EXHIBIT I

CORNERSTONE
EARTH GROUP

Date:	June 6, 2013	**DRAFT**
Project No.:	2725	
Prepared For:	Ms. Pamela Hardy **PONDEROSA HOMES** 6130 Stoneridge Mall Road, Suite 185 Pleasanton, California 94588	
Re:	Geotechnical Response to Comment Wagner Property 4202 Stanley Boulevard Pleasanton, California	

PUD-97
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CITY OF PLEASANTON
PLANNING DIVISION

Dear Ms. Hardy:

As requested, this letter presents our response to a City of Pleasanton review comment for the above referenced project.

We received a copy of an email from the City of Pleasanton dated May 30, 2013, requesting that the geotechnical engineer address a potential concern associated with allowing storm water collected in bio-retention swales to infiltrate into underlying native soils, and whether allowing surface water infiltration would impact the proposed site development from a seismic hazard viewpoint.

We reviewed the preliminary storm water bio-retention basin detail shown on the plan titled, "Grading and Utility Plan, Wagner Property, City of Pleasanton, Alameda County, Sheet PD-3," prepared by RJA dated May 22, 2013. We also reviewed the subsurface data in our geotechnical report dated January 29, 2013, as it pertains to potential seismic-induced settlement.

Based on our review, the proposed bioretention basins and the associated water infiltration would not increase the potential for seismic-induced settlement at the site more than what was previously estimate in our geotechnical report dated January 29, 2013.

Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices at this time and location. No warranties are either expressed or implied. If you have any questions or need any additional information from us, please call and we will be glad to discuss them with you.

Sincerely,

Cornerstone Earth Group, Inc.

John R. Dye, P.E., G.E.
Principal Engineer

Copies: Addressee (PDF by email)
Elisa Sarlatte – RJA (PDF by email)

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EARTH GROUP

PUD - 97

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CITY OF PLEASANTON
PLANNING DIVISION

TYPE OF SERVICES	Preliminary Geotechnical Investigation
PROJECT NAME	Stanley Boulevard Residential Development
LOCATION	4202 Stanley Boulevard Pleasanton, California
CLIENT	Ponderosa Homes
PROJECT NUMBER	132-5-1
DATE	January 29, 2013

CORNERSTONE EARTH GROUP

Type of Services	Preliminary Geotechnical Investigation
Project Name	Stanley Boulevard Residential Development
Location	4202 Stanley Boulevard Pleasanton, California
Client	Ponderosa Homes
Client Address	6671 Owens Drive Pleasanton, CA
Project Number	132-5-1
Date	January 29, 2013

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CORNERSTONE EARTH GROUP

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CORNERSTONE
EARTH GROUP

Type of Services	Preliminary Geotechnical Investigation
Project Name	Stanley Boulevard Residential Development
Location	4202 Stanley Boulevard Pleasanton, California

SECTION 1: INTRODUCTION

This preliminary geotechnical investigation was prepared for the sole use of Ponderosa Homes for the property located at 4202 Stanley Boulevard in Pleasanton, California. The purpose of this study was to evaluate the existing subsurface conditions and develop an opinion regarding potential geotechnical concerns that could impact the proposed development. The preliminary geotechnical recommendations contained in this report are for your forward planning, cost estimating, and preliminary project design. For our use, we were provided with the following documents:

- A report titled, "Phase I Environmental Site Assessment Report, Mobile Home Park, 4202 Stanley Boulevard, Pleasanton, CA," prepared by AAI Environmental Inc. dated March 11, 2011.
- A plan titled, "Pleasanton Trailer Park, Layout of Trailer Pattern and Sewage Arrangement," drawn by J.D. Byrd dated July 14, 1961.
- A preliminary base topographic plan prepared by RJA dated January 27, 2012.

1.1 PROJECT DESCRIPTION

The approximately 2-acre project site is located at 4202 Stanley Boulevard in Pleasanton, California. The site is currently occupied by an existing mobile home park and single-family residence. We understand that Ponderosa Homes is considering purchasing the site for a new residential development.

