2819	1.264	22.93	9	sand	54		
58.4	272.09	2.2869	0.84	22.554	9	sand	56		
58.56	287.32	1.2368	0.43	31.356	9	sand	58		
58.73	301.84	2.9	0.961	29.734	9	sand	61		
58.89	378.7	3.2324	0.854	43.667	9	sand	63		
59.06	351.05	3.8725	1.103	43.322	9	sand	64		
59.22	378.77	3.1165	0.823	57.128	9	sand	64		
59.38	332.98	2.3977	0.72	18.668	10	gravelly sand to s		and	55
59.55	308.5	1.0475	0.34	21.34	10	gravelly sand to s		and	54
59.71	301.36	1.3075	0.434	28.186	10	gravelly sand to s		and	56
59.88	348.41	1.3874	0.398	22.807	10	gravelly sand to s		and	56
60.04	362.04	1.4253	0.394	30.744	10	gravelly sand to s		and	58
60.2	403	1.6607	0.412	38.557	10	gravelly sand to s		and	61
60.37	414.66	2.0055	0.484	35.921	10	gravelly sand to s		and	65
60.53	414.65	2.6992	0.651	21.487	10	gravelly sand to s		and	68
60.7	437	2.5447	0.582	33.369	10	gravelly sand to s		and	70
60.86	458.77	3.0236	0.659	25.25	10	gravelly sand to s		and	70
61.02	479.46	3.8787	0.809	29.808	10	gravelly sand to s		and	69
61.19	452.24	3.1138	0.689	52.301	10	gravelly sand to s		and	66
61.35	395.74	1.7934	0.453	46.297	10	gravelly sand to s		and	64
61.52	368.16	2.1045	0.572	23.9	10	gravelly sand to s		and	61
61.68	320.75	1.9839	0.619	22.428	10	gravelly sand to s		and	59
61.84	309.42	2.1937	0.709	24.371	10	gravelly sand to s		and	59
62.01	350.56	2.4293	0.693	22.896	9	sand	74		
62.17	374.9	3.6825	0.982	39.386	10	gravelly sand to s		and	64
62.34	462.99	4.3346	0.936	87.3	10	gravelly sand to s		and	66
62.5	501.59	4.7925	0.955	28.513	10	gravelly sand to s		and	68
62.66	463.3	2.2919	0.495	27.731	10	gravelly sand to s		and	67
62.83	441.94	3.9229	0.888	21.199	10	gravelly sand to s		and	64
62.99	388.58	2.6526	0.683	4.435	10	gravelly sand to s		and	58
63.16	297.13	1.8619	0.627	6.835	9	sand	63		
63.32	248.77	1.0794	0.434	16.563	9	sand	56		
63.48	218.6	2.412	1.103	15.284	9	sand	54		
63.65	232.03	3.0442	1.312	15.943	9	sand	52		
63.81	223.17	3.4813	1.56	31.473	9	sand	53		
63.98	355.18	3.0216	0.851	29.055	9	sand	56		
64.14	316.94	2.4505	0.773	19.181	9	sand	61		
64.3	326.98	2.0753	0.635	20.169	9	sand	64		
64.47	358.55	2.3913	0.667	9.508	9	sand	66		
64.63	397.96	2.7721	0.697	4.349	9	sand	63		
64.8	360.74	2.2051	0.611	13.582	9	sand	61		
64.96	290.75	3.006	1.034	-3.606	9	sand	56		
65.12	266.93	5.7333	2.148	14.641	9	sand	49		
65.29	209.67	3.8475	1.835	8.098	8	sand to silty san		d	53
65.45	146.46	1.9954	1.362	12.238	8	sand to silty san		d	46
65.62	123.3	1.6733	1.357	15.656	8	sand to silty san		d	44
65.78	137.94	2.0395	1.479	12.073	8	sand to silty san		d	46
65.94	181.55	3.3128	1.825	11.278	8	sand to silty san		d	53
66.11	233.76	3.8586	1.651	19.923	9	sand	50		
66.27	321.61	5.4313	1.689	33.641	9	sand	58		
66.44	414.1	4.3762	1.057	17.925	9	sand	66		
66.6	416.12	3.7328	0.897	37.069	9	sand	72		
66.77	426.62	3.404	0.798	21.853	9	sand	77		
66.93	416.8	3.7038	0.889	83.673	9	sand	79		
67.09	400.25	4.2192	1.054	26.625	9	sand	78		
67.26	405.78	3.7049	0.913	23.174	9	sand	78		
67.42	388	3.2956	0.849	4.396	9	sand	79		
67.59	385.46	3.4328	0.891	2.173	10	gravelly sand to s		and	67
67.75	432.5	3.2507	0.752	23.788	10	gravelly sand to s		and	68
67.91	441.28	3.4188	0.775	7.222	10	gravelly sand to s		and	69
68.08	469.86	4.2047	0.895	11.778	10	gravelly sand to s		and	70
68.24	452.99	3.6662	0.809	10.203	9	sand	86		
68.41	435.4	4.9568	1.138	26.565	9	sand	87		
68.57	440.17	4.6944	1.066	9.173	9	sand	87		

68.73	469.22	5.0075	1.067	14.372	9	sand	88	
68.9	471.31	4.041	0.857	2.78	9	sand	88	
69.06	455.99	3.509	0.77	13.543	10	gravelly sand to s	and	76
69.23	477.83	3.7352	0.782	10.928	10	gravelly sand to s	and	78
69.39	470.78	4.3276	0.919	11.529	10	gravelly sand to s	and	77
69.55	529.76	3.8025	0.718	14.942	10	gravelly sand to s	and	75
69.72	533.99	4.1255	0.773	22.535	10	gravelly sand to s	and	73
69.88	448.8	3.935	0.877	0.076	9	sand	87	
70.05	383.26	5.1404	1.341	9.952	9	sand	86	
70.21	365.29	4.0243	1.102	13.65	9	sand	80	
70.37	445.05	4.2805	0.962	59.453	9	sand	70	
70.54	450.81	4.6916	1.041	1.87	9	sand	64	
70.7	303.49	5.9939	1.975	-13.867	9	sand	64	
70.87	148.14	4.6764	3.157	-12.251	9	sand	64	
71.03	252.29	4.3964	1.743	61.237	9	sand	62	
71.19	357.53	3.0691	0.858	9.733	9	sand	62	
71.36	373.4	3.2089	0.859	7.348	9	sand	68	
71.52	373.76	3.553	0.951	8.423	9	sand	79	
71.69	450.54	5.3636	1.19	21.806	9	sand	86	
71.85	522.14	5.4423	1.042	21.568	9	sand	91	
72.01	541.65	5.5412	1.023	8.266	10	gravelly sand to s	and	81
72.18	512.71	5.0569	0.986	48.928	10	gravelly sand to s	and	87
72.34	537.3	4.3883	0.817	16.864	10	gravelly sand to s	and	92
72.51	622.97	4.1766	0.67	71.351	10	gravelly sand to s	and	94
72.67	625.36	4.2696	0.683	28.265	10	gravelly sand to s	and	96
72.83	649.58	3.859	0.594	-1.268	10	gravelly sand to s	and	98
73	643.45	5.3264	0.828	5.29	10	gravelly sand to s	and	100
73.16	619.64	3.6479	0.589	1.59	10	gravelly sand to s	and	97
73.33	610.39	5.087	0.833	7.824	10	gravelly sand to s	and	95
73.49	593.55	4.8603	0.819	2.785	10	gravelly sand to s	and	90
73.65	530.87	6.2458	1.177	-2.547	10	gravelly sand to s	and	85
73.82	510.56	5.6846	1.113	63.797	10	gravelly sand to s	and	81
73.98	456.66	3.4579	0.757	3.721	10	gravelly sand to s	and	77
74.15	422.3	2.725	0.645	5.627	9	sand	88	
74.31	414.77	2.768	0.667	7.445	9	sand	84	
74.48	429.59	4.565	1.063	9.082	10	gravelly sand to s	and	67
74.64	440.71	4.6394	1.053	6.205	9	sand	78	
74.8	394.35	4.1005	1.04	14.071	9	sand	76	
74.97	375.65	3.3196	0.884	4.851	9	sand	76	
75.13	360.52	3.4602	0.96	3.365	9	sand	77	
75.3	370.44	4.4835	1.21	10.972	9	sand	78	
75.46	408.12	4.252	1.042	22.815	9	sand	80	
75.62	453.18	4.6396	1.024	16.73	9	sand	83	
75.79	476.52	4.3441	0.912	43.698	9	sand	86	
75.95	488.31	4.0433	0.828	24.79	9	sand	89	
76.12	469.74	4.6606	0.992	11.179	10	gravelly sand to s	and	77
76.28	482.22	3.8349	0.795	35.738	10	gravelly sand to s	and	78
76.44	478.74	5.2592	1.099	39.794	10	gravelly sand to s	and	79
76.61	533.03	4.8808	0.916	-9.458	10	gravelly sand to s	and	81
76.77	503.21	4.4786	0.89	6.119	10	gravelly sand to s	and	82
76.94	520.48	3.2132	0.617	-2.212	10	gravelly sand to s	and	82
77.1	555.22	3.7077	0.668	0.727	10	gravelly sand to s	and	82
77.26	544.2	3.6203	0.665	-3.334	10	gravelly sand to s	and	80
77.43	480.05	3.974	0.828	1.742	10	gravelly sand to s	and	80
77.59	459.07	3.6431	0.794	3.559	10	gravelly sand to s	and	79
77.76	465.36	5.3557	1.151	6.618	10	gravelly sand to s	and	79
77.92	471.51	3.5887	0.761	3.449	10	gravelly sand to s	and	77
78.08	500.77	4.1975	0.838	12.991	10	gravelly sand to s	and	75
78.25	524.74	4.6502	0.886	4.581	10	gravelly sand to s	and	71
78.41	479.95	2.8288	0.589	5.797	10	gravelly sand to s	and	65
78.58	401.16	2.6188	0.653	2.827	9	sand	67	
78.74	283.13	2.5527	0.902	-15.101	9	sand	55	
78.9	168.95	3.4329	2.032	-11.749	9	sand	41	
79.07	93.97	2.567	2.732	-10.653	8	sand to silty san	d	37
79.23	49.06	2.1341	4.35	12.162	7	silty sand to sandy	silt	34
79.4	38.56	2.3112	5.994	65.606	6	sandy silt to clayey	silt	28
79.56	59.26	2.6156	4.414	69.813	5	clayey silt to silty	clay	27
79.72	52.78	2.4933	4.724	94.287	4	silty clay to cla	y	32
79.89	47.68	2.2875	4.798	57.824	4	silty clay to cla	y	31
80.05	45.86	1.9211	4.189	54.33	4	silty clay to cla	y	31
80.22	52.84	1.6531	3.128	52.945	4	silty clay to cla	y	28

80.38	40.08	1.7014	4.245	19.955	4	silty clay to cla		y	27	
80.54	30.4	1.8766	6.174	72.303	3	clay	40			
80.71	31.21	2.2563	7.229	116.189	3	clay	41			
80.87	40.37	2.4001	5.945	147.595	3	clay	41			
81.04	44.47	3.3419	7.514	57.39	3	clay	40			
81.2	53.29	3.4822	6.534	99.271	3	clay	39			
81.36	54.14	3.0841	5.697	7.636	3	clay	37			
81.53	29.25	2.2891	7.827	8.101	3	clay	33			
81.69	23.95	1.7267	7.21	25.067	3	clay	30			
81.86	18.01	1.0489	5.823	79.018	3	clay	25			
82.02	16.1	0.8921	5.54	117.74	3	clay	20			
82.19	15.63	0.8823	5.643	146.413	3	clay	19			
82.35	16.71	0.8498	5.084	154.511	3	clay	18			
82.51	17.05	0.8415	4.937	147.856	3	clay	18			
82.68	16.5	0.8527	5.167	147.791	3	clay	18			
82.84	16.43	0.9478	5.768	156.645	3	clay	18			
83.01	14.92	0.9346	6.266	153.891	3	clay	18			
83.17	17.28	0.9148	5.294	149.765	3	clay	18			
83.33	16.63	0.8852	5.322	134.295	3	clay	18			
83.5	16.28	0.8527	5.237	147.218	3	clay	18			
83.66	17.33	0.8806	5.082	156.24	3	clay	19			
83.83	18.2	0.8461	4.649	162.513	3	clay	19			
83.99	17.99	0.8629	4.797	161.498	3	clay	19			
84.15	17.69	0.859	4.857	152.908	3	clay	19			
84.32	16.51	0.8576	5.193	154.391	3	clay	19			
84.48	16.59	0.8483	5.113	171.919	3	clay	19			
84.65	17.53	0.8805	5.021	175.993	3	clay	19			
84.81	18.29	0.9384	5.131	165.831	3	clay	19			
84.97	18.09	0.9619	5.317	171.869	3	clay	20			
85.14	18.61	0.998	5.363	175.564	3	clay	21			
85.3	19.66	1.0075	5.124	169.958	3	clay	22			
85.47	20.01	1.0593	5.293	163.901	3	clay	25			
85.63	22.05	1.1936	5.414	170.737	3	clay	30			
85.79	26.48	1.7845	6.739	168.467	3	clay	39			
85.96	38.89	2.983	7.67	162.51	3	clay	54			
86.12	57.89	4.6144	7.971	146.962	11	very stiff fine grain		ed (*	)	67
86.29	86.72	5.5962	6.453	87.605	11	very stiff fine grain		ed (*	)	77
86.45	126.67	4.9868	3.937	-5.261	11	very stiff fine grain		ed (*	)	83
86.61	120.78	3.7866	3.135	-11.644	11	very stiff fine grain		ed (*	)	82
86.78	98.81	3.2078	3.247	-7.317	5	clayey silt to silty		clay	39	
86.94	69.76	2.6672	3.823	-14.432	5	clayey silt to silty		clay	34	
87.11	35.72	1.8023	5.046	-1.459	5	clayey silt to silty		clay	27	
87.27	24.65	1.0832	4.394	49.49	5	clayey silt to silty		clay	21	
87.43	20.88	0.8087	3.873	128.778	4	silty clay to cla		y	21	
87.6	20.21	0.7787	3.853	172.463	4	silty clay to cla		y	17	
87.76	23.35	0.8577	3.673	137.653	4	silty clay to cla		y	16	
87.93	23.87	0.9638	4.038	158.776	4	silty clay to cla		y	16	
88.09	23.23	1.0948	4.712	146.125	5	clayey silt to silty		clay	12	
88.25	23.72	0.9739	4.105	170.384	5	clayey silt to silty		clay	12	
88.42	22.42	0.9172	4.091	142.715	5	clayey silt to silty		clay	12	
88.58	22.64	0.8113	3.583	161.391	5	clayey silt to silty		clay	11	
88.75	22.43	0.7828	3.49	118.548	5	clayey silt to silty		clay	11	
88.91	20	0.7199	3.601	151.397	5	clayey silt to silty		clay	11	
89.07	18.15	0.7058	3.888	168.682	4	silty clay to cla		y	15	
89.24	17.71	0.7036	3.972	179.154	4	silty clay to cla		y	16	
89.4	20.25	0.9727	4.802	189.972	4	silty clay to cla		y	19	
89.57	26.14	1.5496	5.927	170.627	4	silty clay to cla		y	21	
89.73	36.98	2.0657	5.586	109.919	4	silty clay to cla		y	22	
89.9	49.68	1.7216	3.465	61.508	3	clay	37			
90.06	43.7	1.7359	3.973	69.96	3	clay	42			
90.22	33.98	2.2561	6.639	144.208	3	clay	49			
90.39	43.27	3.3538	7.751	195.375	11	very stiff fine grain		ed (*	)	57
90.55	58.72	4.2407	7.222	41.891	11	very stiff fine grain		ed (*	)	63
90.72	82.02	4.6848	5.712	3.734	11	very stiff fine grain		ed (*	)	71
90.88	100.41	4.5441	4.526	-6.773	11	very stiff fine grain		ed (*	)	100
91.04	95.5	4.3667	4.573	-9.725	6	sandy silt to clayey		silt	56	
91.21	99.66	5.0877	5.105	3.996	7	silty sand to sandy		silt	53	
91.37	246.42	4.4443	1.804	5.727	7	silty sand to sandy		silt	53	
91.54	334.61	4.3137	1.289	-2.712	7	silty sand to sandy		silt	51	
91.7	206.36	4.6614	2.259	-8.927	7	silty sand to sandy		silt	49	
91.86	84.77	4.8672	5.742	-5.685	7	silty sand to sandy		silt	46	

92.03	60.83	3.1216	5.131	44.407	6	sandy silt to clayey	silt	43
92.19	42.68	2.1414	5.017	18.446	5	clayey silt to silty	clay	32
92.36	25.81	1.4625	5.666	94.062	3	clay	40	
92.52	22.08	1.1685	5.293	143.385	3	clay	32	
92.68	20.69	1.1295	5.459	171.189	3	clay	27	
92.85	22.67	1.0653	4.698	185.639	3	clay	26	
93.01	24.72	1.1486	4.646	196.057	4	silty clay to cla	y	17
93.18	26.8	1.3711	5.116	152.715	4	silty clay to cla	y	18
93.34	30.15	1.2992	4.309	103.52	4	silty clay to cla	y	18
93.5	29.12	1.2529	4.302	121.615	4	silty clay to cla	y	18
93.67	26.77	1.1448	4.277	141.146	4	silty clay to cla	y	18
93.83	24.92	1.054	4.229	142.234	4	silty clay to cla	y	18
94	24.27	1.067	4.397	159.464	4	silty clay to cla	y	18
94.16	25.16	1.025	4.073	141.042	4	silty clay to cla	y	18
94.32	24.6	1.1646	4.734	150.942	4	silty clay to cla	y	18
94.49	25.59	1.1753	4.593	143.725	4	silty clay to cla	y	18
94.65	28.4	1.1601	4.085	125.37	4	silty clay to cla	y	18
94.82	27.09	1.2028	4.44	149.245	4	silty clay to cla	y	19
94.98	27.12	1.1823	4.359	159.357	4	silty clay to cla	y	19
95.14	27.74	1.2704	4.579	158.847	4	silty clay to cla	y	19
95.31	28.59	1.3219	4.624	158.371	4	silty clay to cla	y	19
95.47	31.92	1.2053	3.776	114.994	4	silty clay to cla	y	19
95.64	27.41	1.2059	4.399	128.812	4	silty clay to cla	y	19
95.8	26.37	1.1287	4.28	160.565	4	silty clay to cla	y	19
95.96	26.33	1.1765	4.468	153.191	4	silty clay to cla	y	19
96.13	27.16	1.1771	4.334	155.902	4	silty clay to cla	y	19
96.29	29.08	1.1777	4.05	163.833	4	silty clay to cla	y	19
96.46	28.01	1.2484	4.457	147.796	4	silty clay to cla	y	19
96.62	28.96	1.3014	4.494	154.909	4	silty clay to cla	y	20
96.78	28.73	1.3384	4.659	145.44	4	silty clay to cla	y	20
96.95	29.97	1.2729	4.247	147.127	4	silty clay to cla	y	20
97.11	29.64	1.1491	3.877	139.771	5	clayey silt to silty	clay	14
97.28	28.28	1.0238	3.62	154.778	5	clayey silt to silty	clay	14
97.44	25.65	1.0246	3.995	151.588	5	clayey silt to silty	clay	14
97.6	24.86	0.9916	3.988	165.24	5	clayey silt to silty	clay	14
97.77	25.1	0.9223	3.675	168.088	5	clayey silt to silty	clay	13
97.93	25.26	0.9005	3.565	164.605	5	clayey silt to silty	clay	13
98.1	24.24	0.8832	3.644	174.27	5	clayey silt to silty	clay	13
98.26	23.94	0.848	3.543	175.504	5	clayey silt to silty	clay	14
98.43	25.16	0.7419	2.948	182.674	5	clayey silt to silty	clay	16
98.59	26.57	1.0559	3.974	183.495	5	clayey silt to silty	clay	17
98.75	36.56	1.5403	4.213	220.551	5	clayey silt to silty	clay	17
98.92	49.56	2.047	4.13	228.265	5	clayey silt to silty	clay	18
99.08	40.89	1.9967	4.884	134.481	4	silty clay to cla	y	24
99.25	31.38	1.5455	4.925	164.558	4	silty clay to cla	y	24
99.41	28.54	1.2577	4.407	179.442	4	silty clay to cla	y	23
99.57	28.15	1.2609	4.479	200.918	4	silty clay to cla	y	21
99.74	26.86	1.3266	4.94	204.268	4	silty clay to cla	y	20
99.9	30.41	1.286	4.229	142.171	4	silty clay to cla	y	20
100.07	30.13	1.1758	3.902	176.707	5	clayey silt to silty	clay	15
100.23	27.91	1.2004	4.301	175.452	4	silty clay to cla	y	19
100.39	27.12	1.0762	3.968	193.463	5	clayey silt to silty	clay	14
100.56	26.72-3	2767.8500-1226	29.7	196.674	0	<out of range>		0

Data F ile:CPT-4 3/5/2012 10:12:43 AM
Opera tor:Doug Locatio n:San Jose State University
Cone ID:DSG1150 Job Numbe r:408
Custo mer:Converse Consultants Unit s:

Depth (ft)	Qc TSF	Fs TSF	Fs/Qc (%)	Pw PSI	Zone	Soil Behavior Type UBC-1983	SPT N* 60% Hammer
0.16	8.86	0.3848	4.345	13.462	3	clay	9
0.33	17.22	0.5428	3.153	21.233	4	silty clay to clay	8
0.49	25.48	0.7768	3.049	18.582	7	silty sand to sandy silt	19
0.66	58.76	1.853	3.154	30.558	7	silty sand to sandy silt	27
0.82	106.72	2.1466	2.011	19.845	7	silty sand to sandy silt	33
0.98	194.14	2.6297	1.355	19.288	7	silty sand to sandy silt	38
1.15	169.95	2.2841	1.344	51.088	7	silty sand to sandy silt	43
1.31	153.51	2.6048	1.697	9.283	7	silty sand to sandy silt	44
1.48	133.39	2.6613	1.995	3.284	7	silty sand to sandy silt	45
1.64	114.61	2.4492	2.137	1.362	7	silty sand to sandy silt	43
1.8	100.8	2.2393	2.222	0.873	7	silty sand to sandy silt	41
1.97	111.98	3.3171	2.962	3.998	7	silty sand to sandy silt	39
2.13	149.24	4.0295	2.7	14.275	6	sandy silt to clayey silt	45
2.3	138.61	4.3031	3.104	55.322	6	sandy silt to clayey silt	43
2.46	114.85	4.0761	3.549	-1.234	6	sandy silt to clayey silt	41
2.62	92.06	3.5899	3.9	0.732	6	sandy silt to clayey silt	37
2.79	76.19	3.0402	3.99	-0.596	5	clayey silt to silty clay	40
2.95	62.72	2.4441	3.897	-0.099	5	clayey silt to silty clay	33
3.12	50.48	2.0308	4.023	0.115	5	clayey silt to silty clay	27
3.28	43.01	1.7137	3.984	0.016	5	clayey silt to silty clay	23
3.44	37.83	1.6204	4.283	0.303	4	silty clay to clay	26
3.61	34.83	1.5351	4.408	-0.003	4	silty clay to clay	23
3.77	30.64	1.3405	4.375	-1.104	4	silty clay to clay	21
3.94	27	1.1665	4.32	-1.82	5	clayey silt to silty clay	16
4.1	24.48	1.0249	4.186	-0.675	5	clayey silt to silty clay	16
4.27	33.28	1.1395	3.425	0.235	5	clayey silt to silty clay	16
4.43	43.64	1.2384	2.838	0.866	5	clayey silt to silty clay	16
4.59	40.72	1.3375	3.285	-0.282	5	clayey silt to silty clay	16
4.76	35.48	1.3807	3.891	-0.526	5	clayey silt to silty clay	16
4.92	27.71	1.3748	4.961	-1.436	5	clayey silt to silty clay	15
5.09	22.71	1.2592	5.545	-1.221	4	silty clay to clay	20
5.25	25.52	1.0386	4.07	2.557	4	silty clay to clay	19
5.41	29.95	0.9658	3.224	0.931	5	clayey silt to silty clay	14
5.58	31.88	0.9701	3.043	0.136	5	clayey silt to silty clay	15
5.74	33.68	0.9538	2.832	3.099	5	clayey silt to silty clay	15
5.91	34.8	1.0239	2.942	0.968	5	clayey silt to silty clay	15
6.07	35.1	1.1425	3.255	0.471	5	clayey silt to silty clay	14
6.23	31.82	1.1098	3.488	-0.246	5	clayey silt to silty clay	13
6.4	23.23	1.0856	4.673	-1.42	4	silty clay to clay	15
6.56	17.01	0.903	5.309	0.361	3	clay	20
6.73	14.86	0.7862	5.292	1.321	3	clay	17
6.89	12.2	0.6875	5.638	2.186	3	clay	15
7.05	11.35	0.6933	6.107	4.519	3	clay	15
7.22	12.9	0.6012	4.661	7.254	4	silty clay to clay	11
7.38	20.46	0.5115	2.5	7.565	5	clayey silt to silty clay	8
7.55	22.97	0.3839	1.671	3.585	5	clayey silt to silty clay	8
7.71	20.5	0.3269	1.595	2.126	5	clayey silt to silty clay	8
7.87	17.28	0.3909	2.263	1.394	5	clayey silt to silty clay	8
8.04	14.97	0.4686	3.13	0.981	5	clayey silt to silty clay	8
8.2	11.51	0.4227	3.672	0.96	5	clayey silt to silty clay	7
8.37	13.51	0.4003	2.964	2.965	4	silty clay to clay	9
8.53	13.74	0.3522	2.564	1.762	4	silty clay to clay	8
8.69	9.08	0.3183	3.505	0.698	4	silty clay to clay	7
8.86	14.07	0.3372	2.397	3.522	4	silty clay to clay	7
9.02	11.89	0.3053	2.567	1.715	3	clay	9
9.19	8.14	0.2822	3.468	1.47	4	silty clay to clay	6
9.35	5.87	0.3823	6.512	4.006	5	clayey silt to silty clay	6
9.51	5.36	0.3501	6.535	5.515	5	clayey silt to silty clay	6
9.68	15.62	0.2503	1.603	14.489	5	clayey silt to silty clay	7
9.84	22.82	0.2432	1.066	5.303	5	clayey silt to silty clay	8
10.01	23.29	0.2651	1.138	3.331	6	sandy silt to clayey silt	7
10.17	21.21	0.3044	1.435	2.544	6	sandy silt to clayey silt	7
10.33	17.93	0.3028	1.689	1.987	6	sandy silt to clayey silt	6

10.5	14.63	0.2385	1.631	1.368	5	clayey silt to silty clay	7
10.66	11.27	0.2645	2.347	0.126	5	clayey silt to silty clay	6
10.83	7.43	0.2732	3.677	-0.277	4	silty clay to clay	6
10.99	4.47	0.2207	4.941	0.97	3	clay	7
11.15	4.18	0.1833	4.382	3.797	3	clay	5
11.32	3.99	0.1779	4.46	5.201	3	clay	4
11.48	3.56	0.1638	4.596	6.341	3	clay	4
11.65	3.31	0.1574	4.756	8.012	3	clay	4
11.81	3.16	0.1374	4.353	8.87	3	clay	4
11.98	4.44	0.1498	3.371	16.294	3	clay	4
12.14	4.19	0.1276	3.042	12.154	3	clay	4
12.3	3.96	0.1126	2.84	13.611	3	clay	4
12.47	3.68	0.13	3.537	17.63	3	clay	4
12.63	3.96	0.1507	3.8	24.042	3	clay	4
12.8	4.11	0.1818	4.421	22.023	3	clay	4
12.96	4.26	0.2005	4.708	20.203	3	clay	4
13.12	4.23	0.2123	5.02	16.78	3	clay	4
13.29	3.98	0.1817	4.562	13.323	3	clay	4
13.45	3.75	0.1558	4.153	12.782	3	clay	4
13.62	3.7	0.1455	3.933	14.508	3	clay	4
13.78	3.46	0.1279	3.693	16.749	3	clay	3
13.94	3.1	0.1063	3.431	17.345	3	clay	3
14.11	2.74	0.0848	3.091	18.516	3	clay	3
14.27	2.72	0.0667	2.451	21.921	3	clay	3
14.44	2.68	0.046	1.718	25.619	3	clay	3
14.6	3.13	0.0498	1.594	29.588	3	clay	3
14.76	2.9	0.0738	2.546	27.65	3	clay	4
14.93	2.99	0.1795	6.001	29.264	3	clay	5
15.09	5.36	0.2231	4.16	29.69	3	clay	5
15.26	6.18	0.2108	3.413	13.412	3	clay	6
15.42	7.43	0.2241	3.014	17.076	3	clay	6
15.58	7.53	0.2478	3.289	17.97	3	clay	7
15.75	6.42	0.2606	4.06	18.506	3	clay	7
15.91	6.96	0.3175	4.561	27.255	3	clay	8
16.08	8.12	0.4181	5.146	29.619	3	clay	8
16.24	8.94	0.4657	5.21	16.594	3	clay	9
16.4	9.88	0.472	4.776	15.818	3	clay	9
16.57	10.03	0.4933	4.918	15.92	3	clay	10
16.73	10.54	0.5092	4.83	16.892	3	clay	10
16.9	10.57	0.5232	4.948	15.546	3	clay	10
17.06	11.89	0.5229	4.398	16.2	3	clay	9
17.22	10.96	0.5052	4.609	10.891	3	clay	9
17.39	7.96	0.4741	5.957	3.65	3	clay	9
17.55	5.98	0.4123	6.891	0.787	3	clay	8
17.72	6.63	0.3868	5.833	1.059	3	clay	10
17.88	7.62	0.4738	6.216	2.1	3	clay	14
18.04	8.71	0.7318	8.397	2.842	3	clay	19
18.21	24	1.2698	5.29	22.334	3	clay	24
18.37	39.25	1.893	4.823	29.489	3	clay	28
18.54	43.25	2.3936	5.535	64.733	3	clay	32
18.7	41.11	2.2052	5.364	30.44	3	clay	35
18.86	38.33	2.1326	5.564	32.752	3	clay	37
19.03	34.77	2.012	5.787	29.491	3	clay	36
19.19	35.15	1.9402	5.52	31.471	3	clay	34
19.36	33.62	1.9903	5.92	26.819	3	clay	32
19.52	32.14	1.7404	5.416	24.285	3	clay	30
19.69	28.8	1.6143	5.606	18.119	3	clay	28
19.85	26.32	1.3826	5.253	25.66	3	clay	26
20.01	24.73	1.1454	4.632	19.364	3	clay	23
20.18	21.03	0.8668	4.121	15.269	3	clay	21
20.34	18.31	0.6453	3.525	29.768	4	silty clay to clay	13
20.51	16.79	0.5369	3.198	35.997	4	silty clay to clay	11
20.67	14.67	0.4917	3.353	41.959	4	silty clay to clay	10
20.83	13.58	0.4774	3.517	53.708	4	silty clay to clay	10
21	13.5	0.5127	3.798	39.423	4	silty clay to clay	9
21.16	12.87	0.5064	3.934	32.551	4	silty clay to clay	9
21.33	11.9	0.4992	4.195	26.325	4	silty clay to clay	8
21.49	12.07	0.4576	3.793	32.506	3	clay	12
21.65	11.99	0.4589	3.826	31.667	3	clay	12
21.82	11.1	0.4817	4.338	34.575	3	clay	11
21.98	10.66	0.4823	4.524	35.357	3	clay	11

22.15	10.4	0.4806	4.62	22.24	3	clay	11
22.31	9.76	0.4387	4.496	23.799	3	clay	12
22.47	9.85	0.4664	4.734	31.429	4	silty clay to clay	8
22.64	12.4	0.5137	4.142	43.494	4	silty clay to clay	8
22.8	17.59	0.4387	2.495	19.008	4	silty clay to clay	8
22.97	14.17	0.3839	2.709	3.512	4	silty clay to clay	8
23.13	10.44	0.3723	3.565	27.935	4	silty clay to clay	9
23.29	11.19	0.5024	4.491	58.499	4	silty clay to clay	9
23.46	12.33	0.5219	4.235	47.712	4	silty clay to clay	9
23.62	18.66	0.4577	2.453	23.019	4	silty clay to clay	9
23.79	15.16	0.6155	4.059	-0.013	4	silty clay to clay	10
23.95	13.33	0.4238	3.178	18.291	4	silty clay to clay	10
24.11	18.54	0.3906	2.106	12.212	5	clayey silt to silty clay	7
24.28	12.97	0.5305	4.089	7.759	4	silty clay to clay	9
24.44	13.5	0.4099	3.036	42.814	4	silty clay to clay	9
24.61	12.99	0.3859	2.972	17.193	4	silty clay to clay	8
24.77	9.92	0.3175	3.2	17.578	4	silty clay to clay	8
24.93	10.71	0.4615	4.307	46.799	4	silty clay to clay	9
25.1	11.16	0.5986	5.366	54.683	3	clay	14
25.26	17.99	0.726	4.034	25.417	3	clay	15
25.43	16.6	0.8251	4.971	5.261	3	clay	18
25.59	19.29	1.0597	5.493	20.342	4	silty clay to clay	13
25.75	21.43	1.1039	5.15	16.16	5	clayey silt to silty clay	11
25.92	28.48	0.8257	2.899	21.314	5	clayey silt to silty clay	12
26.08	29.12	0.6803	2.336	-4.294	5	clayey silt to silty clay	13
26.25	28.58	0.6484	2.269	-4.783	5	clayey silt to silty clay	13
26.41	32.47	0.4545	1.4	-3.692	6	sandy silt to clayey silt	10
26.57	27.68	0.5944	2.147	-5.755	6	sandy silt to clayey silt	9
26.74	17.92	0.5973	3.333	-5.834	5	clayey silt to silty clay	11
26.9	17.33	0.3836	2.213	6.812	5	clayey silt to silty clay	10
27.07	18.13	0.3875	2.137	4.427	5	clayey silt to silty clay	9
27.23	11.76	0.4739	4.029	14.356	5	clayey silt to silty clay	8
27.4	15.94	0.4001	2.51	35.945	5	clayey silt to silty clay	8
27.56	17.92	0.3645	2.034	16.312	5	clayey silt to silty clay	9
27.72	18.52	0.5863	3.166	14.304	5	clayey silt to silty clay	9
27.89	21.49	0.6697	3.116	18.059	5	clayey silt to silty clay	10
28.05	24.66	0.7077	2.87	11.331	5	clayey silt to silty clay	10
28.22	20.21	0.6061	2.998	1.744	5	clayey silt to silty clay	9
28.38	18.86	0.524	2.778	2.876	5	clayey silt to silty clay	9
28.54	16.57	0.3466	2.091	8.551	5	clayey silt to silty clay	8
28.71	16.96	0.2334	1.376	12.902	5	clayey silt to silty clay	7
28.87	10.79	0.2348	2.176	12.293	5	clayey silt to silty clay	6
29.04	8.33	0.1918	2.303	36.031	5	clayey silt to silty clay	5
29.2	8.37	0.1747	2.089	46.943	5	clayey silt to silty clay	5
29.36	8.21	0.2003	2.439	51.221	4	silty clay to clay	6
29.53	7.91	0.241	3.048	57.196	4	silty clay to clay	6
29.69	7.76	0.2788	3.593	49.634	4	silty clay to clay	6
29.86	8.69	0.2961	3.407	54.21	4	silty clay to clay	6
30.02	8.66	0.2956	3.415	38.345	3	clay	8
30.18	7.96	0.2832	3.558	44.692	3	clay	8
30.35	7.91	0.2839	3.591	51.169	3	clay	8
30.51	8.02	0.3103	3.868	49.336	3	clay	8
30.68	8.17	0.2961	3.623	44.498	3	clay	8
30.84	7.9	0.2885	3.652	38.67	3	clay	8
31	7.75	0.2594	3.348	35.882	3	clay	8
31.17	7.5	0.2512	3.347	36.541	3	clay	8
31.33	7.42	0.2345	3.159	38.089	3	clay	8
31.5	7.52	0.2747	3.655	40.552	3	clay	8
31.66	8.14	0.3453	4.243	54.861	3	clay	8
31.82	8.65	0.4217	4.875	40.892	3	clay	9
31.99	8.55	0.4737	5.538	34.93	3	clay	9
32.15	9.15	0.5308	5.801	35.537	3	clay	9
32.32	9.41	0.5398	5.736	19.178	3	clay	9
32.48	9.26	0.5076	5.484	21.96	3	clay	9
32.64	9.41	0.5004	5.317	25.299	3	clay	10
32.81	9.08	0.522	5.748	27.01	4	silty clay to clay	8
32.97	9.05	0.6697	7.399	25.922	4	silty clay to clay	9
33.14	14.94	0.4069	2.724	46.028	5	clayey silt to silty clay	7
33.3	26.43	0.2182	0.825	4.103	5	clayey silt to silty clay	7
33.46	18.86	0.1953	1.035	8.522	5	clayey silt to silty clay	7
33.63	10.88	0.2309	2.122	32.789	5	clayey silt to silty clay	7

33.79	8.58	0.2369	2.762	63.488	5	clayey silt to silty clay	6
33.96	8.24	0.2703	3.279	56.94	4	silty clay to clay	7
34.12	8.5	0.3088	3.632	59.176	4	silty clay to clay	6
34.28	9	0.3501	3.891	46.305	4	silty clay to clay	6
34.45	9.03	0.3401	3.768	40.032	3	clay	9
34.61	9.06	0.3397	3.749	46.721	3	clay	9
34.78	8.61	0.3079	3.574	42.451	3	clay	9
34.94	8.24	0.2981	3.617	56.067	3	clay	9
35.1	7.56	0.3048	4.033	55.811	3	clay	9
35.27	8.37	0.3581	4.277	68.564	3	clay	9
35.43	9.22	0.3976	4.311	47.655	3	clay	9
35.6	8.96	0.3874	4.323	36.661	3	clay	9
35.76	8.69	0.3824	4.4	53.525	3	clay	9
35.93	8.64	0.4272	4.946	54.997	3	clay	9
36.09	9.37	0.4818	5.143	47.984	3	clay	10
36.25	9.97	0.5108	5.123	46.839	3	clay	10
36.42	9.85	0.5577	5.66	42.239	3	clay	10
36.58	10.23	0.6058	5.921	43.648	3	clay	10
36.75	10.74	0.647	6.025	43.481	3	clay	11
36.91	10.66	0.659	6.184	30.019	3	clay	11
37.07	10.71	0.6356	5.932	36.444	3	clay	11
37.24	11.55	0.7094	6.141	27.752	3	clay	11
37.4	12.22	0.7111	5.819	30.019	3	clay	12
37.57	12.22	0.7461	6.106	25.558	3	clay	12
37.73	12.51	0.7331	5.858	26.936	3	clay	12
37.89	12.58	0.7883	6.264	22.928	3	clay	12
38.06	12.38	0.7603	6.139	23.681	3	clay	12
38.22	11.85	0.7506	6.333	27.101	3	clay	12
38.39	11.78	0.6652	5.649	25.273	3	clay	12
38.55	11.48	0.6797	5.92	21.72	3	clay	11
38.71	11.4	0.6526	5.725	21.592	3	clay	11
38.88	10.88	0.6241	5.736	21.223	3	clay	11
39.04	10.74	0.6152	5.73	26.942	3	clay	11
39.21	11.03	0.5914	5.363	24.617	3	clay	11
39.37	10.63	0.4952	4.658	29.29	3	clay	11
39.53	10.64	0.4257	4	37.951	3	clay	11
39.7	10.35	0.4557	4.401	60.426	3	clay	11
39.86	10.71	0.464	4.333	61.88	3	clay	11
40.03	10.54	0.4692	4.453	55.507	3	clay	11
40.19	10.66	0.4819	4.521	60.013	3	clay	11
40.35	10.83	0.5141	4.748	58.865	3	clay	11
40.52	10.66	0.4923	4.618	53.507	3	clay	11
40.68	9.84	0.4743	4.823	47.254	3	clay	11
40.85	10.04	0.4317	4.299	42.446	3	clay	11
41.01	10.45	0.465	4.45	38.785	3	clay	11
41.17	9.62	0.5191	5.398	67.191	3	clay	11
41.34	11.59	0.5622	4.849	51.318	3	clay	11
41.5	11.94	0.6301	5.276	40.979	3	clay	12
41.67	12.65	0.6978	5.516	44.71	3	clay	12
41.83	13.04	0.7282	5.582	41.996	3	clay	13
41.99	12.53	0.7036	5.617	38.102	3	clay	13
42.16	12.68	0.6611	5.212	40.283	3	clay	13
42.32	12.55	0.6797	5.416	49.6	3	clay	13
42.49	13.09	0.7055	5.391	56.71	3	clay	13
42.65	13.29	0.7193	5.411	45.513	3	clay	14
42.81	13.57	0.7256	5.347	54.142	3	clay	14
42.98	14.62	0.7925	5.42	51.462	3	clay	14
43.14	14.71	0.8006	5.441	36.423	3	clay	14
43.31	14.41	0.7916	5.495	32.365	3	clay	14
43.47	14.4	0.7904	5.491	34.883	3	clay	14
43.64	14.35	0.7884	5.492	35.466	3	clay	14
43.8	14.5	0.7976	5.502	45.743	3	clay	14
43.96	14.87	0.7514	5.052	39.002	3	clay	14
44.13	14.2	0.657	4.627	27.632	3	clay	14
44.29	13.85	0.6156	4.445	61.161	3	clay	14
44.46	14.47	0.7483	5.171	56.89	3	clay	14
44.62	13.89	0.8039	5.788	55.201	3	clay	14
44.78	13.67	0.8128	5.945	48.585	3	clay	14
44.95	13.9	0.7924	5.701	43.005	3	clay	14
45.11	14.22	0.8265	5.81	45.39	3	clay	14
45.28	14.94	0.8535	5.711	45.484	3	clay	14

45.44	15.07	0.8561	5.681	34.909	3	clay	15
45.6	14.66	0.8223	5.611	33.751	3	clay	15
45.77	14.44	0.8192	5.672	39.376	3	clay	15
45.93	14.69	0.7987	5.439	42.754	3	clay	15
46.1	14.66	0.7986	5.449	43.612	3	clay	15
46.26	14.72	0.7884	5.356	53.502	3	clay	15
46.42	14.73	0.791	5.369	50.455	3	clay	15
46.59	14.64	0.7682	5.246	52.194	3	clay	15
46.75	14.9	0.7688	5.159	57.178	3	clay	15
46.92	15.44	0.7676	4.971	60.972	3	clay	15
47.08	15.16	0.81	5.344	50.808	3	clay	15
47.24	15.41	0.7972	5.173	60.936	3	clay	15
47.41	15.04	0.8013	5.326	57.542	3	clay	16
47.57	15.23	0.8293	5.444	59.937	3	clay	16
47.74	15.49	0.8046	5.193	62.233	3	clay	16
47.9	16.15	0.8261	5.114	79.133	3	clay	16
48.06	16.21	0.8406	5.185	68.182	3	clay	16
48.23	15.86	0.8082	5.096	58.846	3	clay	16
48.39	15.36	0.7459	4.857	61.053	3	clay	16
48.56	15.29	0.6965	4.556	75.443	3	clay	16
48.72	15.74	0.7148	4.541	80.979	3	clay	16
48.88	16.41	0.7357	4.482	81.651	3	clay	16
49.05	16.2	0.722	4.458	78.537	4	silty clay to clay	11
49.21	15.83	0.6876	4.344	81.212	4	silty clay to clay	11
49.38	15.3	0.6245	4.082	82.763	4	silty clay to clay	11
49.54	14.73	0.5357	3.636	80.32	4	silty clay to clay	10
49.7	14.3	0.4863	3.402	91.729	4	silty clay to clay	10
49.87	14.21	0.4422	3.111	96.645	5	clayey silt to silty clay	7
50.03	14.01	0.4272	3.05	89.033	5	clayey silt to silty clay	7
50.2	13.78	0.3953	2.868	97.181	5	clayey silt to silty clay	7
50.36	13.81	0.3672	2.658	99.945	5	clayey silt to silty clay	7
50.52	14.08	0.3568	2.535	103.865	5	clayey silt to silty clay	7
50.69	14.21	0.4033	2.837	100.348	5	clayey silt to silty clay	8
50.85	14.57	0.4375	3.003	92.456	5	clayey silt to silty clay	8
51.02	15.23	0.4946	3.247	97.079	5	clayey silt to silty clay	8
51.18	15.61	0.5825	3.731	87.347	4	silty clay to clay	11
51.35	16.61	0.6627	3.989	91.355	4	silty clay to clay	11
51.51	16.33	0.6927	4.242	85.508	4	silty clay to clay	11
51.67	16.19	0.6798	4.199	82.19	4	silty clay to clay	11
51.84	16.11	0.619	3.842	82.164	4	silty clay to clay	11
52	15.58	0.538	3.454	80.958	4	silty clay to clay	11
52.17	14.87	0.5003	3.365	100.602	4	silty clay to clay	11
52.33	14.74	0.5317	3.608	100.578	4	silty clay to clay	11
52.49	14.97	0.5452	3.641	102.301	4	silty clay to clay	11
52.66	15.33	0.6152	4.012	101.778	4	silty clay to clay	11
52.82	16.2	0.6508	4.017	105.494	4	silty clay to clay	11
52.99	16.54	0.7044	4.258	98.473	4	silty clay to clay	11
53.15	16.94	0.6851	4.043	97.958	5	clayey silt to silty clay	9
53.31	17.32	0.6631	3.829	81.183	5	clayey silt to silty clay	9
53.48	17.36	0.5037	2.901	92.192	5	clayey silt to silty clay	9
53.64	16.67	0.3435	2.061	85.249	6	sandy silt to clayey silt	12
53.81	16.37	0.6505	3.973	107.335	6	sandy silt to clayey silt	16
53.97	22.48	0.9698	4.314	128.077	6	sandy silt to clayey silt	18
54.13	97.26	1.4417	1.482	55.133	6	sandy silt to clayey silt	19
54.3	95.46	1.6302	1.708	25.551	6	sandy silt to clayey silt	20
54.46	60.86	1.6682	2.741	24.348	6	sandy silt to clayey silt	20
54.63	33.1	1.0642	3.215	52.333	6	sandy silt to clayey silt	20
54.79	24.12	0.6928	2.872	81.296	6	sandy silt to clayey silt	15
54.95	19.79	0.654	3.304	105.256	5	clayey silt to silty clay	14
55.12	20.79	0.5775	2.778	105.361	5	clayey silt to silty clay	12
55.28	20.55	0.4991	2.429	98.638	5	clayey silt to silty clay	11
55.45	20.17	0.5379	2.667	106.593	5	clayey silt to silty clay	10
55.61	20.11	0.6107	3.037	120.297	5	clayey silt to silty clay	10
55.77	19.53	0.6572	3.365	112.691	5	clayey silt to silty clay	10
55.94	20.26	0.4874	2.406	112.819	5	clayey silt to silty clay	10
56.1	19.74	0.3899	1.976	94.58	5	clayey silt to silty clay	14
56.27	17.76	0.3909	2.201	114.137	7	silty sand to sandy silt	18
56.43	17.91	1.3924	7.776	120.496	8	sand to silty sand	22
56.59	73.37	1.9682	2.682	138.908	8	sand to silty sand	32
56.76	207.21	2.223	1.073	11.752	9	sand	34
56.92	291.64	2.3719	0.813	8.174	9	sand	42

57.09	300.91	2.1264	0.707	26.296	9	sand	50
57.25	318.33	1.8996	0.597	26.628	9	sand	55
57.41	327.19	1.6246	0.497	30.391	9	sand	56
57.58	307.09	1.9199	0.625	30.059	9	sand	52
57.74	259.8	2.0342	0.783	29.805	9	sand	49
57.91	221.88	2.0027	0.903	30.137	9	sand	44
58.07	175.64	1.8058	1.028	28.788	9	sand	38
58.23	161.81	1.6889	1.044	27.072	9	sand	33
58.4	146.16	1.5688	1.073	22.46	8	sand to silty sand	37
58.56	131.57	1.7297	1.315	23.09	8	sand to silty sand	34
58.73	124.71	1.8195	1.459	22.739	8	sand to silty sand	31
58.89	124.28	1.92	1.545	19.133	7	silty sand to sandy silt	37
59.06	118.19	2.2356	1.891	14.866	7	silty sand to sandy silt	40
59.22	89.21	3.0583	3.428	10.706	7	silty sand to sandy silt	44
59.38	86.29	3.247	3.763	25.906	7	silty sand to sandy silt	50
59.55	190.47	3.6752	1.93	38.068	8	sand to silty sand	42
59.71	237.34	3.204	1.35	25.786	8	sand to silty sand	47
59.88	256.63	3.1503	1.228	22.216	8	sand to silty sand	52
60.04	260.85	3.0005	1.15	19.798	9	sand	45
60.2	243.82	2.7132	1.113	14.997	9	sand	46
60.37	228.67	2.6756	1.17	12.68	9	sand	51
60.53	231.64	2.8244	1.219	10.977	9	sand	58
60.7	235.6	2.8513	1.21	8.114	9	sand	65
60.86	395.3	2.1348	0.54	13.538	9	sand	71
61.02	510.14	4.7128	0.924	38.508	10	gravelly sand to sand	67
61.19	515.59	4.6463	0.901	23.615	10	gravelly sand to sand	75
61.35	493.18	5.6226	1.14	30.825	10	gravelly sand to sand	81
61.52	565.59	2.271	0.402	23.647	10	gravelly sand to sand	82
61.68	575.47	3.0767	0.535	13.075	10	gravelly sand to sand	78
61.84	504.79	1.9774	0.392	45.304	10	gravelly sand to sand	74
62.01	433.97	1.8482	0.426	15.82	10	gravelly sand to sand	71
62.17	349.59	1.7517	0.501	9.171	10	gravelly sand to sand	68
62.34	304.91	3.5311	1.158	27.65	10	gravelly sand to sand	64
62.5	380.77	2.8953	0.76	30.257	10	gravelly sand to sand	61
62.66	432.3	2.6503	0.613	63.143	10	gravelly sand to sand	59
62.83	415.74	2.4955	0.6	55.946	10	gravelly sand to sand	58
62.99	354.88	2.1878	0.616	26.646	10	gravelly sand to sand	60
63.16	344.84	2.3064	0.669	29.549	10	gravelly sand to sand	62
63.32	325.06	2.1753	0.669	21.573	10	gravelly sand to sand	63
63.48	370.11	2.3819	0.644	14.275	10	gravelly sand to sand	64
63.65	466.2	3.3109	0.71	18.456	10	gravelly sand to sand	65
63.81	492.41	3.173	0.644	12.531	10	gravelly sand to sand	66
63.98	441.28	4.3543	0.987	43.442	10	gravelly sand to sand	68
64.14	397.35	2.9728	0.748	16.519	10	gravelly sand to sand	69
64.3	394.64	2.6451	0.67	25.237	10	gravelly sand to sand	68
64.47	417.98	3.2159	0.769	14.612	9	sand	81
64.63	398.05	3.4852	0.876	25.315	9	sand	82
64.8	445.11	4.2455	0.954	26.604	9	sand	81
64.96	456.09	5.5126	1.209	11.851	9	sand	82
65.12	469.27	6.6169	1.41	28.921	9	sand	83
65.29	392.73	7.4731	1.903	60.086	9	sand	84
65.45	409.35	5.287	1.292	27.637	9	sand	84
65.62	456.53	3.3837	0.741	54.906	9	sand	83
65.78	441.51	3.3751	0.764	17.319	9	sand	81
65.94	444.74	4.2061	0.946	16.194	10	gravelly sand to sand	68
66.11	407.94	4.1074	1.007	11.945	10	gravelly sand to sand	68
66.27	404.51	2.6729	0.661	19.743	10	gravelly sand to sand	67
66.44	402.94	2.2181	0.55	25.815	10	gravelly sand to sand	68
66.6	426.6	2.601	0.61	24.05	10	gravelly sand to sand	69
66.77	407.96	3.6544	0.896	27.282	10	gravelly sand to sand	70
66.93	470.97	4.86	1.032	26.228	10	gravelly sand to sand	71
67.09	483.31	3.3041	0.684	25.741	10	gravelly sand to sand	73
67.26	460.66	3.2962	0.716	23.89	10	gravelly sand to sand	74
67.42	451.86	3.7939	0.84	44.446	10	gravelly sand to sand	75
67.59	483.07	3.1944	0.661	23.257	10	gravelly sand to sand	75
67.75	485.07	3.1658	0.653	15.188	10	gravelly sand to sand	74
67.91	468.12	3.6923	0.789	31.74	10	gravelly sand to sand	75
68.08	435.62	3.2475	0.745	1.927	10	gravelly sand to sand	76
68.24	460.26	3.4257	0.744	32.075	10	gravelly sand to sand	76
68.41	496.15	3.6866	0.743	53.957	10	gravelly sand to sand	75
68.57	483.11	1.918	0.397	14.845	10	gravelly sand to sand	73

68.73	495.01	2.5103	0.507	6.059	10	gravelly sand to sand	71
68.9	453.06	2.2401	0.494	8.044	10	gravelly sand to sand	68
69.06	395.93	2.6465	0.668	34.19	10	gravelly sand to sand	64
69.23	335.02	2.8976	0.865	2.068	10	gravelly sand to sand	61
69.39	333.02	2.8403	0.853	20.457	9	sand	71
69.55	313.11	4.2242	1.349	12.975	9	sand	70
69.72	351.31	3.0909	0.88	18.833	9	sand	70
69.88	405.57	3.4171	0.843	49.961	9	sand	72
70.05	419.87	3.5009	0.834	30.715	9	sand	73
70.21	398.94	4.5901	1.151	17.638	10	gravelly sand to sand	63
70.37	401.25	2.9879	0.745	14.743	10	gravelly sand to sand	64
70.54	387.61	2.6782	0.691	30.291	10	gravelly sand to sand	63
70.7	388.88	2.1839	0.562	19.879	10	gravelly sand to sand	61
70.87	392.13	2.8119	0.717	11.903	10	gravelly sand to sand	60
71.03	353.63	2.4615	0.696	13.443	9	sand	71
71.19	340.09	2.9001	0.853	9.155	9	sand	72
71.36	355.69	3.1403	0.883	33.254	9	sand	73
71.52	392.64	3.9758	1.013	18.346	9	sand	75
71.69	413.63	3.8161	0.923	13.629	9	sand	78
71.85	423.24	4.1057	0.97	20.765	9	sand	82
72.01	455.48	5.341	1.173	23.979	9	sand	85
72.18	478.73	5.5645	1.162	99.174	9	sand	86
72.34	459.21	3.6603	0.797	27.684	9	sand	86
72.51	464.06	3.7833	0.815	20.083	9	sand	86
72.67	441.03	4.1328	0.937	20.451	10	gravelly sand to sand	72
72.83	412.94	3.4079	0.825	29.075	10	gravelly sand to sand	70
73	414.01	3.3412	0.807	13.807	10	gravelly sand to sand	67
73.16	464.89	2.3798	0.512	34.122	10	gravelly sand to sand	64
73.33	406.76	2.5895	0.637	8.339	10	gravelly sand to sand	64
73.49	344.16	3.0188	0.877	7.026	10	gravelly sand to sand	63
73.65	331.64	3.6279	1.094	7.756	10	gravelly sand to sand	63
73.82	416.8	3.0024	0.72	20.193	9	sand	73
73.98	403	3.9846	0.989	2.421	9	sand	70
74.15	400.15	3.0086	0.752	4.192	9	sand	68
74.31	352.63	3.1064	0.881	-2.803	9	sand	67
74.48	314.42	2.3119	0.735	-2.304	9	sand	63
74.64	281.17	3.0276	1.077	0.57	9	sand	57
74.8	289.18	1.5114	0.523	2.678	9	sand	50
74.97	244.57	3.0754	1.257	11.684	9	sand	43
75.13	187.53	2.3286	1.242	-1.974	8	sand to silty sand	46
75.3	146.26	2.2732	1.554	19.246	8	sand to silty sand	43
75.46	105.14	3.252	3.093	3.878	8	sand to silty sand	44
75.62	101.52	2.7903	2.749	8.593	9	sand	38
75.79	189.68	2.4121	1.272	12.771	9	sand	41
75.95	305.96	2.0537	0.671	6.713	9	sand	46
76.12	336.89	2.0138	0.598	8.352	9	sand	50
76.28	330.31	1.7171	0.52	-3.261	9	sand	54
76.44	301.21	1.4184	0.471	-1.885	9	sand	54
76.61	268.35	1.5318	0.571	-4.655	9	sand	50
76.77	231.73	1.9118	0.825	23.276	9	sand	45
76.94	199.11	1.5024	0.755	-1.038	9	sand	41
77.1	170.35	0.9491	0.557	-1.117	9	sand	39
77.26	151.55	1.5944	1.052	3.865	9	sand	40
77.43	163.1	1.9581	1.201	15.616	9	sand	45
77.59	237.89	3.326	1.398	18.699	9	sand	52
77.76	315.84	3.7992	1.203	19.727	9	sand	62
77.92	389.81	4.1408	1.062	21.722	9	sand	72
78.08	481.6	5.1456	1.068	20.153	9	sand	81
78.25	527.67	6.396	1.212	15.564	9	sand	88
78.41	523.92	6.888	1.315	51.454	9	sand	91
78.58	489.33	7.6267	1.559	27.988	9	sand	91
78.74	482.9	7.3149	1.515	24.471	9	sand	89
78.9	429.25	3.8624	0.9	28.822	9	sand	84
79.07	405.81	4.6108	1.136	27.261	9	sand	80
79.23	388.79	3.814	0.981	29.196	9	sand	80
79.4	334.43	3.5392	1.058	19.526	9	sand	78
79.56	384.81	5.9856	1.555	45.053	9	sand	77
79.72	489.66	4.9456	1.01	48.052	9	sand	69
79.89	428.18	2.6825	0.626	31.209	9	sand	61
80.05	397.45	2.8505	0.717	20.038	9	sand	53
80.22	108.33	2.8687	2.648	-13.239	9	sand	43

80.38	69.54	2.0956	3.013	-8.106	8	sand to silty sand	38	
80.54	45.99	1.4908	3.242	18.99	7	silty sand to sandy silt	33	
80.71	35.39	1.306	3.69	47.979	6	sandy silt to clayey silt	19	
80.87	35.46	1.2225	3.447	73.872	5	clayey silt to silty clay	18	
81.04	27.94	1.0632	3.806	58.776	5	clayey silt to silty clay	15	
81.2	23.29	0.6376	2.737	87.017	5	clayey silt to silty clay	13	
81.36	21.95	0.4927	2.245	109.312	5	clayey silt to silty clay	13	
81.53	21.65	0.5381	2.486	123.501	5	clayey silt to silty clay	12	
81.69	21.98	0.5989	2.725	131.424	5	clayey silt to silty clay	11	
81.86	21.38	0.6273	2.934	134.253	5	clayey silt to silty clay	11	
82.02	20.7	0.5872	2.837	130.749	5	clayey silt to silty clay	11	
82.19	19.56	0.5455	2.788	127.219	5	clayey silt to silty clay	11	
82.35	19.23	0.51	2.652	134.91	5	clayey silt to silty clay	10	
82.51	19.45	0.5211	2.68	139.308	5	clayey silt to silty clay	10	
82.68	19.35	0.61	3.152	131.513	5	clayey silt to silty clay	10	
82.84	19.24	0.6324	3.287	136.656	5	clayey silt to silty clay	10	
83.01	17.18	0.6337	3.689	159.553	5	clayey silt to silty clay	10	
83.17	16.54	0.6245	3.775	154.922	5	clayey silt to silty clay	9	
83.33	16.23	0.6319	3.893	145.877	5	clayey silt to silty clay	9	
83.5	16.28	0.6483	3.983	157.801	4	silty clay to clay	12	
83.66	16.92	0.6767	3.999	170.8	4	silty clay to clay	12	
83.83	17.14	0.6909	4.031	165.24	4	silty clay to clay	12	
83.99	16.76	0.7133	4.257	163.297	4	silty clay to clay	12	
84.15	16.86	0.6956	4.125	172.374	4	silty clay to clay	12	
84.32	16.51	0.6944	4.207	166.833	4	silty clay to clay	12	
84.48	16.4	0.6788	4.138	162.814	4	silty clay to clay	13	
84.65	17.1	0.6999	4.094	167.934	4	silty clay to clay	14	
84.81	18.81	1.0943	5.818	170.13	4	silty clay to clay	14	
84.97	23.58	1.1379	4.826	124.311	4	silty clay to clay	14	
85.14	26.76	1.0822	4.044	60.868	3	clay	22	
85.3	20.87	0.9947	4.765	104.145	3	clay	22	
85.47	20.39	0.9959	4.884	134.758	4	silty clay to clay	15	
85.63	19.9	1.0021	5.035	143.725	4	silty clay to clay	14	
85.79	20.14	0.9372	4.654	137.498	4	silty clay to clay	14	
85.96	19.19	0.8693	4.53	141.246	4	silty clay to clay	13	
86.12	18.67	0.7522	4.029	139.912	4	silty clay to clay	13	
86.29	17.3	0.7654	4.425	154.872	4	silty clay to clay	13	
86.45	17.53	0.8155	4.651	173.501	4	silty clay to clay	13	
86.61	18.29	0.8568	4.684	182.881	4	silty clay to clay	14	
86.78	18.71	0.9751	5.212	190.924	4	silty clay to clay	16	
86.94	19.7	1.1875	6.028	165.944	4	silty clay to clay	17	
87.11	27.52	1.3053	4.743	184.912	4	silty clay to clay	20	
87.27	36.69	1.2516	3.411	110.609	4	silty clay to clay	24	
87.43	31.85	1.7957	5.638	90.835	4	silty clay to clay	26	
87.6	51.35	2.2897	4.459	144.551	4	silty clay to clay	33	
87.76	60.93	2.2881	3.755	20.394	5	clayey silt to silty clay	34	
87.93	44.38	3.3043	7.445	64.615	11 v	ery stiff fine grained (*	)	90
88.09	100.78	3.994	3.963	20.682	11 v	ery stiff fine grained (*	)	124
88.25	159.62	6.8786	4.309	8.329	11 v	ery stiff fine grained (*	)	161
88.42	202.25	8.9116	4.406	9.121	12	sand to clayey sand (*)	101	
88.58	286.51	11.012	3.844	38.722	12	sand to clayey sand (*)	133	
88.75	318.42	11.6671	3.664	16.116	12	sand to clayey sand (*)	163	
88.91	355.99	10.8517	3.048	43.68	8	sand to silty sand	95	
89.07	516.21	6.8919	1.335	23.493	8	sand to silty sand	106	
89.24	537.77	5.8321	1.084	9.934	8	sand to silty sand	115	
89.4	552.56	6.0898	1.102	16.835	8	sand to silty sand	123	
89.57	543.53	7.1216	1.31	20.159	8	sand to silty sand	126	
89.73	539.12	9.8885	1.834	24.248	8	sand to silty sand	123	
89.9	535.86	13.7394	2.564	48.546	8	sand to silty sand	122	
90.06	467.19	14.1711	3.033	40.286	8	sand to silty sand	123	
90.22	427.3	6.8523	1.604	40.082	8	sand to silty sand	124	
90.39	498.42	5.2798	1.059	61.059	9	sand	100	
90.55	583.5	4.867	0.834	-1.674	9	sand	99	
90.72	574.41	5.1964	0.905	-1.26	9	sand	99	
90.88	555.39	5.1347	0.925	-2.165	9	sand	96	
91.04	498.86	5.1419	1.031	-1.802	9	sand	86	
91.21	473.21	5.2973	1.119	2.576	9	sand	72	
91.37	327.34	5.749	1.756	-6.362	8	sand to silty sand	72	
91.54	149.46	4.5249	3.028	-8.702	8	sand to silty sand	54	
91.7	66.86	2.9881	4.469	-9.218	7	silty sand to sandy silt	51	
91.86	34.42	1.5653	4.547	-8.718	6	sandy silt to clayey silt	37	