Conceptual plans are not yet available; however, we understand that single-family homes will likely be considered for the site. Appurtenant streets, parking, utilities, landscaping and other improvements necessary for site development are also likely planned.

1.2 SCOPE OF SERVICES

Our scope of services was presented in our proposal dated January 9, 2012, and consisted of field and laboratory programs to evaluate physical and engineering properties of the subsurface soils, engineering analysis to prepare preliminary recommendations for site grading, building foundations, pavements, and preparation of this preliminary report. Brief descriptions of our exploration and laboratory programs are presented below.

1.3 EXPLORATION PROGRAM

Field exploration consisted of three borings drilled on January 16 and December 18, 2012, with truck-mounted, hollow-stem auger drilling equipment and three Cone Penetration Tests (CPTs) advanced on January 19, 2012. The borings were drilled to depths of approximately 16½ and 40 feet; the CPTs were advance to depths of approximately 50 feet each. Boring EB-1 was advanced adjacent to CPT-2 and Boring EB-3 was performed adjacent to CPT-3 for direct evaluation of physical samples to correlated soil behavior.

The borings and CPTs were backfilled with cement grout in accordance with local requirements; exploration permits were obtained as required by local jurisdictions. The approximate locations of our exploratory borings and CPTs are shown on the Site Plan, Figure 2. Details regarding our field program are included in Appendix A.

1.4 LABORATORY TESTING PROGRAM

In addition to visual classification of samples, the laboratory program focused on obtaining data for preliminary foundation design and seismic ground deformation estimates. Testing included moisture contents, dry densities, washed sieve analyses, and Plasticity Index tests. Details regarding our laboratory program are included in Appendix B.

1.5 ENVIRONMENTAL SERVICES

Cornerstone Earth Group also provided environmental services for this project, including Phase 1 and 2 site assessments; environmental findings and conclusions are provided under separate covers.

SECTION 2: REGIONAL SETTING

2.1 REGIONAL SEISMICITY

The San Francisco Bay area is one of the most seismically active areas in the Country. While seismologists cannot predict earthquake events, the U.S. Geological Survey's Working Group on California Earthquake Probabilities 2007 estimates there is a 63 percent chance of at least one magnitude 6.7 or greater earthquake occurring in the Bay Area region between 2007 and 2036. As seen with damage in San Francisco and Oakland due to the 1989 Loma Prieta earthquake that was centered about 50 miles south of San Francisco, significant damage can

occur at considerable distances. Higher levels of shaking and damage would be expected for earthquakes occurring at closer distances.

The faults considered capable of generating significant earthquakes are generally associated with the well-defined areas of crustal movement, which trend northwesterly. The table below presents the State-considered active faults within 25 kilometers of the site.

Table 1: Approximate Fault Distances

Fault Name	Distance	
	(miles)	(kilometers)
Calaveras	2.3	3.8
Hayward (Total Length)	8.4	13.6
Greenville	9.9	16.0
Hayward (Southeast Extension)	13.9	22.4

SECTION 3: SITE CONDITIONS

3.1 SITE BACKGROUND

The existing single-family home located at the northwest corner of the site was reportedly constructed around 1912. The mobile home park was reportedly constructed in the late 1950s and was developed to accommodate up to 32 mobile homes. Our review of the original sewer system plan dated July 14, 1961, indicated the mobile home park was connected to three septic tanks and two sump pumps that drained to a leach field located near the laundry building. The mobile home park septic system was reportedly disconnected in 1992 and the site was connected to City of Pleasanton sewer services. In general, the mobile home park has remained relatively unchanged since original construction; however, the site has reportedly recently been vacated with the exception of the single-family home and one or two units.

3.2 SURFACE DESCRIPTION

The approximately 2-acre site is located at 4202 Stanley Boulevard and is bounded by Stanley Boulevard to the north, Arroyo del Valle to the south, and existing commercial and residential properties to the east and west. The site is occupied by a mobile home park and a single-family residence. Many of the mobile home sites are unoccupied, but several mobiles are still present throughout the site. Several additional out-structures were observed at the site, including small sheds, a storage building and a laundry building. The site is bordered by chain link or wooden fencing. A U-shaped asphalt concrete paved street loops into the site to provide access to each mobile home site. Based on visual observations, the existing asphalt concrete pavements are in fair to poor condition. Concrete pads, patio slabs and/or walkways were observed at each mobile home unit. The remainder of the site is covered with grass, bushes and numerous mature trees.

Topographic information provided by RJA indicates site grades ranging from approximately Elevation 350 to 352 feet (datum unknown). The adjacent Arroyo del Valle creek channel that flanks the south end of the site is approximately 25 feet deep and has an average bank slope inclined at approximately 1.5:1 to 2:1 (horizontal:vertical). Localized portions near the top of the creek bank are inclined as steep as 1.2:1, while the lower portion of the bank is about 8:1 or flatter. The creek bank is covered with dense vegetation and mature trees. Active erosion, bank sloughing or slope instability was not observed within the project boundary during our site reconnaissance.

3.3 SUBSURFACE CONDITIONS

3.3.1 Undocumented Fill

Our explorations were performed in unpaved areas of the site. However, based on our site observations, surface pavements are estimated to be on the order of 3 inches or less. Our explorations generally encountered approximately 1 foot of undocumented fill consisting of stiff sandy silt and medium dense silty sand.

As discussed, the mobile home park was reportedly connected to three septic tanks and two sump pumps that drained to a leach field located near the laundry building. We understand the mobile home park septic system was abandoned in about 1992 and the site was connected to City of Pleasanton sewer services. It is not known at this time whether the three septic tanks, two sump pumps and leach field indicated on the 1961 site utility plan were removed and backfilled or if they were abandoned in-place.

3.3.2 Native Alluvial Soil

Below the existing fills or where no fill is present, the site is underlain by Holocene-aged alluvial fan deposits derived from deposition from Arroyo del Valle and surrounding hillsides in the Tri-Valley area. The northern end of the site in the vicinity of CPT-1 is primarily underlain by stiff to hard sandy silt and sandy clay to a depth of approximately 47 feet. The fine-grained soils are underlain by dense silty sands and gravels to the maximum depth explored in CPT-1 at 50 feet.

The fine-grained soils decrease in thickness towards the central and southern portions of the site. In Boring EB-2 and CPT-3, performed near the center and southeast portions of the site, stiff to very stiff sandy silt was encountered to a depth of approximately 11½ to 13 feet, underlain by medium dense to dense sand and silty sand to a depth of approximately 37 feet. The sands were underlain by stiff to very stiff clay to a depth of about 47 feet and very dense sand and gravel to the maximum depth explored in CPT-3 at approximately 50 feet.

In Boring EB-1 and CPT-2, performed within 5 feet of each other near the southwest corner of the site, dense to very dense sands with varying percentages of gravel were encountered directly below the fill and extending to a depth of approximately 34 feet. The upper sands were underlain by stiff to hard clay and silt with occasional interbedded dense clayey and silty sand to the maximum depth explored in CPT-2 at 50 feet.

3.3.3 Plasticity/Expansion Potential

We performed one Plasticity Index (PI) test on a representative sample of the near-surface, fine-grained soil. Test results were used to evaluate expansion potential of surficial soils. The results of the surficial PI test indicated a PI 4, indicating low expansion potential to wetting and drying cycles.

3.3.4 In-Situ Moisture Contents

Laboratory testing indicated that the in-situ moisture contents within the upper 10 feet range from 5 percent below to near the estimated laboratory optimum moisture.