92.03	33.13	1.1563	3.491	-7.304	5	clayey silt to silty clay	27
92.19	33.97	1.0816	3.184	-6.182	4	silty clay to clay	27
92.36	34.75	1.5094	4.344	-5.172	4	silty clay to clay	26
92.52	43.42	2.2268	5.129	-1.912	4	silty clay to clay	29
92.68	52.39	2.5909	4.946	-1.169	4	silty clay to clay	31
92.85	58.38	3.2524	5.571	-0.803	4	silty clay to clay	31
93.01	63.24	2.7487	4.347	-0.442	4	silty clay to clay	30
93.18	57.56	1.9042	3.308	-3.797	4	silty clay to clay	29
93.34	30.25	1.6736	5.533	-5.28	4	silty clay to clay	26
93.5	26.82	1.0675	3.981	1.496	4	silty clay to clay	23
93.67	26.14	0.9707	3.713	11.163	4	silty clay to clay	20
93.83	24.56	0.9381	3.819	42.171	4	silty clay to clay	17
94	24.69	0.96	3.888	70.062	4	silty clay to clay	17
94.16	25.88	1.005	3.884	101.818	4	silty clay to clay	17
94.32	25.91	1.0399	4.014	112.649	4	silty clay to clay	17
94.49	25.77	1.0502	4.075	120.836	4	silty clay to clay	18
94.65	25.66	1.0865	4.233	130.394	4	silty clay to clay	18
94.82	26.21	1.0992	4.194	156.475	4	silty clay to clay	18
94.98	25.91	1.0992	4.242	151.745	4	silty clay to clay	18
95.14	25.28	1.0775	4.262	162.508	4	silty clay to clay	18
95.31	24.69	1.1014	4.462	156.417	4	silty clay to clay	18
95.47	25	1.1588	4.635	163.397	4	silty clay to clay	18
95.64	26.28	1.2314	4.686	161.629	4	silty clay to clay	19
95.8	28.05	1.2856	4.584	157.024	4	silty clay to clay	19
95.96	29.07	1.3633	4.69	147.404	4	silty clay to clay	19
96.13	29.72	1.5131	5.091	148.696	4	silty clay to clay	19
96.29	29.62	1.3589	4.587	151.446	4	silty clay to clay	19
96.46	27.61	1.2707	4.602	145.966	4	silty clay to clay	19
96.62	25.56	1.1541	4.515	173.629	4	silty clay to clay	18
96.78	24.11	1.0991	4.559	181.657	4	silty clay to clay	18
96.95	23.44	1.096	4.676	179.798	4	silty clay to clay	17
97.11	23.09	1.1136	4.823	181.591	4	silty clay to clay	17
97.28	23.69	1.1088	4.68	180.253	4	silty clay to clay	17
97.44	23.77	1.0729	4.513	175.807	4	silty clay to clay	18
97.6	22.73	1.1419	5.023	178.689	4	silty clay to clay	19
97.77	27.6	1.2111	4.388	210.881	4	silty clay to clay	20
97.93	33.01	1.3001	3.938	232.789	4	silty clay to clay	20
98.1	31.97	1.3848	4.331	249.177	4	silty clay to clay	21
98.26	30.77	1.4497	4.712	243.189	4	silty clay to clay	22
98.43	32.27	1.6179	5.014	222.52	4	silty clay to clay	22
98.59	34.2	1.5501	4.532	149.629	3	clay	33
98.75	28.85	1.5761	5.463	144.998	3	clay	35
98.92	29.61	2.1782	7.356	158.277	3	clay	34
99.08	37.51	2.1997	5.864	171.877	3	clay	33
99.25	44.22	2.118	4.79	64.992	3	clay	32
99.41	29.84	1.8879	6.327	70.865	3	clay	32
99.57	24.59	1.274	5.181	237.493	3	clay	31
99.74	24.69	1.1331	4.59	226.249	4	silty clay to clay	18
99.9	23.9	1.0944	4.579	241.105	5	clayey silt to silty clay	14
100.07	25.66	1.1522	4.489	227.779	4	silty clay to clay	19
100.23	27.8	1.2719	4.575	224.531	4	silty clay to clay	19
100.39	26.1	-32768	-32768	207.199	0	<out of range>	0

Data F ile:CPT-5 3/5/2012 9:14:00 AM
Opera tor:Doug Locatio n:San Jo se State University
Cone ID:DSG1150 Job Numbe r:408
Custo mer:Converse Consultants Unit s:

Depth (ft)	Qc TSF	Fs TSF	Fs/Qc (%)	Pw PSI	Zone	Soil Behavior Type UBC-1983	SPT N* 60% Hammer
0.16	26.75	1.44	5.383	4.749	3	clay	26
0.33	24.94	1.5138	6.07	7.102	3	clay	25
0.49	26.63	1.5707	5.899	4.725	3	clay	21
0.66	21.17	1.7867	8.44	3.894	3	clay	28
0.82	21.88	1.9932	9.109	7.442	4	silty clay to clay	21
0.98	31.09	2.0185	6.493	14.649	4	silty clay to clay	22
1.15	50.73	0.638	1.258	13.022	5	clayey silt to silty clay	17
1.31	54.65	0.8234	1.507	-0.445	5	clayey silt to silty clay	18
1.48	35.75	0.9906	2.771	8.198	6	sandy silt to clayey silt	15
1.64	38.73	1.0094	2.606	14.225	6	sandy silt to clayey silt	15
1.8	33.72	0.9876	2.929	7.233	5	clayey silt to silty clay	18
1.97	27.61	1.2194	4.416	1.347	4	silty clay to clay	23
2.13	30.65	1.6457	5.369	0.06	4	silty clay to clay	24
2.3	38.03	2.1457	5.642	5.083	3	clay	36
2.46	44.54	2.4316	5.46	10.959	3	clay	36
2.62	44.46	2.5049	5.634	7.816	3	clay	36
2.79	40.65	2.3611	5.808	1.765	3	clay	35
2.95	34.17	2.0356	5.957	0.107	3	clay	33
3.12	27.86	1.7396	6.244	0.324	3	clay	30
3.28	24.99	1.5237	6.097	-0.016	3	clay	27
3.44	23.89	1.4321	5.995	-0.581	3	clay	25
3.61	23.62	1.4742	6.242	3.209	3	clay	23
3.77	24.16	1.4316	5.925	4.469	3	clay	22
3.94	22.72	1.3811	6.078	3.538	3	clay	22
4.1	21.49	1.3043	6.068	6.182	3	clay	23
4.27	22.77	1.2889	5.661	6.161	3	clay	24
4.43	23.6	1.3425	5.688	10.167	3	clay	24
4.59	28.07	1.2771	4.549	7.782	3	clay	26
4.76	28.36	1.2579	4.435	8.705	4	silty clay to clay	18
4.92	30.24	1.1851	3.918	2.516	4	silty clay to clay	19
5.09	32.78	1.1539	3.52	2.123	5	clayey silt to silty clay	15
5.25	34.6	1.1189	3.233	0.928	5	clayey silt to silty clay	15
5.41	33.78	1.0922	3.233	0.711	5	clayey silt to silty clay	15
5.58	30.94	0.9997	3.231	0.601	5	clayey silt to silty clay	15
5.74	29.64	1.0397	3.508	0.411	5	clayey silt to silty clay	15
5.91	30.28	1.0527	3.476	1.551	5	clayey silt to silty clay	15
6.07	31.05	1.076	3.465	0.866	5	clayey silt to silty clay	15
6.23	33.61	1.035	3.08	0.769	5	clayey silt to silty clay	14
6.4	36.82	1.1459	3.112	1.263	4	silty clay to clay	18
6.56	28.81	1.1735	4.073	0.782	4	silty clay to clay	17
6.73	20.43	1.0583	5.18	10.638	4	silty clay to clay	16
6.89	15.86	1.0491	6.615	22.235	4	silty clay to clay	16
7.05	14.88	0.8551	5.747	27.148	5	clayey silt to silty clay	11
7.22	25.94	0.6886	2.655	17.062	5	clayey silt to silty clay	11
7.38	31.86	0.5844	1.834	5.217	5	clayey silt to silty clay	10
7.55	28.73	0.5065	1.763	2.952	5	clayey silt to silty clay	10
7.71	19.84	0.423	2.132	1.898	5	clayey silt to silty clay	10
7.87	11.63	0.4242	3.648	20.956	5	clayey silt to silty clay	8
8.04	12.84	0.4054	3.158	10.7	5	clayey silt to silty clay	6
8.2	8.02	0.3203	3.995	7.215	4	silty clay to clay	6
8.37	5.85	0.2466	4.218	15.938	3	clay	8
8.53	5.2	0.198	3.805	18.14	3	clay	7
8.69	5.53	0.2774	5.018	18.574	4	silty clay to clay	6
8.86	4.92	0.2803	5.697	21.887	4	silty clay to clay	6
9.02	8.78	0.1983	2.259	25.765	4	silty clay to clay	6
9.19	21.35	0.3031	1.42	4.302	4	silty clay to clay	6
9.35	12.32	0.2772	2.25	0.881	4	silty clay to clay	6
9.51	7.57	0.2433	3.214	2.568	4	silty clay to clay	6
9.68	4.47	0.1729	3.872	14.411	4	silty clay to clay	5
9.84	4.61	0.1711	3.709	18.25	3	clay	6
10.01	4.36	0.187	4.289	17.554	3	clay	5
10.17	3.83	0.1723	4.493	16.492	3	clay	4
10.33	3.52	0.1599	4.54	18.482	3	clay	5

10.5	3.42	0.1878	5.487	18.801	3	clay	5
10.66	4.76	0.1915	4.022	20.318	3	clay	5
10.83	7.89	0.1963	2.486	8.112	3	clay	5
10.99	5.71	0.1649	2.887	5.384	3	clay	5
11.15	3.62	0.1378	3.811	11.153	3	clay	5
11.32	3.29	0.1277	3.878	19.071	3	clay	4
11.48	3.48	0.1093	3.139	23.796	3	clay	4
11.65	3.3	0.1384	4.197	25.307	3	clay	4
11.81	3.85	0.1608	4.179	29.248	3	clay	4
11.98	4.4	0.1888	4.296	23.945	3	clay	4
12.14	4.76	0.1777	3.732	15.376	3	clay	4
12.3	4.28	0.1611	3.761	14.743	3	clay	4
12.47	3.81	0.119	3.122	16.202	3	clay	4
12.63	3.34	0.0898	2.688	16.547	3	clay	4
12.8	2.8	0.0781	2.787	20.3	3	clay	3
12.96	2.55	0.0735	2.878	25.409	3	clay	3
13.12	2.49	0.0657	2.639	25.775	3	clay	3
13.29	2.57	0.0736	2.866	26.186	3	clay	3
13.45	2.69	0.0595	2.21	28.568	1	sensitive fine grained	1
13.62	2.58	0.0362	1.402	27.436	1	sensitive fine grained	1
13.78	2.73	0.0806	2.951	30.127	3	clay	3
13.94	3.45	0.0489	1.42	27.303	3	clay	4
14.11	2.24	0.0705	3.152	20.261	3	clay	5
14.27	2.96	0.1672	5.645	28.552	3	clay	6
14.44	8.21	0.1891	2.304	30.168	3	clay	6
14.6	9.3	0.2586	2.779	40.364	3	clay	7
14.76	8.28	0.303	3.661	37.982	3	clay	8
14.93	8.18	0.3141	3.841	36.013	3	clay	8
15.09	8.37	0.3145	3.757	27.802	3	clay	8
15.26	8.01	0.3325	4.153	23.814	3	clay	8
15.42	7.73	0.2695	3.484	28.247	3	clay	7
15.58	7.4	0.2301	3.107	35.482	3	clay	7
15.75	6.31	0.2831	4.484	23.103	3	clay	7
15.91	5.78	0.2675	4.631	15.303	3	clay	6
16.08	5.97	0.2459	4.118	17.112	3	clay	6
16.24	6.6	0.231	3.5	22.13	3	clay	6
16.4	5.28	0.2264	4.287	16.351	3	clay	10
16.57	4.94	0.4175	8.454	13.49	3	clay	15
16.73	4.86	1.0169	20.941	16.971	3	clay	20
16.9	38.06	1.7394	4.57	54.5	3	clay	25
17.06	43.32	2.2999	5.309	63.708	3	clay	29
17.22	42.86	2.2814	5.323	58.995	3	clay	33
17.39	36.33	1.9384	5.336	44.857	4	silty clay to clay	25
17.55	34.69	1.708	4.924	81.552	4	silty clay to clay	24
17.72	35.1	1.6192	4.613	79.847	4	silty clay to clay	23
17.88	34.77	1.4591	4.196	83.445	4	silty clay to clay	22
18.04	30.4	1.2266	4.034	67.342	4	silty clay to clay	21
18.21	28.96	1.0341	3.571	85.223	4	silty clay to clay	20
18.37	27.97	1.0279	3.675	94.791	4	silty clay to clay	19
18.54	26.55	1.0067	3.792	78.299	4	silty clay to clay	18
18.7	25.39	1.2239	4.821	72.172	4	silty clay to clay	17
18.86	25.43	1.2654	4.976	78.275	4	silty clay to clay	16
19.03	23.49	1.2125	5.161	40.453	3	clay	22
19.19	20.18	1.026	5.084	36.06	3	clay	20
19.36	16.47	0.7558	4.588	40.335	3	clay	19
19.52	15.09	0.6725	4.456	33.15	3	clay	17
19.69	15.24	0.6748	4.428	57.382	3	clay	16
19.85	14.89	0.6786	4.557	40.016	3	clay	15
20.01	14.59	0.6569	4.502	42.508	3	clay	14
20.18	13.61	0.6636	4.878	49.846	3	clay	14
20.34	13.27	0.6534	4.925	29.674	3	clay	13
20.51	12.84	0.5712	4.447	25.945	3	clay	13
20.67	12.08	0.4226	3.498	28.482	3	clay	12
20.83	11.58	0.4201	3.63	19.403	3	clay	11
21	10.05	0.4353	4.329	49.958	3	clay	11
21.16	9.91	0.4307	4.348	43.167	3	clay	10
21.33	9.63	0.4172	4.333	41.774	3	clay	10
21.49	9.39	0.3955	4.211	35.534	3	clay	10
21.65	8.79	0.3957	4.501	42.205	3	clay	9
21.82	9.03	0.3911	4.333	36.23	3	clay	9
21.98	9.65	0.314	3.253	33.301	3	clay	9

22.15	8.96	0.3198	3.57	38.311	3	clay	10
22.31	8.9	0.3097	3.479	47.048	4	silty clay to clay	8
22.47	9.09	0.5027	5.533	46.504	4	silty clay to clay	9
22.64	12.9	0.4375	3.392	53.8	4	silty clay to clay	10
22.8	26.41	0.6979	2.642	7.105	4	silty clay to clay	11
22.97	24.54	0.7143	2.911	-3.475	5	clayey silt to silty clay	9
23.13	19.28	0.8061	4.181	7.042	5	clayey silt to silty clay	10
23.29	15.93	0.7068	4.437	20.695	5	clayey silt to silty clay	10
23.46	25.29	0.6583	2.603	26.939	5	clayey silt to silty clay	9
23.62	23.85	0.5151	2.16	-4.071	5	clayey silt to silty clay	8
23.79	13.25	0.466	3.517	3.229	5	clayey silt to silty clay	7
23.95	8.93	0.3111	3.485	39.085	5	clayey silt to silty clay	7
24.11	8.54	0.2814	3.297	45.717	4	silty clay to clay	8
24.28	8.19	0.2539	3.1	49.566	4	silty clay to clay	6
24.44	7.86	0.2775	3.531	48.656	4	silty clay to clay	6
24.61	8.66	0.2995	3.458	51.606	3	clay	10
24.77	11.15	0.2928	2.627	39.812	4	silty clay to clay	9
24.93	10.28	0.5024	4.886	33.725	5	clayey silt to silty clay	8
25.1	11.46	0.5111	4.458	55.094	5	clayey silt to silty clay	10
25.26	34.08	0.6648	1.951	18.072	5	clayey silt to silty clay	11
25.43	33.98	0.6628	1.95	-5.081	5	clayey silt to silty clay	11
25.59	29.37	0.5517	1.878	-4.043	6	sandy silt to clayey silt	10
25.75	23.66	0.8391	3.546	0.356	6	sandy silt to clayey silt	11
25.92	21.58	0.6209	2.877	20.336	5	clayey silt to silty clay	12
26.08	29.82	0.7444	2.496	13.945	5	clayey silt to silty clay	11
26.25	24.05	0.6577	2.734	-3.308	5	clayey silt to silty clay	10
26.41	13.52	0.5759	4.259	15.444	5	clayey silt to silty clay	9
26.57	13.3	0.3687	2.772	37.08	5	clayey silt to silty clay	8
26.74	11.54	0.3046	2.64	31.452	4	silty clay to clay	8
26.9	8.68	0.2485	2.861	44.579	4	silty clay to clay	7
27.07	8.18	0.2114	2.583	56.43	4	silty clay to clay	7
27.23	8.11	0.2252	2.776	58.546	4	silty clay to clay	6
27.4	8.36	0.2651	3.171	63.263	4	silty clay to clay	6
27.56	8.88	0.3086	3.476	56.464	4	silty clay to clay	6
27.72	8.96	0.3189	3.559	51.292	4	silty clay to clay	6
27.89	9.23	0.3388	3.669	52.304	3	clay	9
28.05	9.15	0.335	3.661	48.993	3	clay	9
28.22	8.79	0.3457	3.932	49.446	3	clay	9
28.38	8.98	0.3741	4.166	54.221	3	clay	9
28.54	9.07	0.3729	4.109	44.632	3	clay	9
28.71	8.63	0.3501	4.059	41.58	3	clay	9
28.87	8.37	0.3287	3.929	45.189	3	clay	9
29.04	8.01	0.3166	3.954	46.886	3	clay	9
29.2	7.89	0.3117	3.952	45.142	3	clay	8
29.36	7.88	0.3199	4.058	48.17	3	clay	8
29.53	8.15	0.3562	4.372	49.506	3	clay	8
29.69	8.15	0.403	4.946	54.903	3	clay	9
29.86	8.57	0.4235	4.941	47.168	3	clay	9
30.02	8.64	0.4098	4.741	42.681	3	clay	9
30.18	8.75	0.4266	4.875	42.668	3	clay	9
30.35	9.17	0.4475	4.88	47.686	3	clay	9
30.51	9.46	0.4959	5.243	37.736	3	clay	9
30.68	9.55	0.4876	5.105	40.73	3	clay	9
30.84	9.63	0.4482	4.652	35.051	3	clay	9
31	8.91	0.3761	4.222	40.178	3	clay	9
31.17	8.54	0.2906	3.404	39.914	3	clay	9
31.33	8	0.2385	2.981	48.891	3	clay	9
31.5	7.84	0.2251	2.871	60.287	4	silty clay to clay	6
31.66	7.84	0.2664	3.397	58.967	4	silty clay to clay	6
31.82	8.17	0.2854	3.492	60.4	4	silty clay to clay	6
31.99	8.36	0.2946	3.524	58.153	4	silty clay to clay	6
32.15	8.54	0.2664	3.119	60.554	4	silty clay to clay	6
32.32	8.23	0.2526	3.069	59.401	4	silty clay to clay	6
32.48	8.05	0.2301	2.859	60.917	4	silty clay to clay	6
32.64	7.98	0.241	3.021	65.486	4	silty clay to clay	6
32.81	8.57	0.2817	3.286	61.788	3	clay	10
32.97	9.67	0.416	4.302	65.528	3	clay	10
33.14	11.12	0.5457	4.909	59.631	3	clay	10
33.3	11.06	0.5825	5.266	37.446	3	clay	10
33.46	10.76	0.5014	4.661	34.483	3	clay	11
33.63	10.32	0.4516	4.377	45.57	3	clay	11

33.79	9.89	0.4401	4.448	49.906	3	clay	10
33.96	9.59	0.419	4.368	54.336	3	clay	10
34.12	9.27	0.4188	4.519	56.639	3	clay	10
34.28	9.84	0.456	4.633	52.644	3	clay	10
34.45	10.01	0.4698	4.695	50.515	3	clay	10
34.61	10.16	0.4785	4.71	45.139	3	clay	11
34.78	10.56	0.5175	4.903	48.784	3	clay	11
34.94	11.45	0.564	4.928	48.792	3	clay	11
35.1	11.52	0.5809	5.041	41.164	3	clay	11
35.27	10.95	0.58	5.297	58.216	3	clay	12
35.43	11.38	0.6032	5.303	52.667	3	clay	12
35.6	11.48	0.6975	6.078	43.784	3	clay	12
35.76	12.73	0.7597	5.967	42.846	3	clay	12
35.93	13.35	0.845	6.332	31.709	3	clay	13
36.09	13.61	0.7342	5.397	28.035	3	clay	13
36.25	12.88	0.7359	5.714	25.323	3	clay	13
36.42	13.54	0.6451	4.764	43.45	3	clay	12
36.58	12.18	0.6259	5.14	45.058	3	clay	12
36.75	11.16	0.5359	4.801	47.934	3	clay	12
36.91	10.37	0.519	5.003	46.324	3	clay	11
37.07	9.92	0.4969	5.007	55.745	3	clay	11
37.24	10	0.4858	4.858	53.538	3	clay	11
37.4	10.65	0.4984	4.68	55.69	3	clay	11
37.57	11.45	0.4736	4.138	53.206	3	clay	11
37.73	10.74	0.4847	4.514	55.084	3	clay	11
37.89	10.94	0.5036	4.604	66.422	3	clay	11
38.06	11.41	0.5249	4.6	60.638	3	clay	11
38.22	10.88	0.524	4.816	60.198	3	clay	11
38.39	11.17	0.5041	4.513	60.52	3	clay	12
38.55	11.19	0.5284	4.721	65.112	3	clay	12
38.71	11.52	0.5555	4.821	62.832	3	clay	12
38.88	11.54	0.5718	4.955	62.311	3	clay	12
39.04	12.17	0.6	4.932	62.285	3	clay	13
39.21	12.41	0.6665	5.372	66.092	3	clay	13
39.37	12.94	0.6534	5.05	58.948	3	clay	13
39.53	13.72	0.6527	4.756	65.094	3	clay	14
39.7	13.52	0.6753	4.994	64.288	3	clay	14
39.86	14.15	0.6732	4.756	61.984	3	clay	14
40.03	13.93	0.7134	5.122	52.526	3	clay	14
40.19	14.11	0.7228	5.124	48.366	3	clay	14
40.35	13.6	0.7743	5.694	47.545	3	clay	14
40.52	14.29	0.8316	5.82	51.2	3	clay	14
40.68	14.84	0.882	5.942	43.834	3	clay	14
40.85	14.65	0.7987	5.452	41.397	3	clay	14
41.01	14.02	0.6884	4.911	41.496	3	clay	14
41.17	12.81	0.6206	4.845	51.87	3	clay	14
41.34	12.57	0.559	4.446	58.789	3	clay	14
41.5	12.11	0.5913	4.884	61.44	3	clay	14
41.67	13.28	0.6732	5.069	71.62	3	clay	14
41.83	14.2	0.7907	5.57	56.456	3	clay	14
41.99	14.03	0.774	5.517	54.446	3	clay	14
42.16	14.44	0.7149	4.952	58.015	3	clay	14
42.32	14.4	0.718	4.988	50.636	3	clay	14
42.49	14.21	0.6886	4.847	60.815	3	clay	14
42.65	14.71	0.6903	4.691	64.654	3	clay	14
42.81	13.83	0.6974	5.043	77.548	3	clay	14
42.98	13.9	0.7332	5.275	63.692	3	clay	15
43.14	13.99	0.7495	5.358	63.041	3	clay	15
43.31	14.42	0.7533	5.224	60.758	3	clay	15
43.47	14.69	0.8055	5.483	60.97	3	clay	15
43.64	15.23	0.8227	5.403	58.054	3	clay	15
43.8	15.14	0.8231	5.437	53.575	3	clay	15
43.96	15.1	0.8203	5.433	56.666	3	clay	15
44.13	15.5	0.8341	5.381	53.797	3	clay	15
44.29	15.09	0.796	5.276	52.508	3	clay	15
44.46	14.79	0.7564	5.114	58.436	3	clay	15
44.62	14.73	0.721	4.894	61.111	3	clay	15
44.78	14.67	0.6957	4.741	63.932	3	clay	15
44.95	14.79	0.7132	4.822	71.869	3	clay	15
45.11	14.89	0.7462	5.011	73.419	3	clay	15
45.28	15.08	0.7185	4.764	73.603	3	clay	15

45.44	14.8	0.7304	4.936	68.917	3	clay	15
45.6	14.97	0.7065	4.72	81.374	3	clay	15
45.77	15.16	0.724	4.777	82.658	3	clay	15
45.93	14.52	0.6854	4.72	78.302	3	clay	16
46.1	15.22	0.6685	4.393	85.521	3	clay	16
46.26	15.6	0.6912	4.431	84.622	3	clay	16
46.42	15.16	0.6965	4.595	85.045	3	clay	16
46.59	15.76	0.7096	4.503	90.283	3	clay	16
46.75	15.84	0.7135	4.504	86.141	3	clay	16
46.92	15.36	0.6959	4.531	87.119	3	clay	16
47.08	15.35	0.6814	4.438	90.21	4	silty clay to clay	11
47.24	15.49	0.685	4.423	92.21	4	silty clay to clay	11
47.41	15.99	0.695	4.345	93.719	4	silty clay to clay	11
47.57	16.4	0.6868	4.189	91.682	4	silty clay to clay	11
47.74	16.34	0.6478	3.965	91.753	4	silty clay to clay	11
47.9	16.17	0.6034	3.731	97.707	4	silty clay to clay	11
48.06	15.68	0.5686	3.626	98.138	5	clayey silt to silty clay	8
48.23	14.8	0.5012	3.387	98.761	5	clayey silt to silty clay	8
48.39	14.4	0.4351	3.023	103.91	5	clayey silt to silty clay	8
48.56	14.69	0.3982	2.711	107.557	5	clayey silt to silty clay	8
48.72	15.03	0.3839	2.554	109.281	5	clayey silt to silty clay	8
48.88	15.82	0.5032	3.18	113.927	5	clayey silt to silty clay	8
49.05	17.48	0.625	3.577	110.172	5	clayey silt to silty clay	9
49.21	18.03	0.697	3.866	99.088	5	clayey silt to silty clay	9
49.38	17.89	0.7263	4.059	94.569	4	silty clay to clay	12
49.54	17.93	0.7191	4.01	99.843	4	silty clay to clay	12
49.7	17.99	0.6868	3.818	95.249	4	silty clay to clay	12
49.87	17.3	0.6289	3.635	92.485	4	silty clay to clay	12
50.03	17.01	0.5942	3.493	103.815	5	clayey silt to silty clay	9
50.2	17.22	0.6083	3.532	102.592	5	clayey silt to silty clay	9
50.36	16.73	0.592	3.539	103.815	5	clayey silt to silty clay	9
50.52	16.47	0.5751	3.492	102.474	5	clayey silt to silty clay	8
50.69	15.54	0.4303	2.769	99.611	5	clayey silt to silty clay	8
50.85	13.97	0.2902	2.077	100.089	5	clayey silt to silty clay	8
51.02	13.97	0.2704	1.936	119.623	5	clayey silt to silty clay	9
51.18	16.34	0.3507	2.146	127.138	5	clayey silt to silty clay	9
51.35	19.05	0.4376	2.297	122.138	5	clayey silt to silty clay	9
51.51	19.84	0.4705	2.371	122.871	5	clayey silt to silty clay	10
51.67	19.79	0.5292	2.674	115.075	5	clayey silt to silty clay	10
51.84	19.46	0.5717	2.937	126.126	5	clayey silt to silty clay	10
52	19.62	0.5134	2.616	113.52	5	clayey silt to silty clay	10
52.17	20.27	0.537	2.65	110.905	5	clayey silt to silty clay	10
52.33	21.08	0.5244	2.487	109.516	5	clayey silt to silty clay	10
52.49	20.07	0.4825	2.404	102.555	5	clayey silt to silty clay	11
52.66	19.39	0.5104	2.632	114.15	5	clayey silt to silty clay	12
52.82	19.87	0.6773	3.409	116.061	5	clayey silt to silty clay	13
52.99	22.43	0.7651	3.412	116.791	5	clayey silt to silty clay	17
53.15	38	1.2895	3.393	65.227	6	sandy silt to clayey silt	18
53.31	40.67	2.039	5.014	78.686	6	sandy silt to clayey silt	22
53.48	79.36	1.9365	2.44	38.751	6	sandy silt to clayey silt	25
53.64	100.62	1.6547	1.645	4.111	6	sandy silt to clayey silt	28
53.81	94.92	1.5963	1.682	24.784	6	sandy silt to clayey silt	27
53.97	83.84	1.7649	2.105	25.608	7	silty sand to sandy silt	22
54.13	62.19	1.3336	2.144	23.608	6	sandy silt to clayey silt	24
54.3	37.3	1.0104	2.709	40.181	6	sandy silt to clayey silt	22
54.46	26.17	0.8922	3.409	108.797	6	sandy silt to clayey silt	19
54.63	27.63	1.112	4.025	114.785	5	clayey silt to silty clay	22
54.79	55.62	1.4039	2.524	100.011	5	clayey silt to silty clay	24
54.95	53.06	2.0924	3.944	34.577	6	sandy silt to clayey silt	26
55.12	48.77	3.1779	6.516	98.868	6	sandy silt to clayey silt	34
55.28	95.8	3.3735	3.521	157.67	7	silty sand to sandy silt	34
55.45	156.32	2.251	1.44	12.69	7	silty sand to sandy silt	36
55.61	175.11	1.6976	0.969	1.151	7	silty sand to sandy silt	40
55.77	145.7	2.8975	1.989	6.867	8	sand to silty sand	37
55.94	114.72	3.0379	2.648	16.853	8	sand to silty sand	43
56.1	142.13	2.9101	2.047	24.097	9	sand	37
56.27	239.29	2.3166	0.968	19.931	9	sand	39
56.43	271.2	1.8884	0.696	22.033	9	sand	43
56.59	263.86	1.7357	0.658	21.863	9	sand	49
56.76	259.45	2.0813	0.802	20.509	9	sand	55
56.92	277.56	2.2399	0.807	12.308	9	sand	59

57.09	327.37	2.6443	0.808	8.166	9	sand	62
57.25	388.27	2.5044	0.645	21.743	10	gravelly sand to sand	55
57.41	378.73	2.6771	0.707	12.256	10	gravelly sand to sand	58
57.58	386.92	2.3108	0.597	23.649	10	gravelly sand to sand	60
57.74	407.6	1.7408	0.427	15.248	10	gravelly sand to sand	59
57.91	395.29	2.669	0.675	7.84	10	gravelly sand to sand	56
58.07	340.6	2.578	0.757	44.598	10	gravelly sand to sand	53
58.23	276.34	2.0741	0.751	21.202	10	gravelly sand to sand	52
58.4	267.33	1.8291	0.684	26.508	9	sand	62
58.56	264.98	2.1023	0.793	17.721	10	gravelly sand to sand	52
58.73	323.02	1.2467	0.386	20.77	10	gravelly sand to sand	53
58.89	403.59	1.9867	0.492	15.122	10	gravelly sand to sand	54
59.06	383.88	1.6132	0.42	24.335	10	gravelly sand to sand	55
59.22	382.42	3.1628	0.827	17.836	10	gravelly sand to sand	56
59.38	358.41	2.6087	0.728	32.106	10	gravelly sand to sand	54
59.55	310.89	2.0681	0.665	31.33	9	sand	61
59.71	274.25	1.5621	0.57	22.384	9	sand	59
59.88	252.54	1.6158	0.64	20.551	9	sand	58
60.04	269.2	1.8188	0.676	16.9	9	sand	57
60.2	311.88	1.9262	0.618	5.047	9	sand	57
60.37	343.79	1.946	0.566	40.579	9	sand	58
60.53	324.91	1.6982	0.523	18.862	10	gravelly sand to sand	49
60.7	318.72	1.8978	0.595	6.731	10	gravelly sand to sand	50
60.86	298.76	1.4005	0.469	7.777	10	gravelly sand to sand	50
61.02	280.87	1.2769	0.455	7.565	10	gravelly sand to sand	48
61.19	301.85	1.138	0.377	6.299	10	gravelly sand to sand	47
61.35	305.08	0.9259	0.303	7.868	9	sand	53
61.52	283.46	0.788	0.278	6.022	9	sand	50
61.68	256.26	2.3758	0.927	10.091	9	sand	49
61.84	202.7	1.7693	0.873	10.876	9	sand	49
62.01	196.31	1.7969	0.915	23.615	9	sand	50
62.17	256.24	1.7871	0.697	16.145	9	sand	52
62.34	296.1	2.6379	0.891	26.434	9	sand	55
62.5	336.37	3.0812	0.916	18.433	9	sand	58
62.66	365.04	3.2609	0.893	8.279	9	sand	61
62.83	343.15	2.2071	0.643	23.247	9	sand	64
62.99	311.75	1.8612	0.597	6.95	10	gravelly sand to sand	55
63.16	325.18	1.8169	0.559	13.252	10	gravelly sand to sand	55
63.32	373.82	1.9921	0.533	16.511	10	gravelly sand to sand	53
63.48	373.37	2.0009	0.536	7.029	10	gravelly sand to sand	50
63.65	306.82	1.0184	0.332	2.126	9	sand	59
63.81	271.65	0.8776	0.323	6.187	9	sand	57
63.98	244.65	1.2118	0.495	18.242	9	sand	54
64.14	258.02	3.6341	1.408	16.665	8	sand to silty sand	67
64.3	259.97	9.0537	3.483	20.977	8	sand to silty sand	70
64.47	270.19	9.7139	3.595	29.761	8	sand to silty sand	76
64.63	338.39	9.7929	2.894	16.006	8	sand to silty sand	84
64.8	396.28	3.592	0.906	31.228	8	sand to silty sand	93
64.96	439.62	6.7828	1.543	24.099	9	sand	82
65.12	497.7	4.4728	0.899	51.564	9	sand	87
65.29	523.59	5.5685	1.064	26.495	9	sand	94
65.45	523.53	3.8523	0.736	82.169	9	sand	98
65.62	472.07	7.1272	1.51	82.967	9	sand	99
65.78	563.84	6.2785	1.114	15.776	9	sand	99
65.94	545.61	5.9367	1.088	34.467	9	sand	96
66.11	498.25	4.2152	0.846	8.214	9	sand	93
66.27	470.86	3.3149	0.704	54.197	9	sand	89
66.44	443.29	5.095	1.149	15.548	9	sand	84
66.6	386.44	4.0872	1.058	41.648	9	sand	81
66.77	358.92	3.5287	0.983	53.321	9	sand	80
66.93	380.01	3.1305	0.824	28.505	9	sand	80
67.09	414.12	2.9071	0.702	22.923	9	sand	86
67.26	449.82	4.0944	0.91	22.575	10	gravelly sand to sand	79
67.42	495.01	3.9352	0.795	18.04	10	gravelly sand to sand	84
67.59	641.25	7.3043	1.139	9.641	10	gravelly sand to sand	86
67.75	727.99	4.4341	0.609	36.094	10	gravelly sand to sand	86
67.91	588.37	4.9607	0.843	27.846	9	sand	101
68.08	459.44	6.2124	1.352	-0.826	9	sand	98
68.24	403.61	5.4409	1.348	35.83	10	gravelly sand to sand	76
68.41	365.88	4.1672	1.139	19.058	9	sand	84
68.57	378.65	2.631	0.695	-5.52	9	sand	79

68.73	421.75	3.3614	0.797	2.115	9	sand	78
68.9	443.32	5.4544	1.23	-0.235	9	sand	78
69.06	432.76	6.0426	1.396	12.763	9	sand	79
69.23	409.29	5.4993	1.344	29.342	9	sand	79
69.39	410.9	3.9504	0.961	-4.919	9	sand	77
69.55	402.85	4.1574	1.032	-0.565	9	sand	76
69.72	361.99	4.0024	1.106	-6.033	9	sand	78
69.88	363.15	4.6187	1.272	-0.675	9	sand	81
70.05	411.09	4.8058	1.169	2.045	9	sand	85
70.21	479.09	4.9556	1.034	17.463	9	sand	89
70.37	542.94	5.0252	0.926	5.175	10	gravelly sand to sand	77
70.54	541.87	4.3613	0.805	0.424	10	gravelly sand to sand	80
70.7	535.1	3.8119	0.712	31.473	10	gravelly sand to sand	80
70.87	524.38	3.9169	0.747	0.659	10	gravelly sand to sand	78
71.03	475.12	4.5009	0.947	-1.71	10	gravelly sand to sand	76
71.19	394.99	4.7988	1.215	-3.867	10	gravelly sand to sand	74
71.36	391.9	5.1259	1.308	8.852	10	gravelly sand to sand	72
71.52	456.02	4.1245	0.904	5.538	10	gravelly sand to sand	70
71.69	448.76	2.3029	0.513	6.535	10	gravelly sand to sand	70
71.85	465.36	2.8236	0.607	4.903	10	gravelly sand to sand	71
72.01	418.01	3.2174	0.77	58.378	10	gravelly sand to sand	73
72.18	482.71	3.5402	0.733	2.338	10	gravelly sand to sand	71
72.34	467.04	5.2018	1.114	-1.09	9	sand	84
72.51	445.37	4.3604	0.979	16.296	9	sand	82
72.67	392.2	4.2865	1.093	3.386	9	sand	82
72.83	393.89	4.4531	1.131	-1.475	9	sand	81
73	390.2	5.628	1.442	0.473	9	sand	79
73.16	440.11	4.8519	1.102	3.104	9	sand	77
73.33	422.5	3.7149	0.879	0.654	9	sand	77
73.49	394.81	3.8279	0.97	-0.703	9	sand	77
73.65	395.19	4.015	1.016	1.313	9	sand	79
73.82	383.97	4.1114	1.071	7.675	9	sand	82
73.98	399.32	4.7469	1.189	6.454	9	sand	87
74.15	452.11	3.8825	0.859	4.451	9	sand	93
74.31	531.29	5.2932	0.996	20.179	10	gravelly sand to sand	82
74.48	629.59	5.3014	0.842	4.655	10	gravelly sand to sand	86
74.64	617.97	5.7677	0.933	44.36	10	gravelly sand to sand	90
74.8	594.88	3.311	0.557	1.234	10	gravelly sand to sand	90
74.97	564	3.6409	0.646	0.829	10	gravelly sand to sand	88
75.13	541.33	3.3207	0.613	-4.811	10	gravelly sand to sand	83
75.3	471.08	4.7983	1.019	3.274	10	gravelly sand to sand	80
75.46	429.13	4.009	0.934	1.932	10	gravelly sand to sand	77
75.62	405.16	3.5748	0.882	-0.706	10	gravelly sand to sand	74
75.79	496.18	3.6897	0.744	-2.066	9	sand	86
75.95	462.09	4.4954	0.973	-1.174	9	sand	86
76.12	443.01	5.1562	1.164	-7.12	9	sand	86
76.28	428.27	6.8451	1.598	6.642	9	sand	86
76.44	482.97	5.8576	1.213	4.461	9	sand	83
76.61	427.88	4.8052	1.123	-0.293	9	sand	81
76.77	402.12	3.4873	0.867	-3.556	9	sand	79
76.94	397.59	3.8064	0.957	-1.247	9	sand	79
77.1	374.35	3.0085	0.804	27.747	9	sand	79
77.26	367.04	4.6202	1.259	6.184	9	sand	80
77.43	438.79	5.4079	1.232	7.892	9	sand	79
77.59	467.87	4.8985	1.047	22.75	9	sand	78
77.76	474.39	5.7073	1.203	-8.501	9	sand	76
77.92	382.35	5.6507	1.478	-7.871	9	sand	77
78.08	333.24	5.064	1.52	-4.553	9	sand	76
78.25	328.41	5.167	1.573	-1.697	9	sand	77
78.41	382.91	4.795	1.252	4.558	9	sand	72
78.58	422.42	2.5048	0.593	4.137	9	sand	75
78.74	477.77	3.5467	0.742	4.346	9	sand	80
78.9	301.7	4.1492	1.375	45.037	10	gravelly sand to sand	69
79.07	487.08	4.1878	0.86	3.833	10	gravelly sand to sand	70
79.23	510.86	3.9871	0.78	8.078	9	sand	86
79.4	460.36	3.5585	0.773	-4.354	9	sand	88
79.56	420.78	3.9478	0.938	-3.907	10	gravelly sand to sand	77
79.72	498.65	6.0154	1.206	6.132	10	gravelly sand to sand	75
79.89	533.3	4.4673	0.838	7.939	10	gravelly sand to sand	72
80.05	452.82	3.4275	0.757	16.657	9	sand	83
80.22	412.1	2.5048	0.608	4.432	9	sand	82

80.38	361.51	3.4053	0.942	0.447	10	gravelly sand to sand	66
80.54	337.86	3.6758	1.088	1.972	9	sand	77
80.71	395.46	3.5283	0.892	5.97	9	sand	77
80.87	423.18	3.1321	0.74	9.299	9	sand	74
81.04	449.19	5.3884	1.2	10.23	9	sand	67
81.2	424.93	4.2404	0.998	0.073	9	sand	59
81.36	297.29	6.0007	2.018	-3.852	8	sand to silty sand	62
81.53	129.91	4.4027	3.389	12.465	8	sand to silty sand	48
81.69	44.72	3.0473	6.814	27.342	7	silty sand to sandy silt	45
81.86	31.03	1.2336	3.976	147.793	6	sandy silt to clayey silt	32
82.02	26.88	0.9837	3.66	184.073	5	clayey silt to silty clay	22
82.19	23.89	0.9005	3.769	195.014	4	silty clay to clay	19
82.35	22.14	0.8442	3.813	202.634	5	clayey silt to silty clay	13
82.51	22.17	0.8195	3.697	203.018	5	clayey silt to silty clay	12
82.68	22.19	0.8498	3.83	201.164	5	clayey silt to silty clay	12
82.84	22.25	0.8373	3.763	200.84	5	clayey silt to silty clay	13
83.01	22.6	0.8813	3.9	195.406	5	clayey silt to silty clay	15
83.17	27.2	1.0268	3.774	203.125	4	silty clay to clay	21
83.33	33.49	1.546	4.617	194.82	4	silty clay to clay	23
83.5	43.5	1.976	4.542	131.23	3	clay	38
83.66	43.87	2.2636	5.16	103.622	3	clay	48
83.83	45.97	2.783	6.054	128.945	5	clayey silt to silty clay	32
83.99	48.48	3.9246	8.095	132.423	6	sandy silt to clayey silt	34
84.15	92.08	4.2031	4.565	131.57	6	sandy silt to clayey silt	41
84.32	154.83	3.6506	2.358	-12.567	6	sandy silt to clayey silt	45
84.48	183.84	2.6708	1.453	-13.412	7	silty sand to sandy silt	40
84.65	165.91	2.4501	1.477	-14.202	7	silty sand to sandy silt	41
84.81	124.68	2.743	2.2	-13.02	7	silty sand to sandy silt	38
84.97	93.92	2.8513	3.036	23.846	7	silty sand to sandy silt	32
85.14	71.44	2.5768	3.607	13.028	6	sandy silt to clayey silt	30
85.3	31.16	2.1091	6.768	92.535	5	clayey silt to silty clay	28
85.47	27.33	1.1765	4.304	108.666	5	clayey silt to silty clay	21
85.63	25.22	1.0166	4.031	147.085	4	silty clay to clay	22
85.79	23.79	0.9575	4.025	181.916	3	clay	28
85.96	24.08	0.9768	4.056	190.555	3	clay	35
86.12	26.21	1.1277	4.303	200.626	4	silty clay to clay	37
86.29	29.88	2.4935	8.344	205.73	5	clayey silt to silty clay	39
86.45	85.6	5.4851	6.408	123.715	5	clayey silt to silty clay	50
86.61	173.24	6.2309	3.597	-3.818	6	sandy silt to clayey silt	48
86.78	201.5	5.9951	2.975	-7.17	12	sand to clayey sand (*)	77
86.94	186.57	6.1771	3.311	-5.282	7	silty sand to sandy silt	69
87.11	173.63	7.6849	4.426	-3.114	7	silty sand to sandy silt	85
87.27	267.4	8.2107	3.071	-3.87	7	silty sand to sandy silt	97
87.43	414.07	7.5209	1.816	4.451	8	sand to silty sand	81
87.6	456.71	7.8493	1.719	-0.983	8	sand to silty sand	88
87.76	424.98	6.9234	1.629	0.622	8	sand to silty sand	95
87.93	438.67	6.6679	1.52	5.648	8	sand to silty sand	101
88.09	390.34	6.9835	1.789	10.013	9	sand	82
88.25	393.3	5.8673	1.492	25.407	9	sand	86
88.42	421.57	3.73	0.885	23.979	9	sand	89
88.58	487.65	5.8246	1.194	28.558	9	sand	92
88.75	588.63	5.4909	0.933	7.962	9	sand	96
88.91	547.63	5.2175	0.953	14.291	9	sand	98
89.07	542.41	6.6657	1.229	7.272	9	sand	99
89.24	544.24	7.5065	1.379	11.639	9	sand	96
89.4	464.72	5.2867	1.138	13.449	9	sand	87
89.57	451.9	3.7017	0.819	26.583	9	sand	75
89.73	378.85	3.3414	0.882	9.063	9	sand	62
89.9	258.83	2.9652	1.146	-6.943	9	sand	48
90.06	106.06	2.2195	2.093	-11.236	9	sand	36
90.22	46.59	1.6129	3.462	-6.281	8	sand to silty sand	32
90.39	42.78	0.8284	1.936	27.517	7	silty sand to sandy silt	28
90.55	43.36	0.8781	2.025	67.465	6	sandy silt to clayey silt	23
90.72	42.85	1.3088	3.055	88.837	5	clayey silt to silty clay	29
90.88	60.15	2.6194	4.355	100.162	6	sandy silt to clayey silt	27
91.04	82.86	3.8509	4.647	44.143	6	sandy silt to clayey silt	29
91.21	99.7	3.0403	3.049	38.74	6	sandy silt to clayey silt	29
91.37	108.2	2.0519	1.896	5.065	6	sandy silt to clayey silt	28
91.54	81.54	1.0779	1.322	-7.795	6	sandy silt to clayey silt	26
91.7	44.24	1.0322	2.333	25.273	6	sandy silt to clayey silt	23
91.86	30.14	0.9116	3.025	140.861	6	sandy silt to clayey silt	19

92.03	25.79	0.8927	3.461	176.045	6	sandy silt to clayey silt	15
92.19	25.35	0.8895	3.508	192.843	6	sandy silt to clayey silt	12
92.36	27.83	0.8798	3.161	202.197	5	clayey silt to silty clay	14
92.52	29.02	0.8991	3.098	212.759	5	clayey silt to silty clay	14
92.68	27.47	0.8939	3.254	189.627	5	clayey silt to silty clay	14
92.85	27.08	0.8415	3.107	197.273	5	clayey silt to silty clay	14
93.01	26.87	0.843	3.138	187.815	5	clayey silt to silty clay	14
93.18	25.27	0.8821	3.491	191.18	5	clayey silt to silty clay	14
93.34	24.88	0.8934	3.591	190.814	5	clayey silt to silty clay	14
93.5	24.64	0.9568	3.882	190.746	5	clayey silt to silty clay	14
93.67	24.23	0.9885	4.08	180.763	5	clayey silt to silty clay	14
93.83	25.57	1.0838	4.238	196.601	5	clayey silt to silty clay	14
94	28.89	1.3015	4.506	200.924	4	silty clay to clay	20
94.16	30.53	1.4128	4.628	177.269	4	silty clay to clay	21
94.32	33.1	1.4087	4.255	183.032	4	silty clay to clay	21
94.49	31.69	1.4472	4.566	181.84	4	silty clay to clay	22
94.65	32.74	1.3761	4.202	191.29	4	silty clay to clay	22
94.82	33.03	1.3763	4.166	189.222	5	clayey silt to silty clay	16
94.98	31.48	1.3041	4.142	173.694	4	silty clay to clay	21
95.14	29.65	1.2515	4.22	181.44	4	silty clay to clay	22
95.31	28.39	1.1866	4.179	184.944	4	silty clay to clay	22
95.47	28.77	1.4411	5.009	187.514	4	silty clay to clay	23
95.64	33.69	1.9303	5.73	182.841	4	silty clay to clay	23
95.8	42.38	1.5752	3.717	101.972	4	silty clay to clay	23
95.96	43.3	1.5763	3.64	70.933	4	silty clay to clay	25
96.13	32.7	1.4636	4.475	135.807	4	silty clay to clay	27
96.29	32.18	1.7115	5.319	171.948	5	clayey silt to silty clay	23
96.46	44.64	2.7057	6.061	126.123	5	clayey silt to silty clay	26
96.62	55.9	2.6943	4.82	69.045	5	clayey silt to silty clay	27
96.78	82.52	2.4252	2.939	-0.654	5	clayey silt to silty clay	26
96.95	77.47	2.1384	2.76	-0.071	5	clayey silt to silty clay	26
97.11	56.1	1.8172	3.239	10.784	5	clayey silt to silty clay	25
97.28	32.23	1.6354	5.075	71.28	5	clayey silt to silty clay	23
97.44	27.02	1.3421	4.967	150.837	5	clayey silt to silty clay	20
97.6	27.98	1.3468	4.813	169.858	4	silty clay to clay	22
97.77	26.28	1.2774	4.861	183.278	4	silty clay to clay	20
97.93	28.99	1.1904	4.107	147.621	4	silty clay to clay	20
98.1	27.59	1.1269	4.084	196.541	8	sand to silty sand	26
98.26	29	1.284	4.427	185.699	8	sand to silty sand	30
98.43	32.63	2.3327	7.15	233.976	8	sand to silty sand	38
98.59	86.55	3.5699	4.125	228.66	8	sand to silty sand	52
98.75	345.84	-32768	-32768	11.155	0	<out of range>	0

APPENDIX B

LABORATORY TESTING PROGRAM

APPENDIX B

LABORATORY TESTING PROGRAM

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

Moisture Content and Dry Density

Results of moisture content and dry density tests, performed on relatively undisturbed ring samples were used to aid in the classification of the soils and to provide quantitative measure of the *in situ* dry density. Data obtained from this test provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration*.

Passing No. 200 Sieve

The percent finer than sieve No. 200 test was performed on three (3) representative soil samples to aid in the classification of the on-site soils. Testing was performed in general accordance with the ASTM Standard D1140 test method. The test results are presented in the boring logs.

Atterberg Limits

Atterberg limits tests were performed on representative fine-grained samples to assist the classification of the soils according to ASTM Standard D4318 test method. The test results are presented in Drawing No. B-1 and the following table:

Table No. B-1, Atterberg Limit Test Results

Boring No	Depth (feet)	Soil Classification	Liquid Limit (%)	Plastic Limit (%)	Plastic Index (%)
MR-1	20	Clay (CL)	33	19	14
MR-1	30	Fat Clay (CH)	52	26	26
MR-1	40	Fat Clay (CH)	60	27	33
MR-2	35	Fat Clay (CH)	63	27	36
MR-2	45	Fat Clay (CH)	61	25	36

Direct Shear

Direct shear test was performed on thee (3) relatively undisturbed in-situ sample. For each test, three brass sampler rings were placed, one at a time, directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The sample was then sheared at a constant strain rate of 0.005 inch/minute. Shear deformation was recorded until a maximum of about 0.25-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear strength parameters. For test data, including sample density and moisture content, see Drawing No. B-2a through B-2c, *Direct Shear Test Results,* and in the following table:

Table No. B-2, Direct Shear Test Results

Boring No.	Depth (feet)	Soil Classification	Ultimate Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
MR-1	5	Sandy Silt (ML)	25	100
MR-2	10	Clay (CL)	25	300
MR-3	25	Silty Sand (SM)	33	100

Consolidation

Consolidation test was performed on three (3) relatively undisturbed in-situ samples. Data obtained from this test procedure was used to evaluate the settlement characteristics of the foundation soils under load. Preparation for this test involved trimming the sample and placing the one-inch high brass ring into the test apparatus, which contained porous stones, both top and bottom, to accommodate drainage during testing. Normal axial loads were applied to one end of the sample through the porous stones, and the resulting deflections were recorded at various time periods. The load was increased after the sample reached a reasonable state equilibrium. Normal loads were applied at a constant load-increment ratio, successive loads being generally twice the preceding load. The sample was tested at field and submerged conditions. The test results, including sample density and moisture content, are presented in Drawing Nos. B-3a and B-3c, *Consolidation Test Results*.

Soil Corrosivity

One (1) representative soil sample was tested to evaluate minimum electrical resistivity, pH, and chemical content, including soluble sulfate and chloride concentrations. The purpose of these tests is to determine the corrosion potential of site soils when placed in contact with common construction materials. These tests were performed by Environmental Geotechnical Laboratory, Inc. (EGL), located in Arcadia, California. The test results received from EGL are included in the following table:

Table No. B-3, Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) ppm	Saturated Resistivity (Caltrans 643) Ohm-cm
MR-2	5	8.93	135	70	720

Expansion Index

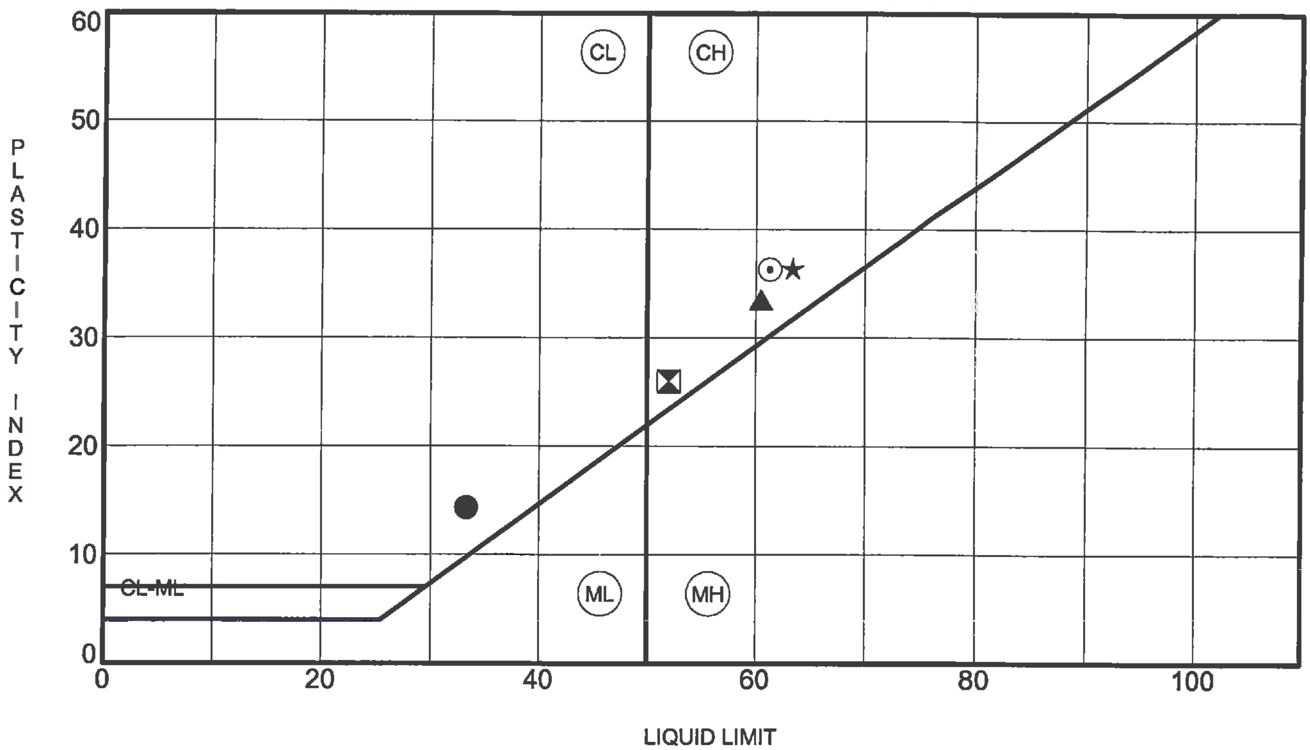
One (1) representative bulk sample was tested to evaluate the expansion potential of materials encountered at the site. Test results are presented in the following table:

Table No. B-4, Expansion Index Test Results

Boring No.	Depth (feet)	Soil Description	Expansion Index	Expansion Potential
MR-3	5	Sandy Silt (ML)	27	Low

Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period.



Symbol	Boring No.	Depth (ft)	LL (%)	PL (%)	PI (%)	Description
●	**MR-1**	**20**	**33**	**19**	**14**	**CLAY (CL)**
⊠	**MR-1**	**30**	**52**	**26**	**26**	**Fat CLAY (CH)**
▲	**MR-1**	**40**	**60**	**27**	**33**	**Fat CLAY (CH)**
★	**MR-2**	**35**	**63**	**27**	**36**	**Fat CLAY (CH)**
⊙	**MR-2**	**45**	**61**	**25**	**36**	**Fat CLAY (CH)**

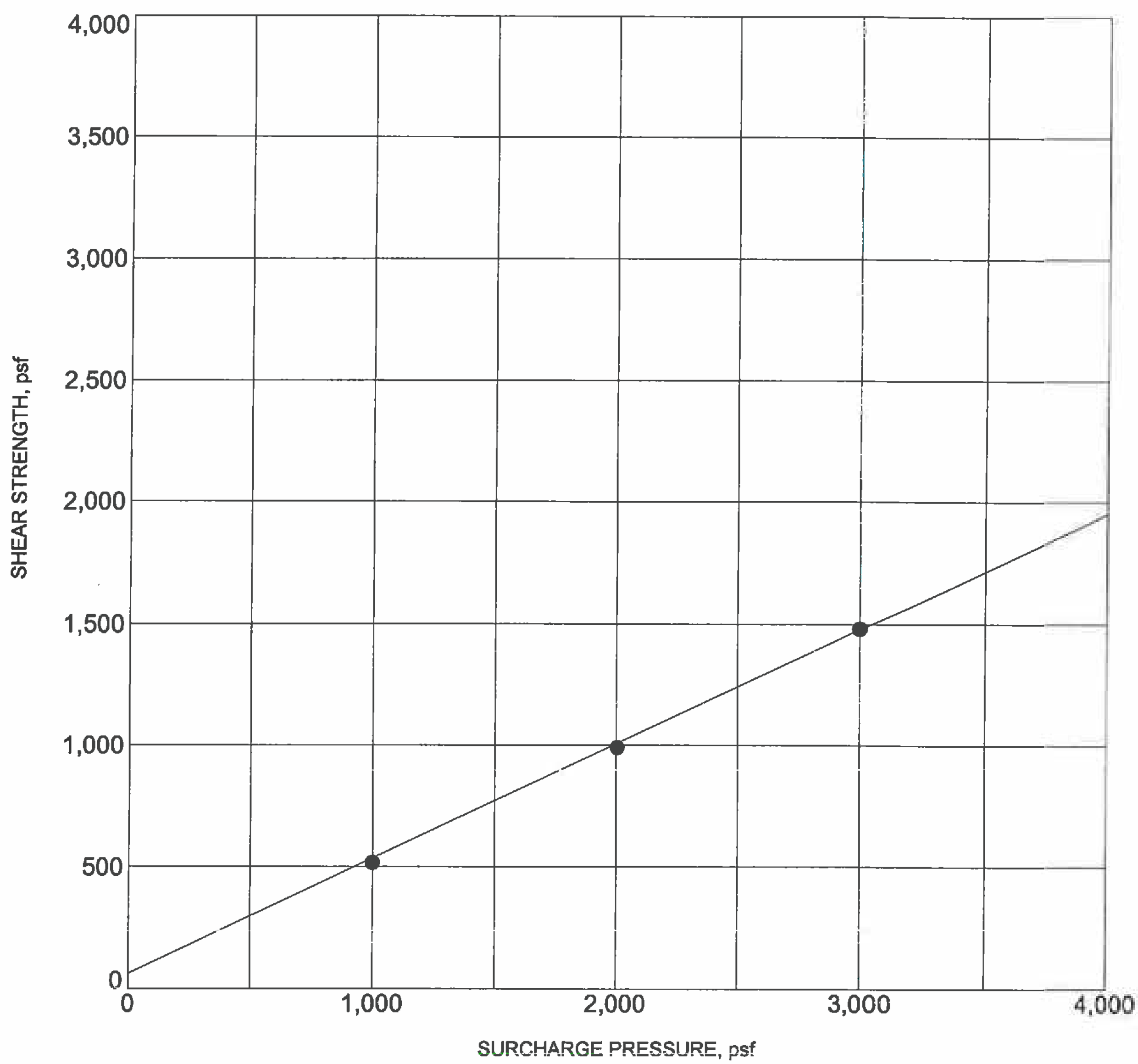
ATTERBERG LIMITS RESULTS

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No.
11-13-105-01

Drawing No.
B-1



BORING NO. :	MR-1	DEPTH (ft) :	5
DESCRIPTION :	SANDY SILT (ML)		
COHESION (psf) :	100	FRICTION ANGLE (degrees):	25
MOISTURE CONTENT (%) :	19.9	DRY DENSITY (pcf) :	94.3

NOTE: Ultimate Strength.

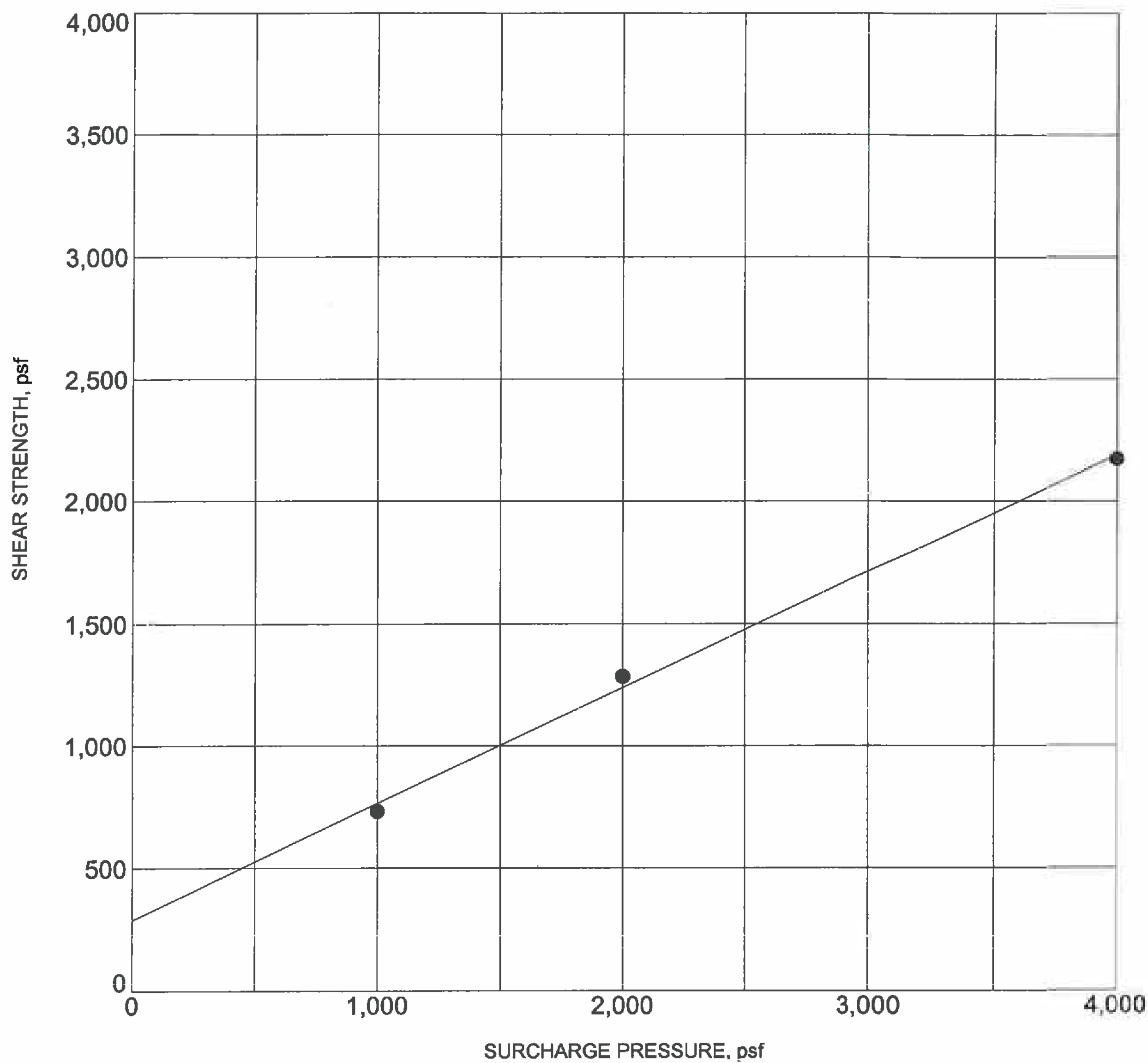
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No. 11-13-105-01

Drawing No. B-2a



BORING NO. :	MR-2	DEPTH (ft) :	10
DESCRIPTION :	CLAY (CL)		
COHESION (psf) :	300	FRICTION ANGLE (degrees):	25
MOISTURE CONTENT (%) :	39.3	DRY DENSITY (pcf) :	84.0

NOTE: Ultimate Strength.

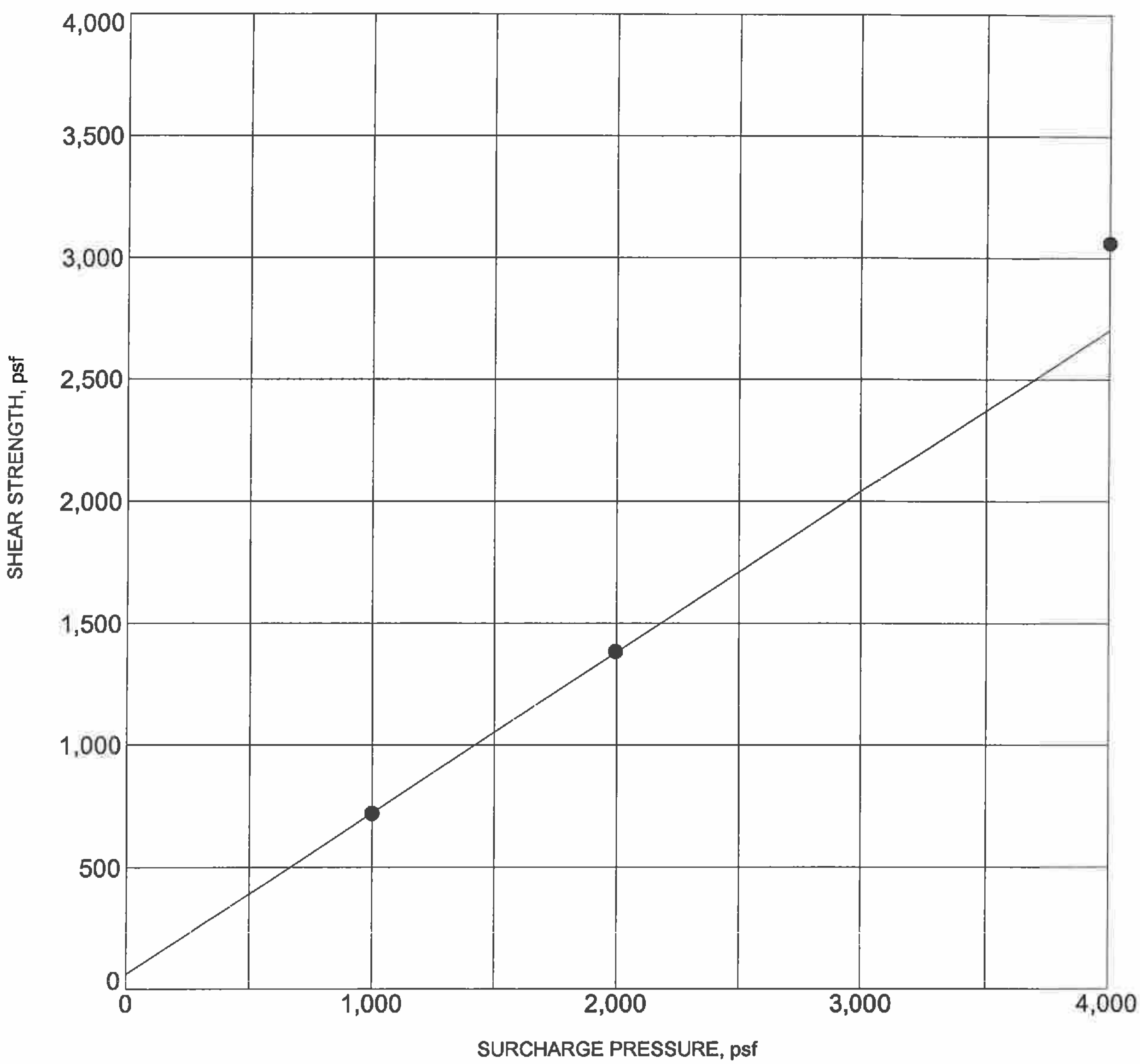
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No. 11-13-105-01

Drawing No. B-2b



BORING NO. :	MR-3	DEPTH (ft) :	25
DESCRIPTION :	SILTY SAND (SM)		
COHESION (psf) :	100	FRICTION ANGLE (degrees):	33
MOISTURE CONTENT (%) :	28.5	DRY DENSITY (pcf) :	95.6

NOTE: Ultimate Strength.

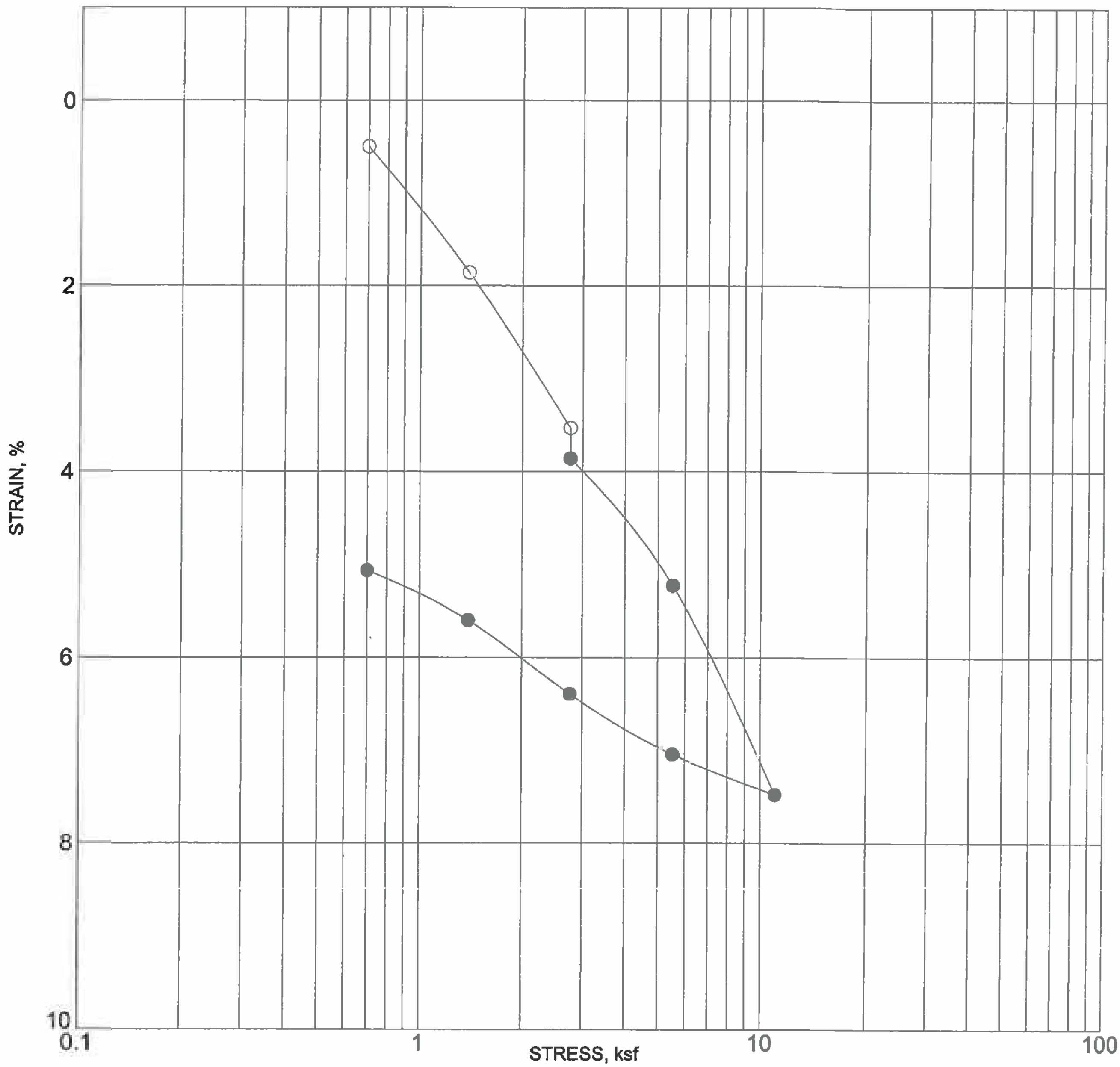
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No. 11-13-105-01

Drawing No. B-2c



BORING NO. :	MR-1	DEPTH (ft) :	15
DESCRIPTION :	CLAY (CL)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	19.5	108.8		
FINAL	17	108.8		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

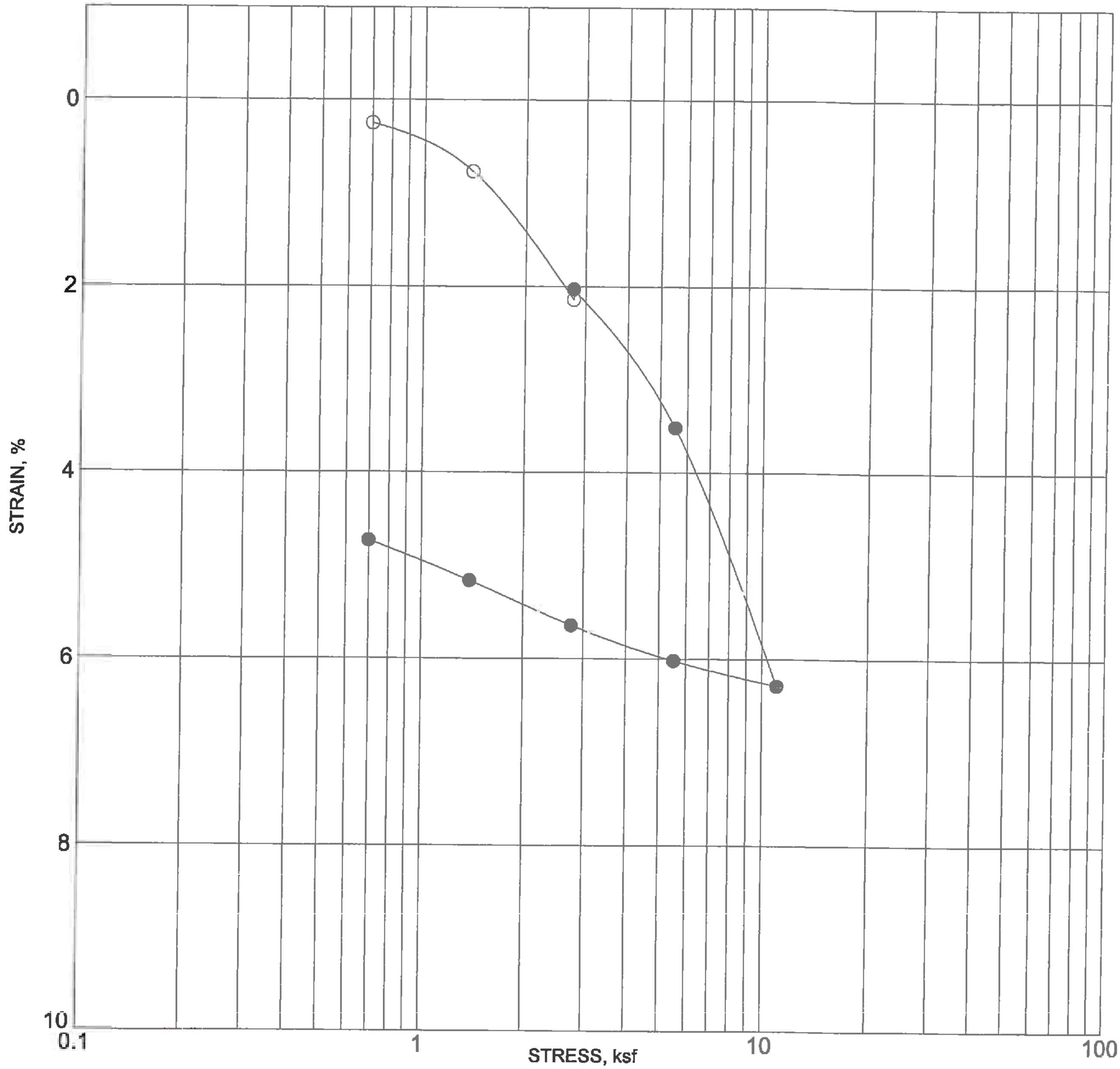
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No. **11-13-105-01**

Drawing No. **B-3a**



BORING NO. :	MR-2	DEPTH (ft) :	20
DESCRIPTION :	CLAY (CL)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	28.5	97.9		
FINAL	24.2	97.9		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

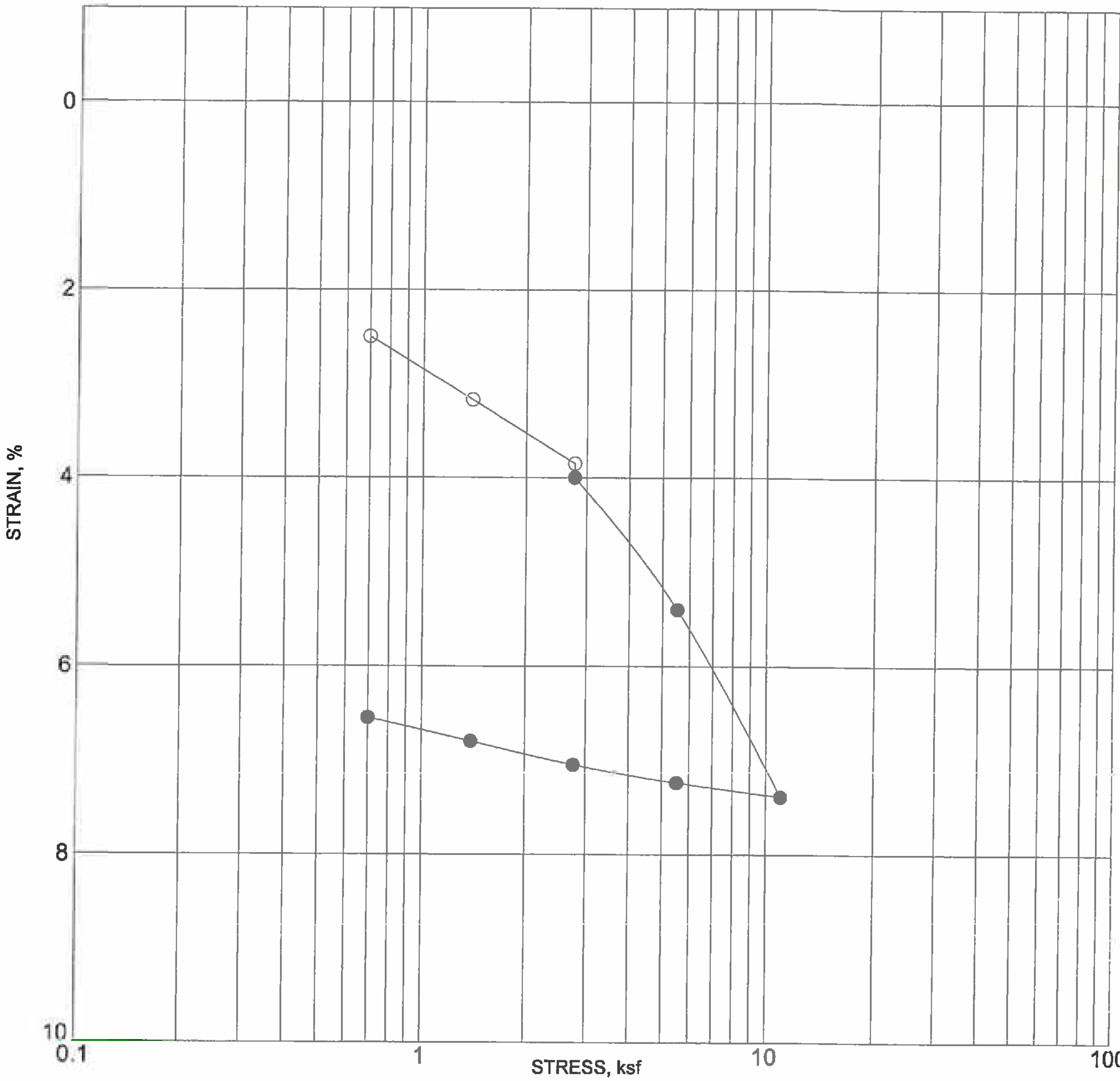
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No. **11-13-105-01**

Drawing No. **B-3b**



BORING NO. :	MR-3	DEPTH (ft) :	5
DESCRIPTION :	CLAY (CL)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	20	100.8		
FINAL	22.7	100.8		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
SAN JOSE STATE UNIVERSITY
STUDENT HEALTH AND COUNSELING PROJECT
SAN JOSE, CALIFORNIA

Project No. **11-13-105-01**

Drawing No. **B-3c**

APPENDIX C

LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

APPENDIX C

LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

The subsurface data obtained from exploratory CPT soundings were used to evaluate the liquefaction/seismic settlement potential of the area. The Logs of Borings are presented in Appendix A, *Field Exploration.*

Liquefaction is defined as the phenomenon where a soil mass exhibits a substantial reduction in its shear strength. This strength reduction is due to the development of excess pore pressure in a soil mass caused by earthquake induced ground motions. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

Our liquefaction analyses are based on the *Special Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California* (9/2008), *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California* (3/1999), and *2010 California Building Code*.

The subsurface data obtained from exploratory borings were used to evaluate the liquefaction/seismic settlement potential of the site. The Logs of Borings are presented in Appendix A, *Field Exploration.* The liquefaction potential and seismic settlement analyses were performed utilizing CPT data obtained from boring CPT-1 through CPT-5 for the upper 50 feet of soil. The analyses were performed using *LiquefyPro,* Version 5.8d, 2009, by Civil Tech Software. The following seismic parameters are used for liquefaction potential analyses.

Table No. C-1, Seismic Parameters Used in Liquefaction Analyses

Groundwater Depth (feet)	Earthquake Magnitude Mw	Peak Ground Acceleration* (g)
10	7.5	0.34

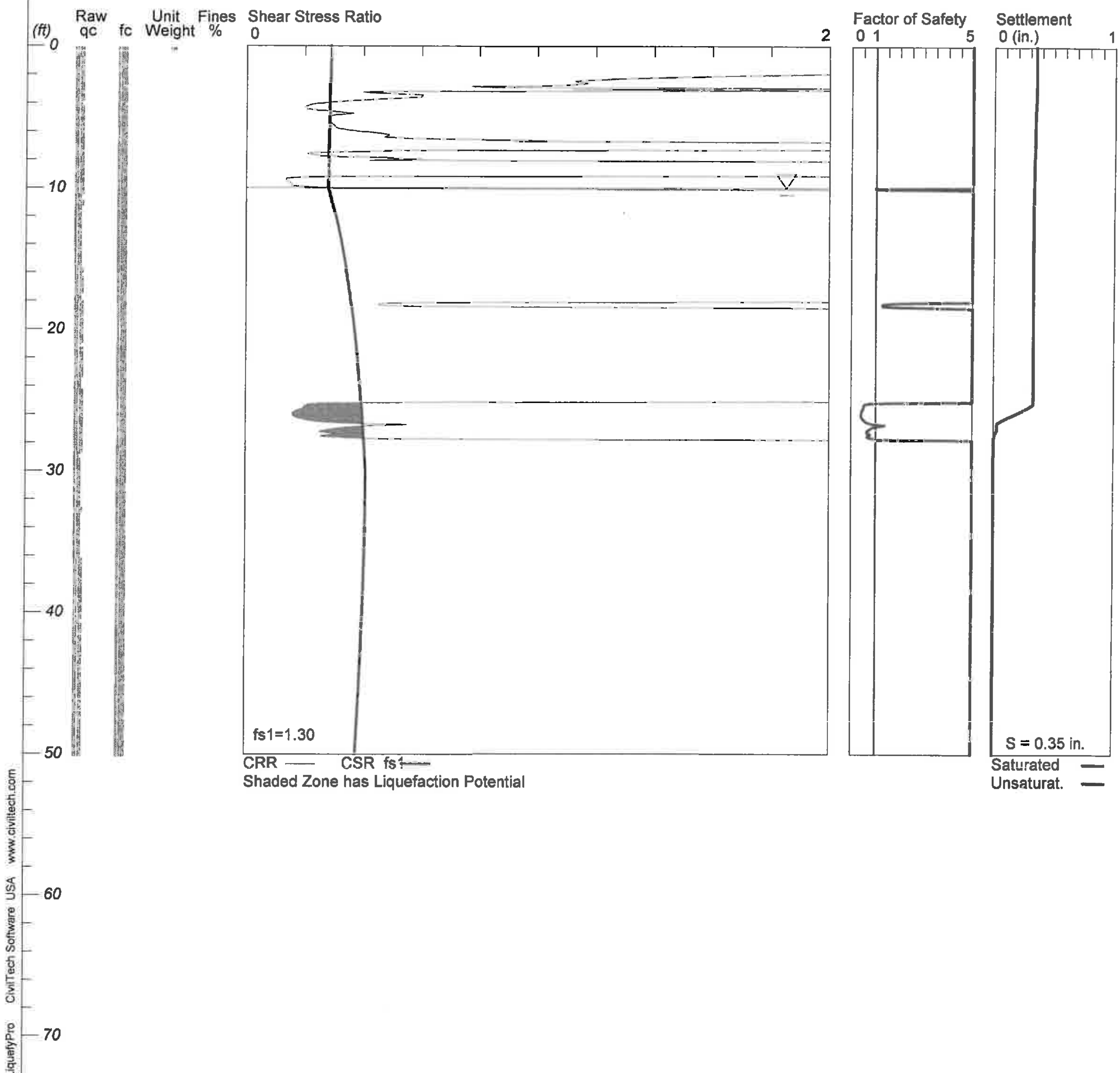
* Based on S_{DS}/2.5 per CBC 2010

The results of analysis indicate certain thin lenses of soil at between approximate 25 and 30 feet below ground surface are prone to liquefaction. The potential liquefaction induced settlement is estimated to be 0.37 inch with a potential differential settlement of 0.25 inch. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.

LIQUEFACTION ANALYSIS
SJSU Student Health & Counseling

Hole No.=CPT-1 Water Depth=10 ft

Magnitude=7.5
Acceleration=0.34g



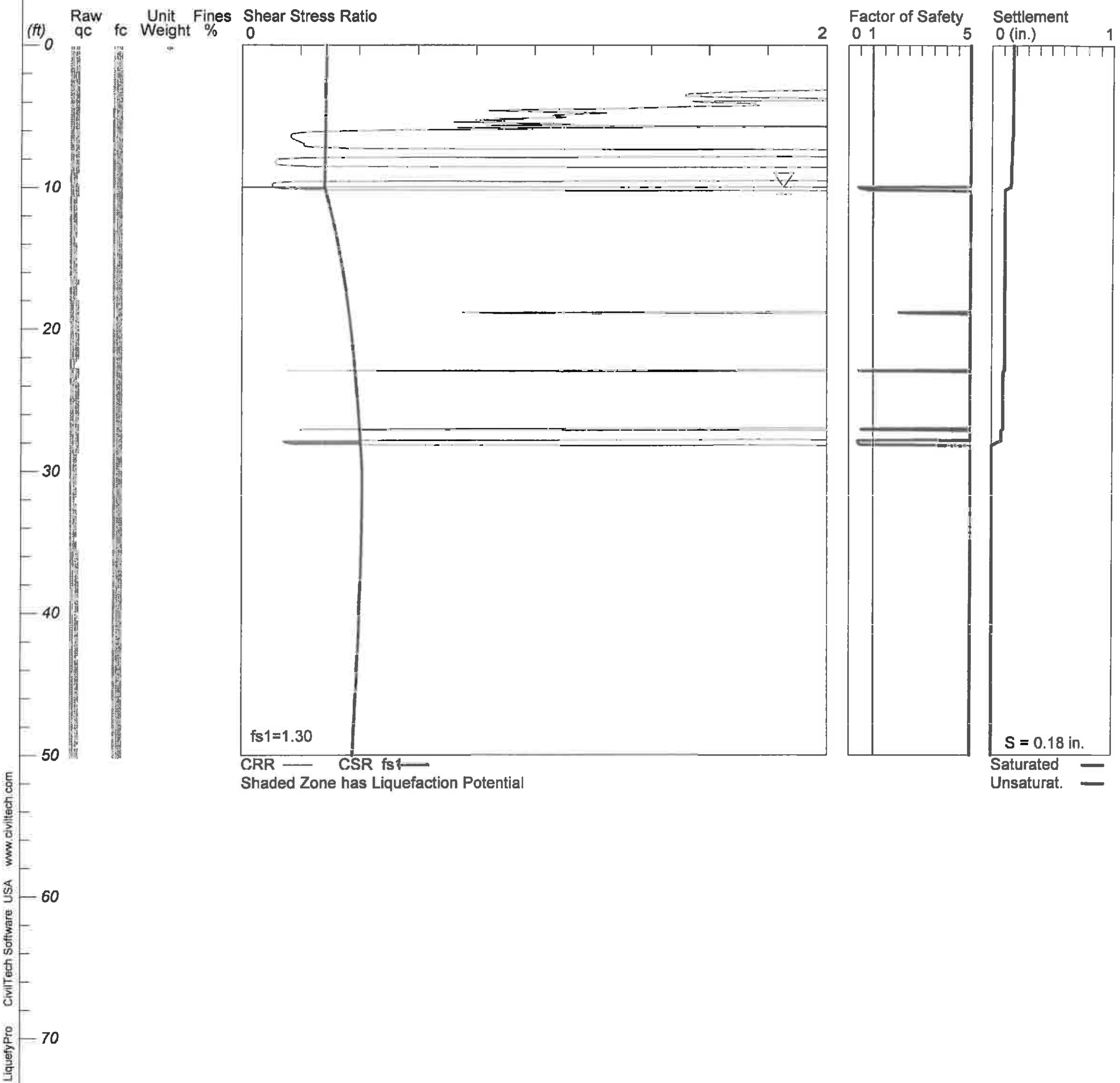
LiquefyPro V.5.8d 11-13-105-01 Plate C-1

LIQUEFACTION ANALYSIS

SJSU Student Health & Counseling

Hole No.=CPT-2 Water Depth=10 ft

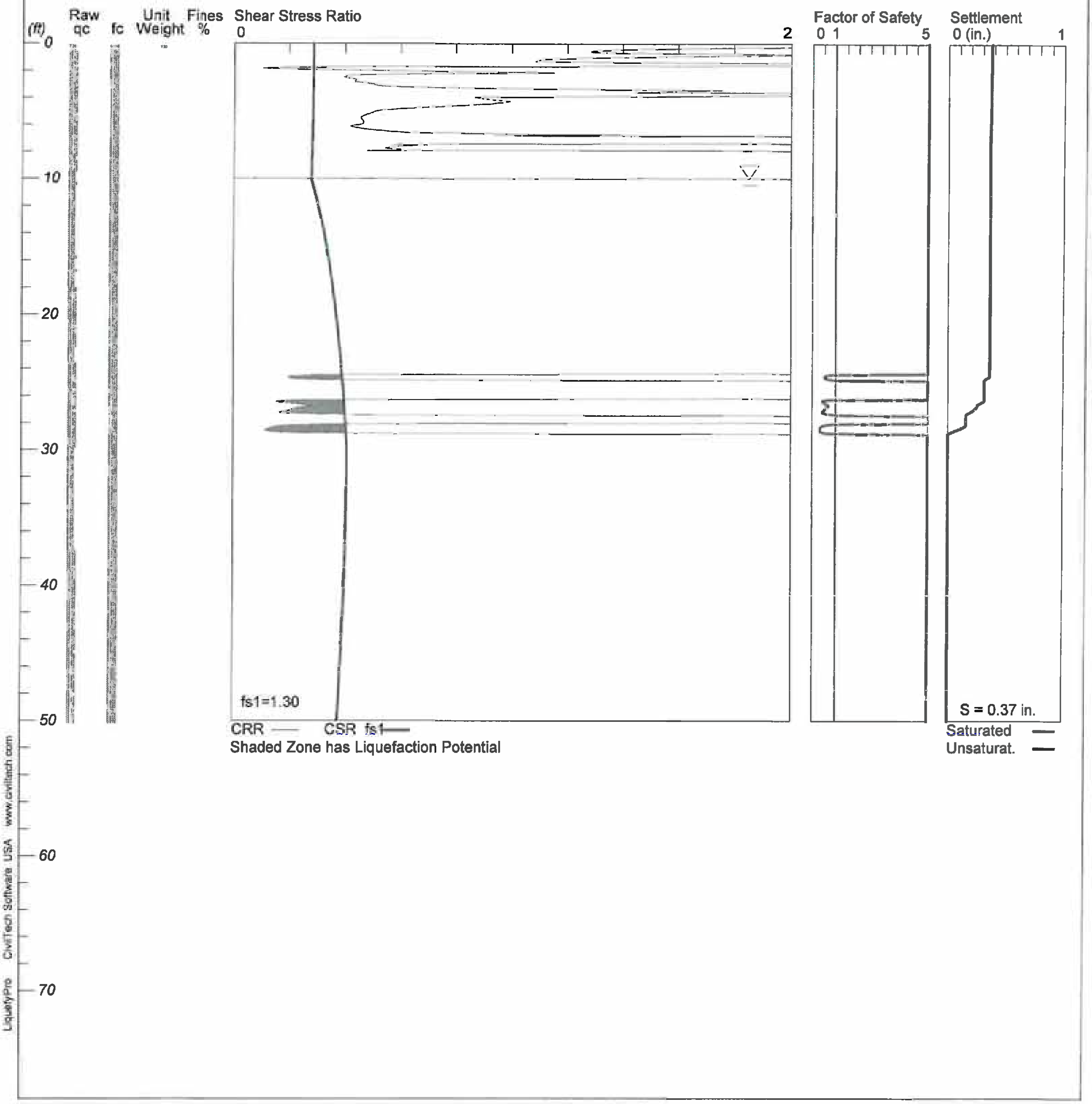
Magnitude=7.5
Acceleration=0.34g



LIQUEFACTION ANALYSIS
SJSU Student Health & Counseling

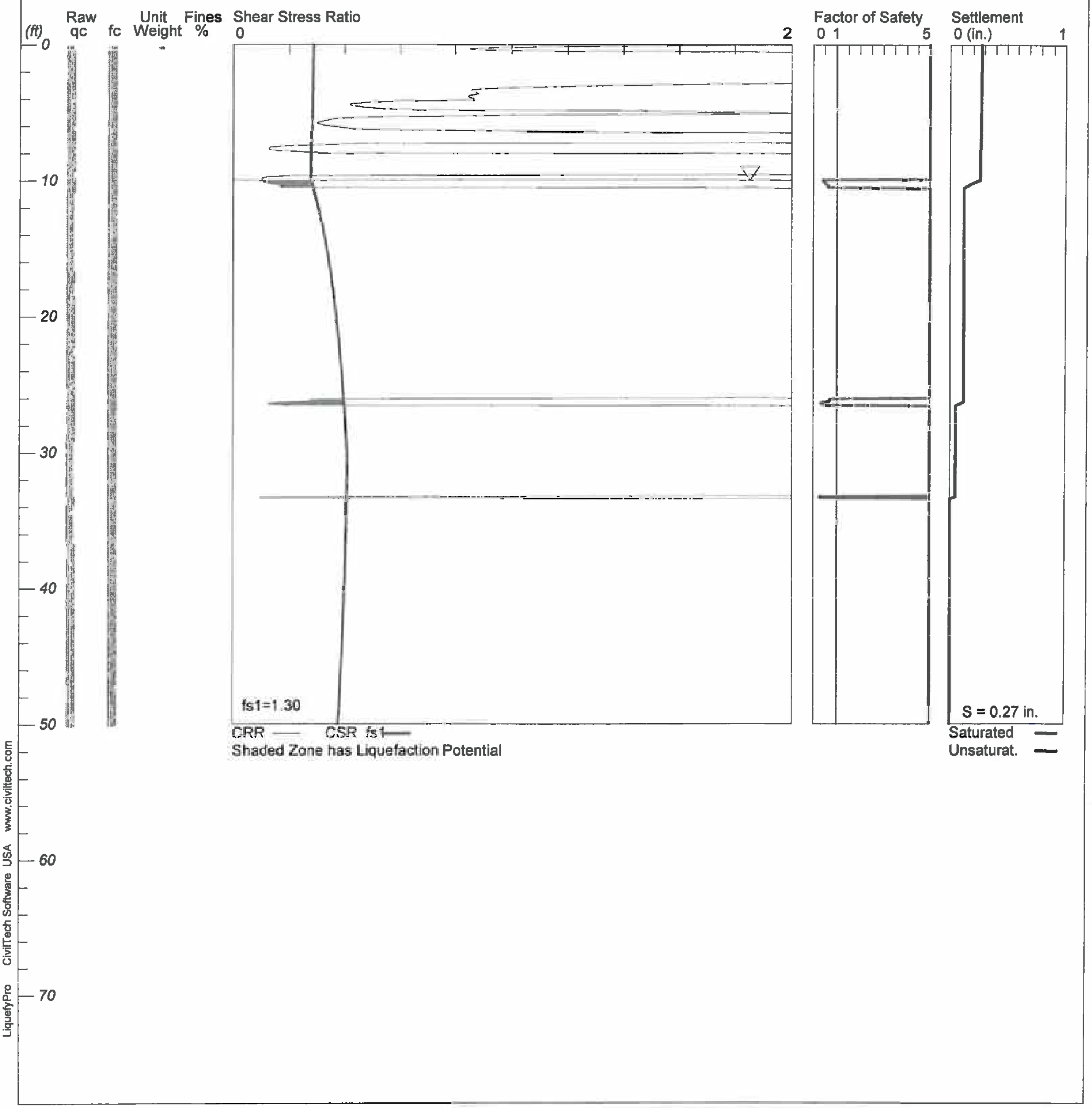
Hole No.=CPT-3 Water Depth=10 ft

Magnitude=7.5
Acceleration=0.34g



LIQUEFACTION ANALYSIS
SJSU Student Health & Counseling

Hole No.=CPT-4 Water Depth=10 ft ***Magnitude=7.5***
Acceleration=0.34g

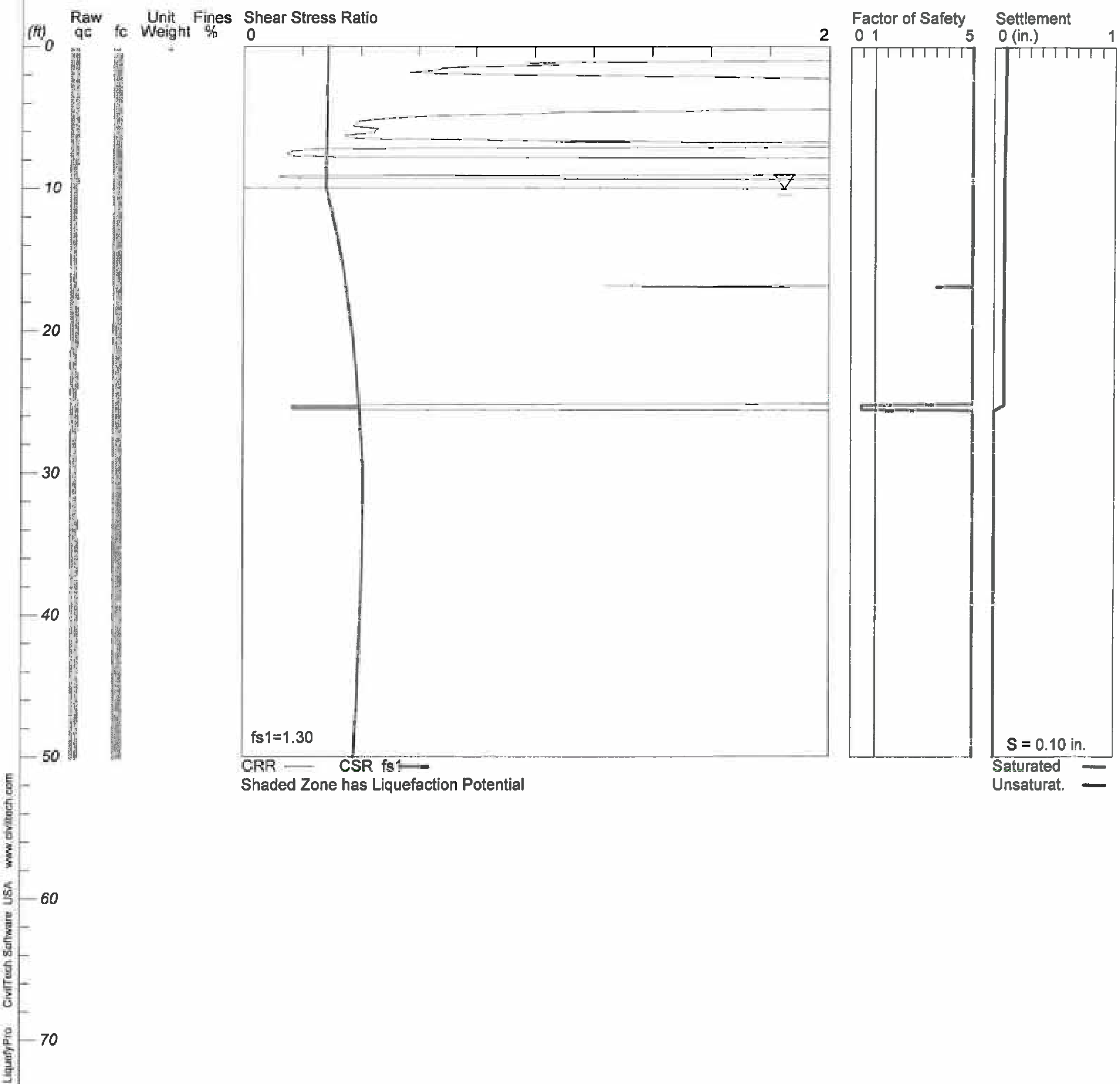


LIQUEFACTION ANALYSIS

SJSU Student Health & Counseling

Hole No.=CPT-5 Water Depth=10 ft

Magnitude=7.5
Acceleration=0.34g



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LIQUEFACTION ANALYSIS SUMMARY

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Font: Courier New, Regular, Size 8 is recommended for this report.
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Input File Name: H:\2011\11-13-105-01 SJSU Student Health and Counseling\Analyses\11-13105-01 LQCPT-1.liq
Title: SJSU Student Health & Counseling
Subtitle: 11-13-105-01

Surface Elev.=
Hole No.=CPT-1
Depth of Hole= 50.00 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration= 0.34 g
Earthquake Magnitude= 7.50

Input Data:
Surface Elev.=
Hole No.=CPT-1
Depth of Hole=50.00 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration=0.34 g
Earthquake Magnitude=7.50
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.00	92.54	0.70	0.76	120.00	0.00	0.50
0.66	88.20	2.27	2.57	120.00	0.00	0.50
1.15	58.00	2.17	3.74	120.00	0.00	0.50
1.64	72.47	1.96	2.70	120.00	0.00	0.50
2.13	68.37	1.74	2.54	120.00	0.00	0.50
2.62	62.29	1.80	2.89	120.00	0.00	0.50
3.12	9.58	0.63	6.57	120.00	0.00	0.50
3.61	48.34	1.44	2.98	120.00	0.00	0.50
4.10	33.91	0.67	1.98	120.00	0.00	0.50
4.59	26.57	0.77	2.89	120.00	0.00	0.50
5.09	42.33	0.92	2.18	120.00	0.00	0.50
5.58	42.11	1.04	2.46	120.00	0.00	0.50

6.07	34.66	1.19	3.43	120.00	0.00	0.50
6.56	29.81	1.17	3.92	120.00	0.00	0.50
7.05	12.56	0.65	5.20	120.00	0.00	0.50
7.55	29.95	0.71	2.38	120.00	0.00	0.50
8.04	18.02	0.61	3.38	120.00	0.00	0.50
8.53	11.04	0.58	5.29	120.00	0.00	0.50
9.02	9.19	0.55	5.96	120.00	0.00	0.50
9.51	28.31	0.47	1.66	120.00	0.00	0.50
10.01	26.02	0.69	2.65	120.00	0.00	0.50
10.50	7.61	0.47	6.11	120.00	0.00	0.50
10.99	10.78	0.52	4.79	120.00	0.00	0.50
11.48	5.60	0.37	6.57	120.00	0.00	0.50
11.98	4.95	0.35	7.03	120.00	0.00	0.50
12.47	6.36	0.43	6.78	120.00	0.00	0.50
12.96	5.81	0.40	6.85	120.00	0.00	0.50
13.45	5.27	0.34	6.51	120.00	0.00	0.50
13.94	4.66	0.32	6.91	120.00	0.00	0.50
14.44	7.12	0.37	5.20	120.00	0.00	0.50
14.93	8.18	0.40	4.87	120.00	0.00	0.50
15.42	10.10	0.63	6.19	120.00	0.00	0.50
15.91	13.20	0.81	6.17	120.00	0.00	0.50
16.40	14.19	0.82	5.80	120.00	0.00	0.50
16.90	20.21	0.90	4.44	120.00	0.00	0.50
17.39	10.70	0.51	4.81	120.00	0.00	0.50
17.88	13.14	0.21	1.59	120.00	0.00	0.50
18.37	44.91	1.55	3.44	120.00	0.00	0.50
18.86	40.82	2.09	5.11	120.00	0.00	0.50
19.36	32.69	1.70	5.20	120.00	0.00	0.50
19.85	22.77	1.11	4.87	120.00	0.00	0.50
20.34	22.48	1.24	5.53	120.00	0.00	0.50
20.83	17.10	0.97	5.70	120.00	0.00	0.50
21.33	16.30	0.85	5.21	120.00	0.00	0.50
21.82	14.72	0.81	5.48	120.00	0.00	0.50
22.31	12.73	0.73	5.72	120.00	0.00	0.50
22.80	10.35	0.61	5.92	120.00	0.00	0.50
23.29	7.62	0.49	6.48	120.00	0.00	0.50
23.79	7.38	0.41	5.57	120.00	0.00	0.50
24.28	17.99	0.80	4.44	120.00	0.00	0.50
24.77	21.45	0.79	3.69	120.00	0.00	0.50
25.26	50.55	1.19	2.36	120.00	0.00	0.50
25.75	71.14	0.89	1.25	120.00	0.00	0.50
26.25	67.94	0.96	1.42	120.00	0.00	0.50
26.74	46.43	1.65	3.56	120.00	0.00	0.50
27.23	43.65	1.12	2.55	120.00	0.00	0.50
27.72	37.25	1.09	2.91	120.00	0.00	0.50
28.22	14.02	0.71	5.09	120.00	0.00	0.50
28.71	8.50	0.45	5.27	120.00	0.00	0.50
29.20	8.43	0.44	5.28	120.00	0.00	0.50
29.69	8.04	0.45	5.55	120.00	0.00	0.50
30.18	7.39	0.44	6.01	120.00	0.00	0.50
30.68	7.53	0.45	5.94	120.00	0.00	0.50
31.17	8.24	0.54	6.57	120.00	0.00	0.50
31.66	8.26	0.49	5.93	120.00	0.00	0.50
32.15	8.36	0.47	5.56	120.00	0.00	0.50
32.64	11.69	0.38	3.22	120.00	0.00	0.50
33.14	7.57	0.40	5.30	120.00	0.00	0.50
33.63	8.45	0.46	5.49	120.00	0.00	0.50
34.12	8.86	0.43	4.83	120.00	0.00	0.50
34.61	8.50	0.43	5.08	120.00	0.00	0.50
35.10	8.44	0.51	6.08	120.00	0.00	0.50
35.60	9.64	0.56	5.76	120.00	0.00	0.50
36.09	11.04	0.66	5.95	120.00	0.00	0.50
36.58	10.83	0.81	7.45	120.00	0.00	0.50

37.07	10.84	0.74	6.83	120.00	0.00	0.50
37.57	10.76	0.73	6.77	120.00	0.00	0.50
38.06	11.03	0.65	5.87	120.00	0.00	0.50
38.55	11.32	0.64	5.64	120.00	0.00	0.50
39.04	10.99	0.63	5.74	120.00	0.00	0.50
39.53	11.25	0.66	5.88	120.00	0.00	0.50
40.03	11.76	0.69	5.91	120.00	0.00	0.50
40.52	9.58	0.76	7.94	120.00	0.00	0.50
41.01	13.32	0.78	5.86	120.00	0.00	0.50
41.50	14.41	0.91	6.34	120.00	0.00	0.50
41.99	14.51	0.85	5.86	120.00	0.00	0.50
42.49	15.28	0.95	6.23	120.00	0.00	0.50
42.98	14.13	0.85	5.99	120.00	0.00	0.50
43.47	15.56	0.86	5.55	120.00	0.00	0.50
43.96	15.80	0.99	6.29	120.00	0.00	0.50
44.46	16.50	1.07	6.45	120.00	0.00	0.50
44.95	15.33	0.97	6.32	120.00	0.00	0.50
45.44	15.36	0.92	5.98	120.00	0.00	0.50
45.93	15.00	0.83	5.55	120.00	0.00	0.50
46.42	14.84	0.82	5.55	120.00	0.00	0.50
46.92	15.89	0.66	4.18	120.00	0.00	0.50
47.41	16.17	0.91	5.60	120.00	0.00	0.50
47.90	15.97	0.85	5.34	120.00	0.00	0.50
48.39	16.17	0.83	5.14	120.00	0.00	0.50
48.88	15.52	0.70	4.51	120.00	0.00	0.50
49.38	15.58	0.65	4.18	120.00	0.00	0.50
49.87	17.53	0.79	4.49	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:
Settlement of Saturated Sands=0.33 in.
Settlement of Unsaturated Sands=0.02 in.
Total Settlement of Saturated and Unsaturated Sands=0.35 in.
Differential Settlement=0.174 to 0.230 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.29	5.00	0.33	0.02	0.35
0.50	2.08	0.29	5.00	0.33	0.02	0.35
1.00	2.08	0.29	5.00	0.33	0.02	0.35
1.50	2.08	0.29	5.00	0.33	0.02	0.35
2.00	1.90	0.29	5.00	0.33	0.02	0.35
2.50	1.13	0.29	5.00	0.33	0.02	0.35
3.00	1.90	0.29	5.00	0.33	0.02	0.35
3.50	0.60	0.28	5.00	0.33	0.02	0.35
4.00	0.27	0.28	5.00	0.33	0.02	0.34
4.50	0.24	0.28	5.00	0.33	0.01	0.34
5.00	0.28	0.28	5.00	0.33	0.01	0.34
5.50	0.30	0.28	5.00	0.33	0.01	0.34
6.00	0.39	0.28	5.00	0.33	0.01	0.34
6.50	0.57	0.28	5.00	0.33	0.01	0.34
7.00	2.00	0.28	5.00	0.33	0.01	0.34
7.50	0.24	0.28	5.00	0.33	0.01	0.34
8.00	0.52	0.28	5.00	0.33	0.01	0.33
8.50	2.00	0.28	5.00	0.33	0.01	0.33
9.00	2.00	0.28	5.00	0.33	0.01	0.33
9.50	0.14	0.28	5.00	0.33	0.00	0.33
10.00	0.28	0.28	0.98*	0.33	0.00	0.33
10.50	2.00	0.29	5.00	0.33	0.00	0.33
11.00	2.00	0.29	5.00	0.33	0.00	0.33

11.50	2.00	0.30	5.00	0.33	0.00	0.33
12.00	2.00	0.31	5.00	0.33	0.00	0.33
12.50	2.00	0.31	5.00	0.33	0.00	0.33
13.00	2.00	0.32	5.00	0.33	0.00	0.33
13.50	2.00	0.32	5.00	0.33	0.00	0.33
14.00	2.00	0.33	5.00	0.33	0.00	0.33
14.50	2.00	0.33	5.00	0.33	0.00	0.33
15.00	2.00	0.34	5.00	0.33	0.00	0.33
15.50	2.00	0.34	5.00	0.33	0.00	0.33
16.00	2.00	0.34	5.00	0.33	0.00	0.33
16.50	2.00	0.35	5.00	0.33	0.00	0.33
17.00	2.00	0.35	5.00	0.33	0.00	0.33
17.50	2.00	0.35	5.00	0.33	0.00	0.33
18.00	2.00	0.36	5.00	0.33	0.00	0.33
18.50	2.00	0.36	5.00	0.33	0.00	0.33
19.00	2.00	0.36	5.00	0.33	0.00	0.33
19.50	2.00	0.37	5.00	0.33	0.00	0.33
20.00	2.00	0.37	5.00	0.33	0.00	0.33
20.50	2.00	0.37	5.00	0.33	0.00	0.33
21.00	2.00	0.38	5.00	0.33	0.00	0.33
21.50	2.00	0.38	5.00	0.33	0.00	0.33
22.00	2.00	0.38	5.00	0.33	0.00	0.33
22.50	2.00	0.38	5.00	0.33	0.00	0.33
23.00	2.00	0.39	5.00	0.33	0.00	0.33
23.50	2.00	0.39	5.00	0.33	0.00	0.33
24.00	2.00	0.39	5.00	0.33	0.00	0.33
24.50	2.00	0.39	5.00	0.33	0.00	0.33
25.00	2.00	0.39	5.00	0.33	0.00	0.33
25.50	0.20	0.40	0.50*	0.28	0.00	0.28
26.00	0.16	0.40	0.40*	0.16	0.00	0.16
26.50	0.23	0.40	0.58*	0.04	0.00	0.04
27.00	0.31	0.40	0.78*	0.03	0.00	0.03
27.50	0.27	0.40	0.68*	0.01	0.00	0.01
28.00	2.00	0.40	5.00	0.00	0.00	0.00
28.50	2.00	0.40	5.00	0.00	0.00	0.00
29.00	2.00	0.41	5.00	0.00	0.00	0.00
29.50	2.00	0.41	5.00	0.00	0.00	0.00
30.00	2.00	0.41	5.00	0.00	0.00	0.00
30.50	2.00	0.41	5.00	0.00	0.00	0.00
31.00	2.00	0.41	5.00	0.00	0.00	0.00
31.50	2.00	0.41	5.00	0.00	0.00	0.00
32.00	2.00	0.41	5.00	0.00	0.00	0.00
32.50	2.00	0.41	5.00	0.00	0.00	0.00
33.00	2.00	0.41	5.00	0.00	0.00	0.00
33.50	2.00	0.41	5.00	0.00	0.00	0.00
34.00	2.00	0.41	5.00	0.00	0.00	0.00
34.50	2.00	0.41	5.00	0.00	0.00	0.00
35.00	2.00	0.41	5.00	0.00	0.00	0.00
35.50	2.00	0.41	5.00	0.00	0.00	0.00
36.00	2.00	0.41	5.00	0.00	0.00	0.00
36.50	2.00	0.40	5.00	0.00	0.00	0.00
37.00	2.00	0.40	5.00	0.00	0.00	0.00
37.50	2.00	0.40	5.00	0.00	0.00	0.00
38.00	2.00	0.40	5.00	0.00	0.00	0.00
38.50	2.00	0.40	5.00	0.00	0.00	0.00
39.00	2.00	0.40	5.00	0.00	0.00	0.00
39.50	2.00	0.40	5.00	0.00	0.00	0.00
40.00	2.00	0.40	5.00	0.00	0.00	0.00
40.50	2.00	0.40	5.00	0.00	0.00	0.00
41.00	2.00	0.40	5.00	0.00	0.00	0.00
41.50	2.00	0.40	5.00	0.00	0.00	0.00
42.00	2.00	0.40	5.00	0.00	0.00	0.00
42.50	2.00	0.39	5.00	0.00	0.00	0.00

43.00	2.00	0.39	5.00	0.00	0.00	0.00
43.50	2.00	0.39	5.00	0.00	0.00	0.00
44.00	2.00	0.39	5.00	0.00	0.00	0.00
44.50	2.00	0.39	5.00	0.00	0.00	0.00
45.00	2.00	0.39	5.00	0.00	0.00	0.00
45.50	2.00	0.39	5.00	0.00	0.00	0.00
46.00	2.00	0.39	5.00	0.00	0.00	0.00
46.50	2.00	0.39	5.00	0.00	0.00	0.00
47.00	2.00	0.39	5.00	0.00	0.00	0.00
47.50	2.00	0.38	5.00	0.00	0.00	0.00
48.00	2.00	0.38	5.00	0.00	0.00	0.00
48.50	2.00	0.38	5.00	0.00	0.00	0.00
49.00	2.00	0.38	5.00	0.00	0.00	0.00
49.50	2.00	0.38	5.00	0.00	0.00	0.00
50.00	2.00	0.38	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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LIQUEFACTION ANALYSIS SUMMARY

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Licensed to , 4/19/2012 9:33:51 AM

Input File Name: H:\2011\11-13-105-01 SJSU Student Health and Counseling\Analyses\11-13105-01 LQCPT-2.liq
Title: SJSU Student Health & Counseling
Subtitle: 11-13-105-01

Surface Elev.=
Hole No.=CPT-2
Depth of Hole= 50.00 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration= 0.34 g
Earthquake Magnitude= 7.50

Input Data:
Surface Elev.=
Hole No.=CPT-2
Depth of Hole=50.00 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration=0.34 g
Earthquake Magnitude=7.50
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.00	18.33	1.22	6.64	120.00	0.00	0.50
0.66	30.41	1.82	5.99	120.00	0.00	0.50
1.15	99.50	2.78	2.79	120.00	0.00	0.50
1.64	64.59	2.70	4.19	120.00	0.00	0.50
2.13	111.90	3.30	2.94	120.00	0.00	0.50
2.62	60.10	3.34	5.56	120.00	0.00	0.50
3.12	42.13	2.39	5.66	120.00	0.00	0.50
3.61	35.43	1.85	5.23	120.00	0.00	0.50
4.10	21.35	1.09	5.10	120.00	0.00	0.50
4.59	19.01	0.77	4.06	120.00	0.00	0.50
5.09	22.01	0.98	4.47	120.00	0.00	0.50
5.58	19.52	0.86	4.43	120.00	0.00	0.50

6.07	25.22	0.71	2.82	120.00	0.00	0.50
6.56	37.83	0.61	1.60	120.00	0.00	0.50
7.05	32.96	0.76	2.32	120.00	0.00	0.50
7.55	10.47	0.44	4.18	120.00	0.00	0.50
8.04	22.99	0.31	1.34	120.00	0.00	0.50
8.53	14.51	0.29	2.03	120.00	0.00	0.50
9.02	9.39	0.30	3.18	120.00	0.00	0.50
9.51	7.29	0.30	4.17	120.00	0.00	0.50
10.01	18.44	0.22	1.20	120.00	0.00	0.50
10.50	6.37	0.24	3.75	120.00	0.00	0.50
10.99	5.20	0.20	3.85	120.00	0.00	0.50
11.48	4.70	0.30	6.32	120.00	0.00	0.50
11.98	6.43	0.17	2.72	120.00	0.00	0.50
12.47	3.87	0.16	4.08	120.00	0.00	0.50
12.96	4.19	0.22	5.13	120.00	0.00	0.50
13.45	4.60	0.27	5.89	120.00	0.00	0.50
13.94	3.58	0.16	4.39	120.00	0.00	0.50
14.44	3.61	0.16	4.38	120.00	0.00	0.50
14.93	4.89	0.15	3.09	120.00	0.00	0.50
15.42	6.61	0.25	3.84	120.00	0.00	0.50
15.91	9.17	0.51	5.61	120.00	0.00	0.50
16.40	10.89	0.59	5.41	120.00	0.00	0.50
16.90	8.58	0.48	5.59	120.00	0.00	0.50
17.39	7.37	0.24	3.20	120.00	0.00	0.50
17.88	20.43	1.29	6.32	120.00	0.00	0.50
18.37	26.04	1.64	6.31	120.00	0.00	0.50
18.86	36.40	1.29	3.54	120.00	0.00	0.50
19.36	25.79	0.91	3.52	120.00	0.00	0.50
19.85	19.79	0.67	3.38	120.00	0.00	0.50
20.34	11.94	0.46	3.89	120.00	0.00	0.50
20.83	14.15	0.64	4.51	120.00	0.00	0.50
21.33	12.25	0.55	4.51	120.00	0.00	0.50
21.82	10.11	0.35	3.44	120.00	0.00	0.50
22.31	9.10	0.45	4.90	120.00	0.00	0.50
22.80	18.98	0.38	1.99	120.00	0.00	0.50
23.29	8.16	0.23	2.77	120.00	0.00	0.50
23.79	12.44	0.63	5.04	120.00	0.00	0.50
24.28	12.38	0.46	3.72	120.00	0.00	0.50
24.77	9.94	0.29	2.89	120.00	0.00	0.50
25.26	22.54	0.46	2.04	120.00	0.00	0.50
25.75	20.22	0.67	3.32	120.00	0.00	0.50
26.25	10.55	0.50	4.71	120.00	0.00	0.50
26.74	21.28	0.96	4.52	120.00	0.00	0.50
27.23	24.06	0.65	2.70	120.00	0.00	0.50
27.72	16.53	0.67	4.05	120.00	0.00	0.50
28.22	23.85	0.50	2.08	120.00	0.00	0.50
28.71	9.22	0.34	3.66	120.00	0.00	0.50
29.20	9.70	0.40	4.14	120.00	0.00	0.50
29.69	9.48	0.38	4.02	120.00	0.00	0.50
30.18	8.89	0.39	4.35	120.00	0.00	0.50
30.68	8.32	0.40	4.82	120.00	0.00	0.50
31.17	9.26	0.49	5.26	120.00	0.00	0.50
31.66	8.90	0.47	5.22	120.00	0.00	0.50
32.15	9.48	0.47	4.93	120.00	0.00	0.50
32.64	7.37	0.24	3.23	120.00	0.00	0.50
33.14	7.89	0.35	4.44	120.00	0.00	0.50
33.63	8.23	0.27	3.26	120.00	0.00	0.50
34.12	6.96	0.23	3.38	120.00	0.00	0.50
34.61	9.20	0.48	5.22	120.00	0.00	0.50
35.10	9.35	0.51	5.51	120.00	0.00	0.50
35.60	10.46	0.55	5.23	120.00	0.00	0.50
36.09	9.84	0.51	5.18	120.00	0.00	0.50
36.58	11.25	0.70	6.25	120.00	0.00	0.50

37.07	12.21	0.69	5.62	120.00	0.00	0.50
37.57	13.94	0.79	5.69	120.00	0.00	0.50
38.06	10.74	0.62	5.74	120.00	0.00	0.50
38.55	10.58	0.58	5.46	120.00	0.00	0.50
39.04	11.47	0.64	5.57	120.00	0.00	0.50
39.53	11.39	0.65	5.72	120.00	0.00	0.50
40.03	11.43	0.60	5.21	120.00	0.00	0.50
40.52	12.09	0.62	5.12	120.00	0.00	0.50
41.01	13.20	0.72	5.47	120.00	0.00	0.50
41.50	13.72	0.76	5.54	120.00	0.00	0.50
41.99	14.98	0.86	5.74	120.00	0.00	0.50
42.49	14.53	0.81	5.57	120.00	0.00	0.50
42.98	13.00	0.68	5.21	120.00	0.00	0.50
43.47	14.72	0.82	5.55	120.00	0.00	0.50
43.96	15.22	0.68	4.48	120.00	0.00	0.50
44.46	14.99	0.86	5.74	120.00	0.00	0.50
44.95	14.16	0.76	5.36	120.00	0.00	0.50
45.44	14.89	0.79	5.33	120.00	0.00	0.50
45.93	14.31	0.70	4.88	120.00	0.00	0.50
46.42	14.40	0.76	5.25	120.00	0.00	0.50
46.92	14.38	0.75	5.18	120.00	0.00	0.50
47.41	14.28	0.76	5.34	120.00	0.00	0.50
47.90	14.20	0.70	4.92	120.00	0.00	0.50
48.39	14.48	0.73	5.01	120.00	0.00	0.50
48.88	15.19	0.76	5.01	120.00	0.00	0.50
49.38	14.87	0.75	5.05	120.00	0.00	0.50
49.87	14.03	0.72	5.16	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:
Settlement of Saturated Sands=0.15 in.
Settlement of Unsaturated Sands=0.02 in.
Total Settlement of Saturated and Unsaturated Sands=0.18 in.
Differential Settlement=0.089 to 0.117 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.29	5.00	0.15	0.02	0.18
0.50	2.08	0.29	5.00	0.15	0.02	0.18
1.00	2.08	0.29	5.00	0.15	0.02	0.18
1.50	2.08	0.29	5.00	0.15	0.02	0.18
2.00	2.08	0.29	5.00	0.15	0.02	0.18
2.50	2.08	0.29	5.00	0.15	0.02	0.18
3.00	2.08	0.29	5.00	0.15	0.02	0.18
3.50	1.52	0.28	5.00	0.15	0.02	0.18
4.00	1.57	0.28	5.00	0.15	0.02	0.17
4.50	1.09	0.28	5.00	0.15	0.02	0.17
5.00	1.08	0.28	5.00	0.15	0.02	0.17
5.50	1.05	0.28	5.00	0.15	0.02	0.17
6.00	0.47	0.28	5.00	0.15	0.02	0.17
6.50	0.17	0.28	5.00	0.15	0.02	0.17
7.00	0.21	0.28	5.00	0.15	0.01	0.17
7.50	2.00	0.28	5.00	0.15	0.01	0.16
8.00	0.13	0.28	5.00	0.15	0.01	0.16
8.50	0.21	0.28	5.00	0.15	0.01	0.16
9.00	2.00	0.28	5.00	0.15	0.01	0.16
9.50	2.00	0.28	5.00	0.15	0.01	0.16
10.00	0.11	0.28	0.39*	0.15	0.00	0.15
10.50	2.00	0.29	5.00	0.11	0.00	0.11
11.00	2.00	0.29	5.00	0.11	0.00	0.11

11.50	2.00	0.30	5.00	0.11	0.00	0.11
12.00	2.00	0.31	5.00	0.11	0.00	0.11
12.50	2.00	0.31	5.00	0.11	0.00	0.11
13.00	2.00	0.32	5.00	0.11	0.00	0.11
13.50	2.00	0.32	5.00	0.11	0.00	0.11
14.00	2.00	0.33	5.00	0.11	0.00	0.11
14.50	2.00	0.33	5.00	0.11	0.00	0.11
15.00	2.00	0.34	5.00	0.11	0.00	0.11
15.50	2.00	0.34	5.00	0.11	0.00	0.11
16.00	2.00	0.34	5.00	0.11	0.00	0.11
16.50	2.00	0.35	5.00	0.11	0.00	0.11
17.00	2.00	0.35	5.00	0.11	0.00	0.11
17.50	2.00	0.35	5.00	0.11	0.00	0.11
18.00	2.00	0.36	5.00	0.11	0.00	0.11
18.50	2.00	0.36	5.00	0.11	0.00	0.11
19.00	2.00	0.36	5.00	0.11	0.00	0.11
19.50	2.00	0.37	5.00	0.11	0.00	0.11
20.00	2.00	0.37	5.00	0.11	0.00	0.11
20.50	2.00	0.37	5.00	0.11	0.00	0.11
21.00	2.00	0.38	5.00	0.11	0.00	0.11
21.50	2.00	0.38	5.00	0.11	0.00	0.11
22.00	2.00	0.38	5.00	0.11	0.00	0.11
22.50	2.00	0.38	5.00	0.11	0.00	0.11
23.00	2.00	0.39	5.00	0.09	0.00	0.09
23.50	2.00	0.39	5.00	0.09	0.00	0.09
24.00	2.00	0.39	5.00	0.09	0.00	0.09
24.50	2.00	0.39	5.00	0.09	0.00	0.09
25.00	2.00	0.39	5.00	0.09	0.00	0.09
25.50	2.00	0.40	5.00	0.09	0.00	0.09
26.00	2.00	0.40	5.00	0.09	0.00	0.09
26.50	2.00	0.40	5.00	0.09	0.00	0.09
27.00	2.00	0.40	5.00	0.09	0.00	0.09
27.50	2.00	0.40	5.00	0.08	0.00	0.08
28.00	0.15	0.40	0.36*	0.04	0.00	0.04
28.50	2.00	0.40	5.00	0.00	0.00	0.00
29.00	2.00	0.41	5.00	0.00	0.00	0.00
29.50	2.00	0.41	5.00	0.00	0.00	0.00
30.00	2.00	0.41	5.00	0.00	0.00	0.00
30.50	2.00	0.41	5.00	0.00	0.00	0.00
31.00	2.00	0.41	5.00	0.00	0.00	0.00
31.50	2.00	0.41	5.00	0.00	0.00	0.00
32.00	2.00	0.41	5.00	0.00	0.00	0.00
32.50	2.00	0.41	5.00	0.00	0.00	0.00
33.00	2.00	0.41	5.00	0.00	0.00	0.00
33.50	2.00	0.41	5.00	0.00	0.00	0.00
34.00	2.00	0.41	5.00	0.00	0.00	0.00
34.50	2.00	0.41	5.00	0.00	0.00	0.00
35.00	2.00	0.41	5.00	0.00	0.00	0.00
35.50	2.00	0.41	5.00	0.00	0.00	0.00
36.00	2.00	0.41	5.00	0.00	0.00	0.00
36.50	2.00	0.40	5.00	0.00	0.00	0.00
37.00	2.00	0.40	5.00	0.00	0.00	0.00
37.50	2.00	0.40	5.00	0.00	0.00	0.00
38.00	2.00	0.40	5.00	0.00	0.00	0.00
38.50	2.00	0.40	5.00	0.00	0.00	0.00
39.00	2.00	0.40	5.00	0.00	0.00	0.00
39.50	2.00	0.40	5.00	0.00	0.00	0.00
40.00	2.00	0.40	5.00	0.00	0.00	0.00
40.50	2.00	0.40	5.00	0.00	0.00	0.00
41.00	2.00	0.40	5.00	0.00	0.00	0.00
41.50	2.00	0.40	5.00	0.00	0.00	0.00
42.00	2.00	0.40	5.00	0.00	0.00	0.00
42.50	2.00	0.39	5.00	0.00	0.00	0.00

43.00	2.00	0.39	5.00	0.00	0.00	0.00
43.50	2.00	0.39	5.00	0.00	0.00	0.00
44.00	2.00	0.39	5.00	0.00	0.00	0.00
44.50	2.00	0.39	5.00	0.00	0.00	0.00
45.00	2.00	0.39	5.00	0.00	0.00	0.00
45.50	2.00	0.39	5.00	0.00	0.00	0.00
46.00	2.00	0.39	5.00	0.00	0.00	0.00
46.50	2.00	0.39	5.00	0.00	0.00	0.00
47.00	2.00	0.39	5.00	0.00	0.00	0.00
47.50	2.00	0.38	5.00	0.00	0.00	0.00
48.00	2.00	0.38	5.00	0.00	0.00	0.00
48.50	2.00	0.38	5.00	0.00	0.00	0.00
49.00	2.00	0.38	5.00	0.00	0.00	0.00
49.50	2.00	0.38	5.00	0.00	0.00	0.00
50.00	2.00	0.38	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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LIQUEFACTION ANALYSIS SUMMARY

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Licensed to , 4/19/2012 9:34:31 AM

Input File Name: H:\2011\11-13-105-01 SJSU Student Health and Counseling\Analyses\11-13105-01 LQCPT-3.liq
Title: SJSU Student Health & Counseling
Subtitle: 11-13-105-01

Surface Elev.=
Hole No.=CPT-3
Depth of Hole= 50.00 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration= 0.34 g
Earthquake Magnitude= 7.50

Input Data:
Surface Elev.=
Hole No.=CPT-3
Depth of Hole=50.00 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration=0.34 g
Earthquake Magnitude=7.50
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.00	7.36	0.66	8.91	120.00	0.00	0.50
0.66	19.12	0.93	4.86	120.00	0.00	0.50
1.15	20.63	0.98	4.76	120.00	0.00	0.50
1.64	19.38	1.12	5.77	120.00	0.00	0.50
2.13	80.78	0.89	1.10	120.00	0.00	0.50
2.62	38.35	0.98	2.54	120.00	0.00	0.50
3.12	36.96	1.22	3.29	120.00	0.00	0.50
3.61	28.53	1.42	4.98	120.00	0.00	0.50
4.10	40.19	1.77	4.40	120.00	0.00	0.50
4.59	52.78	1.95	3.70	120.00	0.00	0.50
5.09	48.00	1.49	3.10	120.00	0.00	0.50
5.58	44.99	1.44	3.20	120.00	0.00	0.50

6.07	43.87	1.37	3.12	120.00	0.00	0.50
6.56	36.13	1.43	3.97	120.00	0.00	0.50
7.05	12.27	0.79	6.42	120.00	0.00	0.50
7.55	21.29	0.72	3.38	120.00	0.00	0.50
8.04	12.83	0.56	4.36	120.00	0.00	0.50
8.53	10.48	0.65	6.24	120.00	0.00	0.50
9.02	16.22	0.48	2.98	120.00	0.00	0.50
9.51	5.04	0.35	6.90	120.00	0.00	0.50
10.01	9.84	0.35	3.58	120.00	0.00	0.50
10.50	5.09	0.27	5.23	120.00	0.00	0.50
10.99	5.93	0.29	4.84	120.00	0.00	0.50
11.48	3.88	0.26	6.83	120.00	0.00	0.50
11.98	3.56	0.28	7.72	120.00	0.00	0.50
12.47	4.29	0.27	6.29	120.00	0.00	0.50
12.96	4.30	0.26	6.14	120.00	0.00	0.50
13.45	3.75	0.22	5.81	120.00	0.00	0.50
13.94	3.89	0.23	5.86	120.00	0.00	0.50
14.44	3.33	0.19	5.86	120.00	0.00	0.50
14.93	3.65	0.36	9.95	120.00	0.00	0.50
15.42	9.22	0.41	4.50	120.00	0.00	0.50
15.91	8.98	0.48	5.35	120.00	0.00	0.50
16.40	9.45	0.51	5.35	120.00	0.00	0.50
16.90	8.79	0.51	5.80	120.00	0.00	0.50
17.39	6.54	0.35	5.31	120.00	0.00	0.50
17.88	18.38	0.86	4.67	120.00	0.00	0.50
18.37	37.13	1.84	4.95	120.00	0.00	0.50
18.86	34.24	1.86	5.43	120.00	0.00	0.50
19.36	28.15	1.50	5.33	120.00	0.00	0.50
19.85	28.99	1.60	5.53	120.00	0.00	0.50
20.34	18.21	0.88	4.82	120.00	0.00	0.50
20.83	15.92	0.80	4.99	120.00	0.00	0.50
21.33	11.85	0.58	4.89	120.00	0.00	0.50
21.82	10.78	0.56	5.22	120.00	0.00	0.50
22.31	8.93	0.44	4.88	120.00	0.00	0.50
22.80	8.15	0.38	4.72	120.00	0.00	0.50
23.29	7.68	0.45	5.89	120.00	0.00	0.50
23.79	16.87	0.55	3.23	120.00	0.00	0.50
24.28	23.53	0.79	3.34	120.00	0.00	0.50
24.77	34.40	0.79	2.30	120.00	0.00	0.50
25.26	10.72	0.54	5.03	120.00	0.00	0.50
25.75	13.13	0.67	5.06	120.00	0.00	0.50
26.25	30.11	0.84	2.79	120.00	0.00	0.50
26.74	38.45	1.03	2.68	120.00	0.00	0.50
27.23	43.65	0.85	1.94	120.00	0.00	0.50
27.72	31.08	1.25	4.02	120.00	0.00	0.50
28.22	39.34	0.80	2.02	120.00	0.00	0.50
28.71	35.37	0.64	1.81	120.00	0.00	0.50
29.20	28.63	0.62	2.18	120.00	0.00	0.50
29.69	8.14	0.44	5.47	120.00	0.00	0.50
30.18	7.32	0.36	4.86	120.00	0.00	0.50
30.68	7.27	0.36	4.92	120.00	0.00	0.50
31.17	8.46	0.44	5.19	120.00	0.00	0.50
31.66	8.34	0.45	5.41	120.00	0.00	0.50
32.15	8.01	0.40	4.99	120.00	0.00	0.50
32.64	8.99	0.45	4.99	120.00	0.00	0.50
33.14	9.11	0.51	5.65	120.00	0.00	0.50
33.63	8.75	0.51	5.85	120.00	0.00	0.50
34.12	7.72	0.48	6.23	120.00	0.00	0.50
34.61	7.44	0.48	6.47	120.00	0.00	0.50
35.10	8.32	0.49	5.93	120.00	0.00	0.50
35.60	8.04	0.42	5.21	120.00	0.00	0.50
36.09	7.79	0.43	5.57	120.00	0.00	0.50
36.58	9.33	0.56	6.00	120.00	0.00	0.50

37.07	9.23	0.64	6.93	120.00	0.00	0.50
37.57	10.22	0.67	6.55	120.00	0.00	0.50
38.06	10.29	0.67	6.52	120.00	0.00	0.50
38.55	10.32	0.63	6.09	120.00	0.00	0.50
39.04	10.83	0.60	5.58	120.00	0.00	0.50
39.53	10.53	0.61	5.76	120.00	0.00	0.50
40.03	10.68	0.63	5.94	120.00	0.00	0.50
40.52	11.45	0.72	6.32	120.00	0.00	0.50
41.01	12.94	0.85	6.54	120.00	0.00	0.50
41.50	12.87	0.82	6.36	120.00	0.00	0.50
41.99	13.06	0.82	6.30	120.00	0.00	0.50
42.49	13.30	0.96	7.21	120.00	0.00	0.50
42.98	14.40	0.83	5.79	120.00	0.00	0.50
43.47	14.45	0.76	5.27	120.00	0.00	0.50
43.96	13.62	0.60	4.38	120.00	0.00	0.50
44.46	14.58	0.93	6.38	120.00	0.00	0.50
44.95	13.05	0.76	5.81	120.00	0.00	0.50
45.44	12.91	0.75	5.83	120.00	0.00	0.50
45.93	13.25	0.83	6.30	120.00	0.00	0.50
46.42	14.08	0.85	6.02	120.00	0.00	0.50
46.92	14.18	0.81	5.74	120.00	0.00	0.50
47.41	14.01	0.79	5.65	120.00	0.00	0.50
47.90	14.00	0.77	5.49	120.00	0.00	0.50
48.39	14.62	0.80	5.49	120.00	0.00	0.50
48.88	14.40	0.76	5.28	120.00	0.00	0.50
49.38	14.53	0.67	4.64	120.00	0.00	0.50
49.87	14.28	0.62	4.31	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:
Settlement of Saturated Sands=0.36 in.
Settlement of Unsaturated Sands=0.01 in.
Total Settlement of Saturated and Unsaturated Sands=0.37 in.
Differential Settlement=0.187 to 0.247 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.29	5.00	0.36	0.01	0.37
0.50	1.32	0.29	5.00	0.36	0.01	0.37
1.00	1.42	0.29	5.00	0.36	0.01	0.37
1.50	2.08	0.29	5.00	0.36	0.01	0.37
2.00	0.59	0.29	5.00	0.36	0.01	0.37
2.50	0.41	0.29	5.00	0.36	0.01	0.37
3.00	0.51	0.29	5.00	0.36	0.01	0.37
3.50	1.65	0.28	5.00	0.36	0.01	0.37
4.00	0.88	0.28	5.00	0.36	0.01	0.37
4.50	0.86	0.28	5.00	0.36	0.01	0.37
5.00	0.51	0.28	5.00	0.36	0.00	0.37
5.50	0.46	0.28	5.00	0.36	0.00	0.37
6.00	0.44	0.28	5.00	0.36	0.00	0.37
6.50	0.59	0.28	5.00	0.36	0.00	0.36
7.00	2.00	0.28	5.00	0.36	0.00	0.36
7.50	0.66	0.28	5.00	0.36	0.00	0.36
8.00	2.00	0.28	5.00	0.36	0.00	0.36
8.50	2.00	0.28	5.00	0.36	0.00	0.36
9.00	2.00	0.28	5.00	0.36	0.00	0.36
9.50	2.00	0.28	5.00	0.36	0.00	0.36
10.00	2.00	0.28	5.00	0.36	0.00	0.36
10.50	2.00	0.29	5.00	0.36	0.00	0.36
11.00	2.00	0.29	5.00	0.36	0.00	0.36

11.50	2.00	0.30	5.00	0.36	0.00	0.36
12.00	2.00	0.31	5.00	0.36	0.00	0.36
12.50	2.00	0.31	5.00	0.36	0.00	0.36
13.00	2.00	0.32	5.00	0.36	0.00	0.36
13.50	2.00	0.32	5.00	0.36	0.00	0.36
14.00	2.00	0.33	5.00	0.36	0.00	0.36
14.50	2.00	0.33	5.00	0.36	0.00	0.36
15.00	2.00	0.34	5.00	0.36	0.00	0.36
15.50	2.00	0.34	5.00	0.36	0.00	0.36
16.00	2.00	0.34	5.00	0.36	0.00	0.36
16.50	2.00	0.35	5.00	0.36	0.00	0.36
17.00	2.00	0.35	5.00	0.36	0.00	0.36
17.50	2.00	0.35	5.00	0.36	0.00	0.36
18.00	2.00	0.36	5.00	0.36	0.00	0.36
18.50	2.00	0.36	5.00	0.36	0.00	0.36
19.00	2.00	0.36	5.00	0.36	0.00	0.36
19.50	2.00	0.37	5.00	0.36	0.00	0.36
20.00	2.00	0.37	5.00	0.36	0.00	0.36
20.50	2.00	0.37	5.00	0.36	0.00	0.36
21.00	2.00	0.38	5.00	0.36	0.00	0.36
21.50	2.00	0.38	5.00	0.36	0.00	0.36
22.00	2.00	0.38	5.00	0.36	0.00	0.36
22.50	2.00	0.38	5.00	0.36	0.00	0.36
23.00	2.00	0.39	5.00	0.36	0.00	0.36
23.50	2.00	0.39	5.00	0.36	0.00	0.36
24.00	2.00	0.39	5.00	0.36	0.00	0.36
24.50	0.27	0.39	0.68*	0.36	0.00	0.36
25.00	2.00	0.39	5.00	0.32	0.00	0.32
25.50	2.00	0.40	5.00	0.32	0.00	0.32
26.00	2.00	0.40	5.00	0.32	0.00	0.32
26.50	0.18	0.40	0.46*	0.28	0.00	0.28
27.00	0.21	0.40	0.53*	0.23	0.00	0.23
27.50	2.00	0.40	5.00	0.15	0.00	0.15
28.00	2.00	0.40	5.00	0.15	0.00	0.15
28.50	0.12	0.40	0.29*	0.08	0.00	0.08
29.00	2.00	0.41	5.00	0.00	0.00	0.00
29.50	2.00	0.41	5.00	0.00	0.00	0.00
30.00	2.00	0.41	5.00	0.00	0.00	0.00
30.50	2.00	0.41	5.00	0.00	0.00	0.00
31.00	2.00	0.41	5.00	0.00	0.00	0.00
31.50	2.00	0.41	5.00	0.00	0.00	0.00
32.00	2.00	0.41	5.00	0.00	0.00	0.00
32.50	2.00	0.41	5.00	0.00	0.00	0.00
33.00	2.00	0.41	5.00	0.00	0.00	0.00
33.50	2.00	0.41	5.00	0.00	0.00	0.00
34.00	2.00	0.41	5.00	0.00	0.00	0.00
34.50	2.00	0.41	5.00	0.00	0.00	0.00
35.00	2.00	0.41	5.00	0.00	0.00	0.00
35.50	2.00	0.41	5.00	0.00	0.00	0.00
36.00	2.00	0.41	5.00	0.00	0.00	0.00
36.50	2.00	0.40	5.00	0.00	0.00	0.00
37.00	2.00	0.40	5.00	0.00	0.00	0.00
37.50	2.00	0.40	5.00	0.00	0.00	0.00
38.00	2.00	0.40	5.00	0.00	0.00	0.00
38.50	2.00	0.40	5.00	0.00	0.00	0.00
39.00	2.00	0.40	5.00	0.00	0.00	0.00
39.50	2.00	0.40	5.00	0.00	0.00	0.00
40.00	2.00	0.40	5.00	0.00	0.00	0.00
40.50	2.00	0.40	5.00	0.00	0.00	0.00
41.00	2.00	0.40	5.00	0.00	0.00	0.00
41.50	2.00	0.40	5.00	0.00	0.00	0.00
42.00	2.00	0.40	5.00	0.00	0.00	0.00
42.50	2.00	0.39	5.00	0.00	0.00	0.00

43.00	2.00	0.39	5.00	0.00	0.00	0.00
43.50	2.00	0.39	5.00	0.00	0.00	0.00
44.00	2.00	0.39	5.00	0.00	0.00	0.00
44.50	2.00	0.39	5.00	0.00	0.00	0.00
45.00	2.00	0.39	5.00	0.00	0.00	0.00
45.50	2.00	0.39	5.00	0.00	0.00	0.00
46.00	2.00	0.39	5.00	0.00	0.00	0.00
46.50	2.00	0.39	5.00	0.00	0.00	0.00
47.00	2.00	0.39	5.00	0.00	0.00	0.00
47.50	2.00	0.38	5.00	0.00	0.00	0.00
48.00	2.00	0.38	5.00	0.00	0.00	0.00
48.50	2.00	0.38	5.00	0.00	0.00	0.00
49.00	2.00	0.38	5.00	0.00	0.00	0.00
49.50	2.00	0.38	5.00	0.00	0.00	0.00
50.00	2.00	0.38	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

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LIQUEFACTION ANALYSIS SUMMARY

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Font: Courier New, Regular, Size 8 is recommended for this report.
Licensed to , 4/19/2012 9:34:43 AM

Input File Name: H:\2011\11-13-105-01 SJSU Student Health and Counseling\Analyses\11-13105-01 LQCPT-4.liq
Title: SJSU Student Health & Counseling
Subtitle: 11-13-105-01

Surface Elev.=
Hole No.=CPT-4
Depth of Hole= 50.00 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration= 0.34 g
Earthquake Magnitude= 7.50

Input Data:
Surface Elev.=
Hole No.=CPT-4
Depth of Hole=50.00 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration=0.34 g
Earthquake Magnitude=7.50
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.00	8.86	0.38	4.33	120.00	0.00	0.50
0.66	58.76	1.85	3.15	120.00	0.00	0.50
1.15	169.90	2.28	1.34	120.00	0.00	0.50
1.64	114.60	2.45	2.14	120.00	0.00	0.50
2.13	149.20	4.03	2.70	120.00	0.00	0.50
2.62	92.06	3.59	3.90	120.00	0.00	0.50
3.12	50.48	2.03	4.02	120.00	0.00	0.50
3.61	34.83	1.53	4.41	120.00	0.00	0.50
4.10	24.48	1.02	4.18	120.00	0.00	0.50
4.59	40.72	1.34	3.28	120.00	0.00	0.50
5.09	22.71	1.26	5.54	120.00	0.00	0.50
5.58	31.88	0.97	3.04	120.00	0.00	0.50

6.07	35.10	1.14	3.25	120.00	0.00	0.50
6.56	17.01	0.90	5.31	120.00	0.00	0.50
7.05	11.35	0.69	6.11	120.00	0.00	0.50
7.55	22.97	0.38	1.67	120.00	0.00	0.50
8.04	14.97	0.47	3.13	120.00	0.00	0.50
8.53	13.74	0.35	2.56	120.00	0.00	0.50
9.02	11.89	0.31	2.57	120.00	0.00	0.50
9.51	5.36	0.35	6.53	120.00	0.00	0.50
10.01	23.29	0.26	1.14	120.00	0.00	0.50
10.50	14.63	0.24	1.63	120.00	0.00	0.50
10.99	4.47	0.22	4.92	120.00	0.00	0.50
11.48	3.56	0.16	4.58	120.00	0.00	0.50
11.98	4.44	0.15	3.36	120.00	0.00	0.50
12.47	3.68	0.13	3.53	120.00	0.00	0.50
12.96	4.26	0.20	4.69	120.00	0.00	0.50
13.45	3.75	0.16	4.13	120.00	0.00	0.50
13.94	3.10	0.11	3.42	120.00	0.00	0.50
14.44	2.68	0.05	1.72	120.00	0.00	0.50
14.93	2.99	0.18	5.99	120.00	0.00	0.50
15.42	7.43	0.22	3.01	120.00	0.00	0.50
15.91	6.96	0.32	4.55	120.00	0.00	0.50
16.40	9.88	0.47	4.78	120.00	0.00	0.50
16.90	10.57	0.52	4.95	120.00	0.00	0.50
17.39	7.96	0.47	5.95	120.00	0.00	0.50
17.88	7.62	0.47	6.21	120.00	0.00	0.50
18.37	39.25	1.89	4.82	120.00	0.00	0.50
18.86	38.33	2.13	5.56	120.00	0.00	0.50
19.36	33.62	1.99	5.92	120.00	0.00	0.50
19.85	26.32	1.38	5.25	120.00	0.00	0.50
20.34	18.31	0.64	3.52	120.00	0.00	0.50
20.83	13.58	0.48	3.51	120.00	0.00	0.50
21.33	11.90	0.50	4.19	120.00	0.00	0.50
21.82	11.10	0.48	4.33	120.00	0.00	0.50
22.31	9.76	0.44	4.49	120.00	0.00	0.50
22.80	17.59	0.44	2.49	120.00	0.00	0.50
23.29	11.19	0.50	4.49	120.00	0.00	0.50
23.79	15.16	0.62	4.06	120.00	0.00	0.50
24.28	12.97	0.53	4.09	120.00	0.00	0.50
24.77	9.92	0.32	3.20	120.00	0.00	0.50
25.26	17.99	0.73	4.04	120.00	0.00	0.50
25.75	21.43	1.10	5.15	120.00	0.00	0.50
26.25	28.58	0.65	2.27	120.00	0.00	0.50
26.74	17.92	0.60	3.33	120.00	0.00	0.50
27.23	11.76	0.47	4.02	120.00	0.00	0.50
27.72	18.52	0.59	3.16	120.00	0.00	0.50
28.22	20.21	0.61	3.00	120.00	0.00	0.50
28.71	16.96	0.23	1.37	120.00	0.00	0.50
29.20	8.37	0.17	2.08	120.00	0.00	0.50
29.69	7.76	0.28	3.58	120.00	0.00	0.50
30.18	7.96	0.28	3.56	120.00	0.00	0.50
30.68	8.17	0.30	3.62	120.00	0.00	0.50
31.17	7.50	0.25	3.35	120.00	0.00	0.50
31.66	8.14	0.34	4.24	120.00	0.00	0.50
32.15	9.15	0.53	5.79	120.00	0.00	0.50
32.64	9.41	0.50	5.31	120.00	0.00	0.50
33.14	14.94	0.41	2.72	120.00	0.00	0.50
33.63	10.88	0.23	2.11	120.00	0.00	0.50
34.12	8.50	0.31	3.62	120.00	0.00	0.50
34.61	9.06	0.34	3.74	120.00	0.00	0.50
35.10	7.56	0.30	4.02	120.00	0.00	0.50
35.60	8.96	0.39	4.32	120.00	0.00	0.50
36.09	9.37	0.48	5.13	120.00	0.00	0.50
36.58	10.23	0.61	5.91	120.00	0.00	0.50

37.07	10.71	0.63	5.93	120.00	0.00	0.50
37.57	12.22	0.75	6.10	120.00	0.00	0.50
38.06	12.38	0.76	6.14	120.00	0.00	0.50
38.55	11.48	0.68	5.91	120.00	0.00	0.50
39.04	10.74	0.62	5.73	120.00	0.00	0.50
39.53	10.64	0.43	3.99	120.00	0.00	0.50
40.03	10.54	0.47	4.45	120.00	0.00	0.50
40.52	10.66	0.49	4.62	120.00	0.00	0.50
41.01	10.45	0.47	4.45	120.00	0.00	0.50
41.50	11.94	0.63	5.28	120.00	0.00	0.50
41.99	12.53	0.70	5.61	120.00	0.00	0.50
42.49	13.09	0.70	5.39	120.00	0.00	0.50
42.98	14.62	0.79	5.42	120.00	0.00	0.50
43.47	14.40	0.79	5.49	120.00	0.00	0.50
43.96	14.87	0.75	5.05	120.00	0.00	0.50
44.46	14.47	0.75	5.17	120.00	0.00	0.50
44.95	13.90	0.79	5.70	120.00	0.00	0.50
45.44	15.07	0.86	5.68	120.00	0.00	0.50
45.93	14.69	0.80	5.43	120.00	0.00	0.50
46.42	14.73	0.79	5.37	120.00	0.00	0.50
46.92	15.44	0.77	4.97	120.00	0.00	0.50
47.41	15.04	0.80	5.33	120.00	0.00	0.50
47.90	16.15	0.83	5.11	120.00	0.00	0.50
48.39	15.36	0.75	4.85	120.00	0.00	0.50
48.88	16.41	0.74	4.48	120.00	0.00	0.50
49.38	15.30	0.62	4.08	120.00	0.00	0.50
49.87	14.21	0.44	3.11	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=0.26 in.
Settlement of Unsaturated Sands=0.02 in.
Total Settlement of Saturated and Unsaturated Sands=0.27 in.
Differential Settlement=0.137 to 0.181 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.29	5.00	0.26	0.02	0.27
0.50	1.28	0.29	5.00	0.26	0.02	0.27
1.00	2.08	0.29	5.00	0.26	0.02	0.27
1.50	2.08	0.29	5.00	0.26	0.02	0.27
2.00	2.08	0.29	5.00	0.26	0.02	0.27
2.50	2.08	0.29	5.00	0.26	0.02	0.27
3.00	1.42	0.29	5.00	0.26	0.01	0.27
3.50	0.87	0.28	5.00	0.26	0.01	0.27
4.00	0.86	0.28	5.00	0.26	0.01	0.27
4.50	0.44	0.28	5.00	0.26	0.01	0.27
5.00	1.86	0.28	5.00	0.26	0.01	0.27
5.50	0.35	0.28	5.00	0.26	0.01	0.27
6.00	0.36	0.28	5.00	0.26	0.01	0.27
6.50	2.00	0.28	5.00	0.26	0.01	0.27
7.00	2.00	0.28	5.00	0.26	0.01	0.27
7.50	0.15	0.28	5.00	0.26	0.01	0.27
8.00	0.31	0.28	5.00	0.26	0.00	0.26
8.50	2.00	0.28	5.00	0.26	0.00	0.26
9.00	2.00	0.28	5.00	0.26	0.00	0.26
9.50	2.00	0.28	5.00	0.26	0.00	0.26
10.00	0.11	0.28	0.38*	0.26	0.00	0.26
10.50	0.18	0.29	0.62*	0.13	0.00	0.13
11.00	2.00	0.29	5.00	0.12	0.00	0.12

11.50	2.00	0.30	5.00	0.12	0.00	0.12
12.00	2.00	0.31	5.00	0.12	0.00	0.12
12.50	2.00	0.31	5.00	0.12	0.00	0.12
13.00	2.00	0.32	5.00	0.12	0.00	0.12
13.50	2.00	0.32	5.00	0.12	0.00	0.12
14.00	2.00	0.33	5.00	0.12	0.00	0.12
14.50	2.00	0.33	5.00	0.12	0.00	0.12
15.00	2.00	0.34	5.00	0.12	0.00	0.12
15.50	2.00	0.34	5.00	0.12	0.00	0.12
16.00	2.00	0.34	5.00	0.12	0.00	0.12
16.50	2.00	0.35	5.00	0.12	0.00	0.12
17.00	2.00	0.35	5.00	0.12	0.00	0.12
17.50	2.00	0.35	5.00	0.12	0.00	0.12
18.00	2.00	0.36	5.00	0.12	0.00	0.12
18.50	2.00	0.36	5.00	0.12	0.00	0.12
19.00	2.00	0.36	5.00	0.12	0.00	0.12
19.50	2.00	0.37	5.00	0.12	0.00	0.12
20.00	2.00	0.37	5.00	0.12	0.00	0.12
20.50	2.00	0.37	5.00	0.12	0.00	0.12
21.00	2.00	0.38	5.00	0.12	0.00	0.12
21.50	2.00	0.38	5.00	0.12	0.00	0.12
22.00	2.00	0.38	5.00	0.12	0.00	0.12
22.50	2.00	0.38	5.00	0.12	0.00	0.12
23.00	2.00	0.39	5.00	0.12	0.00	0.12
23.50	2.00	0.39	5.00	0.12	0.00	0.12
24.00	2.00	0.39	5.00	0.12	0.00	0.12
24.50	2.00	0.39	5.00	0.12	0.00	0.12
25.00	2.00	0.39	5.00	0.12	0.00	0.12
25.50	2.00	0.40	5.00	0.12	0.00	0.12
26.00	2.00	0.40	5.00	0.12	0.00	0.12
26.50	0.15	0.40	0.39*	0.07	0.00	0.07
27.00	2.00	0.40	5.00	0.05	0.00	0.05
27.50	2.00	0.40	5.00	0.05	0.00	0.05
28.00	2.00	0.40	5.00	0.05	0.00	0.05
28.50	2.00	0.40	5.00	0.05	0.00	0.05
29.00	2.00	0.41	5.00	0.05	0.00	0.05
29.50	2.00	0.41	5.00	0.05	0.00	0.05
30.00	2.00	0.41	5.00	0.05	0.00	0.05
30.50	2.00	0.41	5.00	0.05	0.00	0.05
31.00	2.00	0.41	5.00	0.05	0.00	0.05
31.50	2.00	0.41	5.00	0.05	0.00	0.05
32.00	2.00	0.41	5.00	0.05	0.00	0.05
32.50	2.00	0.41	5.00	0.05	0.00	0.05
33.00	2.00	0.41	5.00	0.05	0.00	0.05
33.50	2.00	0.41	5.00	0.00	0.00	0.00
34.00	2.00	0.41	5.00	0.00	0.00	0.00
34.50	2.00	0.41	5.00	0.00	0.00	0.00
35.00	2.00	0.41	5.00	0.00	0.00	0.00
35.50	2.00	0.41	5.00	0.00	0.00	0.00
36.00	2.00	0.41	5.00	0.00	0.00	0.00
36.50	2.00	0.40	5.00	0.00	0.00	0.00
37.00	2.00	0.40	5.00	0.00	0.00	0.00
37.50	2.00	0.40	5.00	0.00	0.00	0.00
38.00	2.00	0.40	5.00	0.00	0.00	0.00
38.50	2.00	0.40	5.00	0.00	0.00	0.00
39.00	2.00	0.40	5.00	0.00	0.00	0.00
39.50	2.00	0.40	5.00	0.00	0.00	0.00
40.00	2.00	0.40	5.00	0.00	0.00	0.00
40.50	2.00	0.40	5.00	0.00	0.00	0.00
41.00	2.00	0.40	5.00	0.00	0.00	0.00
41.50	2.00	0.40	5.00	0.00	0.00	0.00
42.00	2.00	0.40	5.00	0.00	0.00	0.00
42.50	2.00	0.39	5.00	0.00	0.00	0.00

43.00	2.00	0.39	5.00	0.00	0.00	0.00
43.50	2.00	0.39	5.00	0.00	0.00	0.00
44.00	2.00	0.39	5.00	0.00	0.00	0.00
44.50	2.00	0.39	5.00	0.00	0.00	0.00
45.00	2.00	0.39	5.00	0.00	0.00	0.00
45.50	2.00	0.39	5.00	0.00	0.00	0.00
46.00	2.00	0.39	5.00	0.00	0.00	0.00
46.50	2.00	0.39	5.00	0.00	0.00	0.00
47.00	2.00	0.39	5.00	0.00	0.00	0.00
47.50	2.00	0.38	5.00	0.00	0.00	0.00
48.00	2.00	0.38	5.00	0.00	0.00	0.00
48.50	2.00	0.38	5.00	0.00	0.00	0.00
49.00	2.00	0.38	5.00	0.00	0.00	0.00
49.50	2.00	0.38	5.00	0.00	0.00	0.00
50.00	2.00	0.38	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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****

LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: H:\2011\11-13-105-01 SJSU Student Health and Counseling\Analyses\11-13105-01 LQCPT-5.liq
Title: SJSU Student Health & Counseling
Subtitle: 11-13-105-01

Surface Elev.=
Hole No.=CPT-5
Depth of Hole= 50.00 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration= 0.34 g
Earthquake Magnitude= 7.50

Input Data:
Surface Elev.=
Hole No.=CPT-5
Depth of Hole=50.00 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration=0.34 g
Earthquake Magnitude=7.50
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.00	26.75	1.44	5.38	120.00	0.00	0.50
0.66	21.17	1.79	8.44	120.00	0.00	0.50
1.15	50.73	0.64	1.26	120.00	0.00	0.50
1.64	38.73	1.01	2.61	120.00	0.00	0.50
2.13	30.65	1.64	5.37	120.00	0.00	0.50
2.62	44.46	2.50	5.63	120.00	0.00	0.50
3.12	27.86	1.74	6.24	120.00	0.00	0.50
3.61	23.62	1.47	6.24	120.00	0.00	0.50
4.10	21.49	1.30	6.07	120.00	0.00	0.50
4.59	28.07	1.28	4.55	120.00	0.00	0.50
5.09	32.78	1.15	3.52	120.00	0.00	0.50
5.58	30.94	1.00	3.23	120.00	0.00	0.50

6.07	31.05	1.08	3.47	120.00	0.00	0.50
6.56	28.81	1.17	4.07	120.00	0.00	0.50
7.05	14.88	0.86	5.75	120.00	0.00	0.50
7.55	28.73	0.51	1.76	120.00	0.00	0.50
8.04	12.84	0.41	3.15	120.00	0.00	0.50
8.53	5.20	0.20	3.81	120.00	0.00	0.50
9.02	8.78	0.20	2.26	120.00	0.00	0.50
9.51	7.57	0.24	3.21	120.00	0.00	0.50
10.01	4.36	0.19	4.29	120.00	0.00	0.50
10.50	3.42	0.19	5.47	120.00	0.00	0.50
10.99	5.71	0.16	2.87	120.00	0.00	0.50
11.48	3.48	0.11	3.13	120.00	0.00	0.50
11.98	4.40	0.19	4.27	120.00	0.00	0.50
12.47	3.81	0.12	3.12	120.00	0.00	0.50
12.96	2.55	0.07	2.86	120.00	0.00	0.50
13.45	2.69	0.06	2.19	120.00	0.00	0.50
13.94	3.45	0.05	1.39	120.00	0.00	0.50
14.44	8.21	0.19	2.30	120.00	0.00	0.50
14.93	8.18	0.31	3.84	120.00	0.00	0.50
15.42	7.73	0.27	3.48	120.00	0.00	0.50
15.91	5.78	0.27	4.62	120.00	0.00	0.50
16.40	5.28	0.23	4.28	120.00	0.00	0.50
16.90	38.06	1.74	4.57	120.00	0.00	0.50
17.39	36.33	1.94	5.33	120.00	0.00	0.50
17.88	34.77	1.46	4.20	120.00	0.00	0.50
18.37	27.97	1.03	3.67	120.00	0.00	0.50
18.86	25.43	1.26	4.97	120.00	0.00	0.50
19.36	16.47	0.75	4.58	120.00	0.00	0.50
19.85	14.89	0.68	4.55	120.00	0.00	0.50
20.34	13.27	0.65	4.92	120.00	0.00	0.50
20.83	11.58	0.42	3.63	120.00	0.00	0.50
21.33	9.63	0.42	4.33	120.00	0.00	0.50
21.82	9.03	0.39	4.33	120.00	0.00	0.50
22.31	8.90	0.31	3.47	120.00	0.00	0.50
22.80	26.41	0.70	2.64	120.00	0.00	0.50
23.29	15.93	0.71	4.43	120.00	0.00	0.50
23.79	13.25	0.47	3.52	120.00	0.00	0.50
24.28	8.19	0.25	3.09	120.00	0.00	0.50
24.77	11.15	0.29	2.62	120.00	0.00	0.50
25.26	34.08	0.66	1.95	120.00	0.00	0.50
25.75	23.66	0.84	3.55	120.00	0.00	0.50
26.25	24.05	0.66	2.73	120.00	0.00	0.50
26.74	11.54	0.30	2.63	120.00	0.00	0.50
27.23	8.11	0.22	2.77	120.00	0.00	0.50
27.72	8.96	0.32	3.55	120.00	0.00	0.50
28.22	8.79	0.34	3.92	120.00	0.00	0.50
28.71	8.63	0.35	4.06	120.00	0.00	0.50
29.20	7.89	0.31	3.94	120.00	0.00	0.50
29.69	8.15	0.40	4.94	120.00	0.00	0.50
30.18	8.75	0.43	4.87	120.00	0.00	0.50
30.68	9.55	0.49	5.10	120.00	0.00	0.50
31.17	8.54	0.29	3.40	120.00	0.00	0.50
31.66	7.84	0.27	3.39	120.00	0.00	0.50
32.15	8.54	0.27	3.11	120.00	0.00	0.50
32.64	7.98	0.24	3.02	120.00	0.00	0.50
33.14	11.12	0.55	4.90	120.00	0.00	0.50
33.63	10.32	0.45	4.37	120.00	0.00	0.50
34.12	9.27	0.42	4.51	120.00	0.00	0.50
34.61	10.16	0.48	4.70	120.00	0.00	0.50
35.10	11.52	0.58	5.03	120.00	0.00	0.50
35.60	11.48	0.70	6.07	120.00	0.00	0.50
36.09	13.61	0.73	5.39	120.00	0.00	0.50
36.58	12.18	0.63	5.13	120.00	0.00	0.50

37.07	9.92	0.50	5.00	120.00	0.00	0.50
37.57	11.45	0.47	4.13	120.00	0.00	0.50
38.06	11.41	0.52	4.59	120.00	0.00	0.50
38.55	11.19	0.53	4.72	120.00	0.00	0.50
39.04	12.17	0.60	4.93	120.00	0.00	0.50
39.53	13.72	0.65	4.75	120.00	0.00	0.50
40.03	13.93	0.71	5.12	120.00	0.00	0.50
40.52	14.29	0.83	5.82	120.00	0.00	0.50
41.01	14.02	0.69	4.91	120.00	0.00	0.50
41.50	12.11	0.59	4.88	120.00	0.00	0.50
41.99	14.03	0.77	5.52	120.00	0.00	0.50
42.49	14.21	0.69	4.84	120.00	0.00	0.50
42.98	13.90	0.73	5.27	120.00	0.00	0.50
43.47	14.69	0.81	5.48	120.00	0.00	0.50
43.96	15.10	0.82	5.43	120.00	0.00	0.50
44.46	14.79	0.76	5.11	120.00	0.00	0.50
44.95	14.79	0.71	4.82	120.00	0.00	0.50
45.44	14.80	0.73	4.93	120.00	0.00	0.50
45.93	14.52	0.69	4.72	120.00	0.00	0.50
46.42	15.16	0.70	4.59	120.00	0.00	0.50
46.92	15.36	0.69	4.52	120.00	0.00	0.50
47.41	15.99	0.69	4.35	120.00	0.00	0.50
47.90	16.17	0.60	3.73	120.00	0.00	0.50
48.39	14.40	0.44	3.02	120.00	0.00	0.50
48.88	15.82	0.50	3.18	120.00	0.00	0.50
49.38	17.89	0.73	4.06	120.00	0.00	0.50
49.87	17.30	0.63	3.63	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=0.08 in.
Settlement of Unsaturated Sands=0.01 in.
Total Settlement of Saturated and Unsaturated Sands=0.10 in.
Differential Settlement=0.049 to 0.065 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.29	5.00	0.08	0.01	0.10
0.50	2.08	0.29	5.00	0.08	0.01	0.10
1.00	2.08	0.29	5.00	0.08	0.01	0.10
1.50	0.68	0.29	5.00	0.08	0.01	0.10
2.00	1.03	0.29	5.00	0.08	0.01	0.10
2.50	2.08	0.29	5.00	0.08	0.01	0.10
3.00	2.08	0.29	5.00	0.08	0.01	0.10
3.50	2.08	0.28	5.00	0.08	0.01	0.10
4.00	2.08	0.28	5.00	0.08	0.01	0.09
4.50	1.57	0.28	5.00	0.08	0.01	0.09
5.00	0.53	0.28	5.00	0.08	0.01	0.09
5.50	0.38	0.28	5.00	0.08	0.01	0.09
6.00	0.45	0.28	5.00	0.08	0.01	0.09
6.50	0.52	0.28	5.00	0.08	0.01	0.09
7.00	2.00	0.28	5.00	0.08	0.01	0.09
7.50	0.15	0.28	5.00	0.08	0.00	0.09
8.00	2.00	0.28	5.00	0.08	0.00	0.09
8.50	2.00	0.28	5.00	0.08	0.00	0.09
9.00	2.00	0.28	5.00	0.08	0.00	0.09
9.50	2.00	0.28	5.00	0.08	0.00	0.08
10.00	2.00	0.28	5.00	0.08	0.00	0.08
10.50	2.00	0.29	5.00	0.08	0.00	0.08
11.00	2.00	0.29	5.00	0.08	0.00	0.08

11.50	2.00	0.30	5.00	0.08	0.00	0.08
12.00	2.00	0.31	5.00	0.08	0.00	0.08
12.50	2.00	0.31	5.00	0.08	0.00	0.08
13.00	2.00	0.32	5.00	0.08	0.00	0.08
13.50	2.00	0.32	5.00	0.08	0.00	0.08
14.00	2.00	0.33	5.00	0.08	0.00	0.08
14.50	2.00	0.33	5.00	0.08	0.00	0.08
15.00	2.00	0.34	5.00	0.08	0.00	0.08
15.50	2.00	0.34	5.00	0.08	0.00	0.08
16.00	2.00	0.34	5.00	0.08	0.00	0.08
16.50	2.00	0.35	5.00	0.08	0.00	0.08
17.00	2.00	0.35	5.00	0.08	0.00	0.08
17.50	2.00	0.35	5.00	0.08	0.00	0.08
18.00	2.00	0.36	5.00	0.08	0.00	0.08
18.50	2.00	0.36	5.00	0.08	0.00	0.08
19.00	2.00	0.36	5.00	0.08	0.00	0.08
19.50	2.00	0.37	5.00	0.08	0.00	0.08
20.00	2.00	0.37	5.00	0.08	0.00	0.08
20.50	2.00	0.37	5.00	0.08	0.00	0.08
21.00	2.00	0.38	5.00	0.08	0.00	0.08
21.50	2.00	0.38	5.00	0.08	0.00	0.08
22.00	2.00	0.38	5.00	0.08	0.00	0.08
22.50	2.00	0.38	5.00	0.08	0.00	0.08
23.00	2.00	0.39	5.00	0.08	0.00	0.08
23.50	2.00	0.39	5.00	0.08	0.00	0.08
24.00	2.00	0.39	5.00	0.08	0.00	0.08
24.50	2.00	0.39	5.00	0.08	0.00	0.08
25.00	2.00	0.39	5.00	0.08	0.00	0.08
25.50	0.16	0.40	0.41*	0.03	0.00	0.03
26.00	2.00	0.40	5.00	0.00	0.00	0.00
26.50	2.00	0.40	5.00	0.00	0.00	0.00
27.00	2.00	0.40	5.00	0.00	0.00	0.00
27.50	2.00	0.40	5.00	0.00	0.00	0.00
28.00	2.00	0.40	5.00	0.00	0.00	0.00
28.50	2.00	0.40	5.00	0.00	0.00	0.00
29.00	2.00	0.41	5.00	0.00	0.00	0.00
29.50	2.00	0.41	5.00	0.00	0.00	0.00
30.00	2.00	0.41	5.00	0.00	0.00	0.00
30.50	2.00	0.41	5.00	0.00	0.00	0.00
31.00	2.00	0.41	5.00	0.00	0.00	0.00
31.50	2.00	0.41	5.00	0.00	0.00	0.00
32.00	2.00	0.41	5.00	0.00	0.00	0.00
32.50	2.00	0.41	5.00	0.00	0.00	0.00
33.00	2.00	0.41	5.00	0.00	0.00	0.00
33.50	2.00	0.41	5.00	0.00	0.00	0.00
34.00	2.00	0.41	5.00	0.00	0.00	0.00
34.50	2.00	0.41	5.00	0.00	0.00	0.00
35.00	2.00	0.41	5.00	0.00	0.00	0.00
35.50	2.00	0.41	5.00	0.00	0.00	0.00
36.00	2.00	0.41	5.00	0.00	0.00	0.00
36.50	2.00	0.40	5.00	0.00	0.00	0.00
37.00	2.00	0.40	5.00	0.00	0.00	0.00
37.50	2.00	0.40	5.00	0.00	0.00	0.00
38.00	2.00	0.40	5.00	0.00	0.00	0.00
38.50	2.00	0.40	5.00	0.00	0.00	0.00
39.00	2.00	0.40	5.00	0.00	0.00	0.00
39.50	2.00	0.40	5.00	0.00	0.00	0.00
40.00	2.00	0.40	5.00	0.00	0.00	0.00
40.50	2.00	0.40	5.00	0.00	0.00	0.00
41.00	2.00	0.40	5.00	0.00	0.00	0.00
41.50	2.00	0.40	5.00	0.00	0.00	0.00
42.00	2.00	0.40	5.00	0.00	0.00	0.00
42.50	2.00	0.39	5.00	0.00	0.00	0.00

43.00	2.00	0.39	5.00	0.00	0.00	0.00
43.50	2.00	0.39	5.00	0.00	0.00	0.00
44.00	2.00	0.39	5.00	0.00	0.00	0.00
44.50	2.00	0.39	5.00	0.00	0.00	0.00
45.00	2.00	0.39	5.00	0.00	0.00	0.00
45.50	2.00	0.39	5.00	0.00	0.00	0.00
46.00	2.00	0.39	5.00	0.00	0.00	0.00
46.50	2.00	0.39	5.00	0.00	0.00	0.00
47.00	2.00	0.39	5.00	0.00	0.00	0.00
47.50	2.00	0.38	5.00	0.00	0.00	0.00
48.00	2.00	0.38	5.00	0.00	0.00	0.00
48.50	2.00	0.38	5.00	0.00	0.00	0.00
49.00	2.00	0.38	5.00	0.00	0.00	0.00
49.50	2.00	0.38	5.00	0.00	0.00	0.00
50.00	2.00	0.38	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

APPENDIX D

EARTHWORK SPECIFICATIONS

APPENDIX D

EARTHWORK SPECIFICATIONS

D1.1 Scope of Work

The work includes all labor, supplies and construction equipment required to construct the building pads in a good, workmanlike manner, as shown on the drawings and herein specified. The major items of work covered in this section include the following:

- Site Inspection
- Authority of Geotechnical Engineer
- Site Clearing
- Excavations
- Preparation of Fill Areas
- Placement and Compaction of Fill
- Observation and Testing

D1.2 Site Inspection

1. The Contractor shall carefully examine the site and make all inspections necessary, in order to determine the full extent of the work required to make the completed work conform to the drawings and specifications. The Contractor shall satisfy himself as to the nature and location of the work, ground surface and the characteristics of equipment and facilities needed prior to and during prosecution of the work. The Contractor shall satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered. Any inaccuracies or discrepancies between the actual field conditions and the drawings, or between the drawings and specifications must be brought to the Owner's attention in order to clarify the exact nature of the work to be performed.

2. This *Geotechnical Study Report* by Converse Consultants may be used as a reference to the surface and subsurface conditions on this project. The information presented in this report is intended for use in preliminary design and is subject to confirmation of the conditions encountered during construction. The exploration logs and related information depict subsurface conditions only at the particular time and location designated on the boring logs. Subsurface conditions at other locations may differ from conditions encountered at the exploration locations. In addition, the passage of time may result in a change in

subsurface conditions at the exploration locations. Any review of this information shall not relieve the Contractor from performing such independent study and evaluation to satisfy himself as to the nature of the surface and subsurface conditions to be encountered and the procedures to be used in performing his work.

D1.3 Authority of the Geotechnical Engineer

1. The Geotechnical Engineer will observe the placement of compacted fill and will take sufficient tests to evaluate the uniformity and degree of compaction of filled ground.
2. As the Owner's representative, the Geotechnical Engineer will (a) have the authority to cause the removal and replacement of loose, soft, disturbed and other unsatisfactory soils and uncontrolled fill; (b) have the authority to approve the preparation of native ground to receive fill material; and (c) have the authority to approve or reject soils proposed for use in building areas.
3. The Civil Engineer and/or Owner will decide all questions regarding (a) the interpretation of the drawings and specifications, (b) the acceptable fulfillment of the contract on the part of the Contractor and (c) the matters of compensation.

D1.4 Site Clearing

1. Clearing and grubbing shall consist of the removal of all existing structures, pavement, utilities, vegetation and demolition debris from areas to be graded.
2. Organic and inorganic materials resulting from the clearing and grubbing operations shall be hauled away from the areas to be graded.

D1.5 Excavations

1. Based on observations made during our field explorations, the surficial soils can be excavated with conventional earthwork equipment in good working order.

D1.6 Preparation of Fill Areas

1. All organic material, organic soils, undocumented fill soils and demolition debris should be removed from the proposed building areas.
2. The depths and extents of over-excavations should be performed per the recommendations presented in this report. Deeper removal will be needed if firm soils are not exposed on the excavation bottom. The exposed bottom of the over-excavation area should be scarified at least 6 inches, moisture conditioned as needed to near-optimum moisture content, and compacted to 90 percent relative

compaction. All loose, soft or disturbed earth materials should be removed from the bottom of excavations before placing structural fill. The actual depth of removal should be evaluated based on observations made during grading. Thickness of compacted fill underneath the buildings should be kept uniform.

3. The subgrade in all areas to receive fill shall be scarified to a minimum depth of six (6) inches, the soil moisture adjusted between optimum and three (3) percent above optimum for fine-grained soils and within three (3) percent of optimum moisture content for granular soils, and then compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. Scarification may be terminated on moderately hard to hard, cemented earth materials with the approval of the Geotechnical Engineer.
4. Compacted fill may be placed on native soils that have been properly scarified and recompacted as discussed above.
5. All areas to receive compacted fill will be observed and approved by the Geotechnical Engineer before the placement of fill.

D1.7 Placement and Compaction of Fill

1. Compacted fill placed for the support of footings, slabs-on-grade, exterior concrete flatwork, and driveways will be considered structural fill. Structural fill may consist of approved on-site soils or imported fill that meets the criteria indicated below.
2. Fill consisting of selected on-site earth materials or imported soils approved by the Geotechnical Engineer shall be placed in layers on approved earth materials. Soils used as compacted structural fill shall have the following characteristics:
   a. All fill soil particles shall not exceed three (3) inches in nominal size, and shall be free of organic matter and miscellaneous inorganic debris and inert rubble.
   b. Imported fill materials shall have an Expansion Index (EI) less than 20. All imported fill should be compacted to at least 90 percent of the laboratory maximum dry density (ASTM Standard D1557) at about three (3) percent above optimum moisture for fine grained soils, and within three (3) percent of optimum for granular soils.

3. Fill soils shall be evenly spread in maximum 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.
4. All fill placed at the site shall be compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. The on-site soils shall be moisture conditioned within three (3) percent above the optimum moisture content. At least the upper 12 inches of subgrade soils underneath the concrete apron, pavement and parking areas should be compacted to a minimum of 95 percent relative compaction.
5. Fill exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal:vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be benched into competent materials. The height and width of the benches shall be at least two (2) feet.
6. Representative samples of materials being used, as compacted fill will be analyzed in the laboratory by the Geotechnical Engineer to obtain information on their physical properties. Maximum laboratory density of each soil type used in the compacted fill will be determined by the ASTM Standard D1557 compaction method.
7. Fill materials shall not be placed, spread or compacted during unfavorable weather conditions. When site grading is interrupted by heavy rain, filling operations shall not resume until the Geotechnical Engineer approves the moisture and density conditions of the previously placed fill.
8. It shall be the Grading Contractor's obligation to take all measures deemed necessary during grading to provide erosion control devices in order to protect slope areas and adjacent properties from storm damage and flood hazard originating on this project. It shall be the contractor's responsibility to maintain slopes in their as-graded form until all slopes are in satisfactory compliance with job specifications, all berms have been properly constructed, and all associated drainage devices meet the requirements of the Civil Engineer.

D1.8 Trench Backfill

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

1. Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement.

2. Trench backfill shall be compacted to a minimum relative compaction of 90 percent as per ASTM Standard D1557 test method.
3. Rocks larger than one (1) inch should not be placed within 12 inches of the top of the pipeline or within the upper 12 inches of pavement or structure subgrade. No more than 30 percent of the backfill volume shall be larger than 3/4-inch in largest dimension diameter and rocks shall be well mixed with finer soil.
4. The pipe design engineer should select bedding material for the pipe. Bedding materials generally should have a Sand Equivalent (SE) greater than or equal to 30, as determined by the ASTM Standard D2419 test method.
5. Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to within three (3) percent of optimum moisture content for granular soils and between optimum and three (3) percent above optimum for fine-grained soils, then placed in horizontal layers. The thickness of uncompacted layers should not exceed eight (8) inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.
6. The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work.
7. The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D2922 test methods or equivalent.
8. Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.
9. It should be the responsibility of the Contractor to maintain safe conditions during cut and/or fill operations.
10. Trench backfill shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

D1.9 Observation and Testing

1. During the progress of grading, the Geotechnical Engineer will provide observation of the fill placement operations.
2. Field density tests will be made during grading to provide an opinion on the degree of compaction being obtained by the contractor. Where compaction of

less than specified herein is indicated, additional compactive effort with adjustment of the moisture content shall be made as necessary, until the required degree of compaction is obtained.

3. A sufficient number of field density tests will be performed to provide an opinion to the degree of compaction achieved. In general, density tests will be performed on each one-foot lift of fill, but not less than one for each 500 cubic yards of fill placed.

APPENDIX E

GUIDE SPECIFICATIONS FOR DRILLED PILE INSTALLATION

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GUIDE SPECIFICATIONS FOR DRILLED PILE INSTALLATION

It should be the responsibility of the contractor to select proper construction equipment and method to correctly install the piles based on his own interpretation of the information presented in this report. The following recommendations are provided as a guide for preparing plans and specifications and for quality control:

Drilled Piles

- Prior to starting any foundation work, staking should be checked by the project Civil/Structural Engineer. Variations in the alignment from the vertical greater than ¼-inch per foot of length should not be permitted. Any pile installed having a center more than three (3) inches off plan centerline will require structural analysis.

- Some variations in the final pile tip elevations should be expected. The actual tip elevation should be determined by the project geotechnical engineer during excavation based on observation of the actual field conditions.

- Based on the subsurface soil characteristics, caving during excavations will occur within the sandy material layer. Casing, or other methods approved by the project geotechnical consultant, should be used to support the sides of the pile excavation. Casing should be used at the discretion of the contractor. Casing should be advanced as drilling proceeds by drilling with a flight or bucket auger smaller in diameter than the inside of the casing. Occasional hammering may be required to advance the casing with the excavation. Casing should be pulled as the concrete is being poured, while always maintaining a head of concrete inside the casing. Drilling fluids should not be used to support the sides of the excavation without prior approval by the project geotechnical consultants. The contractor should have equipment on-site with sufficient pulling capacity to pull the casing at the proper time. The casing should have outside diameter not less than the specified diameter of the pile.

- In the event that the pile excavation becomes bell-shaped and cannot be advanced due to severe caving, the caved region may be filled with sand and Portland Cement slurry. Drilling may continue when the slurry has reached its initial set. In this case, it may be prudent to utilize casing or other special methods to facilitate continued drilling after the slurry has set. Sufficient space should be provided in the pier-reinforcing cage during fabrication to allow insertion of a concrete pump pipe or tremie tube for concrete placement.

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

- The reinforcing bars in the piles should have a minimum concrete cover of 3 inches. Sufficient space should be provided in the reinforcing cage to allow insertion of a concrete tremie tube for concrete placement.

- The reinforcing cage must be carefully placed in uncased holes to prevent gouging of the sides. This will cause loose material to fall into the hole. The cage of reinforcing steel should be placed to the depth required by the plans, and adequately supported at the top.

- Pile shafts spaced closer than six (6) diameters center-to-center shall be drilled and filled with concrete alternatively, allowing at least 12 hours after concrete placement in one shaft before drilling of an adjacent shaft.

- All piles should be concreted immediately after drilling and clean out. Concrete should be placed through a tremie to prevent segregation and unnecessary splashing on the reinforcing steel. The concrete should be directed towards the center of the pile. Free fall of concrete should not exceed three (3) feet.

- The concrete should be flowable, non-segregating concrete with slump near the maximum allowable to obtain satisfactory consolidation without vibration, and to facilitate filling of all voids outside the casing. Concrete should not exhibit rapid slump loss. The slump for uncased drilled piles should be determined by the structural engineer. When casing is withdrawn, the minimum slump should be 6.0-in for specially designed concrete with retard to prevent arching of concrete during casing withdrawal, or setting of the concrete until after the casing is withdrawn, should be used. The slump can be a maximum of 7-in. for concrete placed under groundwater determined by the structural engineer.

- Casing should be pulled as the concrete is being poured, while always maintaining a head of concrete inside the casing. The bottom of the casing should be maintained not more than five (5) feet nor less than one (1) foot below the top of the concrete during withdrawal and placing operations.

- Place concrete in pile in one continuous operation. Care should be taken to ensure that the concrete in the hole is dense and homogeneous. After the hole has been filled with concrete, the top 10 feet or the length of the reinforcing, whichever is greater should be vibrated.

- In the event that any pile excavation becomes bell-shaped and cannot be advanced due to severe caving, the caved region may be filled with sand and Portland Cement slurry. Drilling may continue when the slurry has hardened. In this case, it may be prudent to utilize casing or other special methods to facilitate continued drilling after the slurry has set.
- Drilled pile installation shall be performed under continuous observation by the project geotechnical consultant to confirm that the subsurface soils are similar to the soils encountered during our field study, which have formed the basis of our pier design recommendations. Further, the soils consultant should confirm that the dimensions of the installed piers are at least as large as those indicated on the foundation plan, and that pier installation has been performed as specified in this report. The contractor shall provide access and necessary facilities, including droplights, at his expense, to accommodate pier observations.
- Drilled pile installation shall be performed such that compliance with all safety rules and requirements is achieved. Drilling equipment, casing, reinforcement, and other items required for installation shall be kept at a safe distance from all overhead power lines and utilities.