3.4 GROUND WATER

Ground water was not encountered in our explorations during drilling; however, the borings were not left open but were immediately backfilled when the borings was completed. A pore pressure dissipation test was performed during CPT-3 to estimate potential ground water conditions. The results of the test indicated that confined ground water rose to approximately 13 feet below the existing ground surface. However, given the time of year the test was conducted and the low water level in the creek at the time of our exploration, it is our opinion that the measured ground water does not represent a static ground water level. Based on our previous experience in the area and review of historic ground water maps, we anticipate that the high ground water level will be on the order of 20 feet below current grades, which is consistent with the depth of the Arroyo del Valle channel.

Fluctuations in ground water levels occur due to many factors including seasonal fluctuation, underground drainage patterns, regional fluctuations, and other factors.

SECTION 4: GEOLOGIC HAZARDS

4.1 FAULT RUPTURE

As discussed above several significant faults are located within 25 kilometers of the site. The site is not located within a State-designated Alquist-Priolo Earthquake Fault Zone. No known surface expression of fault traces is thought to cross the site; therefore, fault rupture hazard is not a significant geologic hazard at the site.

4.2 ESTIMATED GROUND SHAKING

Moderate to severe (design-level) earthquakes can cause strong ground shaking, which is the case for most sites within the Bay Area.

4.3 LIQUEFACTION POTENTIAL

The site is within a State-designated Liquefaction Hazard Zone (CGS, Livermore Quadrangle, 2008). Our field and laboratory programs addressed this issue on a preliminary basis by

sampling potentially liquefiable layers to depths of at least 50 feet, performing visual classification on sampled materials, evaluating CPT correlations, and performing various tests to further classify the soil properties.

4.3.1 Background

During strong seismic shaking, cyclically induced stresses can cause increased pore pressures within the soil matrix that can result in liquefaction triggering, soil softening due to shear stress loss, potentially significant ground deformation due to settlement within sandy liquefiable layers as pore pressures dissipate, and/or flow failures in sloping ground or where open faces are present (lateral spreading) (NCEER 1998). Limited field and laboratory data is available regarding ground deformation due to settlement; however, in clean sand layers settlement on the order of 2 to 3 percent of the liquefied layer thickness can occur. Soils most susceptible to liquefaction are loose, non-cohesive soils that are saturated and are bedded with poor drainage, such as sand and silt layers bedded with a cohesive cap.

4.3.2 Analysis

As discussed in the "Subsurface" section above, sand layers were encountered below the design ground water depth of 20 feet. Following the procedures in the 2008 monograph, *Soil Liquefaction During Earthquakes* (Idriss and Boulanger, 2008) and in accordance with CDMG Special Publication 117A guidelines (CDMG, 2008) for quantitative analysis, these layers were analyzed for liquefaction triggering and potential post-liquefaction settlement. These methods compare the ratio of the estimated cyclic shaking (Cyclic Stress Ratio - CSR) to the soil's estimated resistance to cyclic shaking (Cyclic Resistance Ratio - CRR), providing a factor of safety against liquefaction triggering. Factors of safety less than or equal to 1.3 are considered to be potentially liquefiable and capable of post-liquefaction re-consolidation.

The CSR for each layer quantifies the stresses anticipated to be generated due to a design-level seismic event, is based on the peak horizontal acceleration generated at the ground surface discussed in the "Estimated Ground Shaking" section above, and is corrected for overburden and stress reduction factors as discussed in the procedure developed by Seed and Idriss (1971) and updated in the 2008 Idriss and Boulanger monograph.

The soil's CRR is estimated from the in-situ measurements from CPTs and laboratory testing on samples retrieved from our borings. SPT "N" values obtained from hollow-stem auger borings were also used in our analyses since shallow ground water was not encountered.. The tip pressures are corrected for effective overburden stresses, taking into consideration both the ground water level at the time of exploration and the design ground water level, and stress reduction versus depth factors. The CPT method utilizes the soil behavior type index (I_C) to estimate the plasticity of the layers.

The results of our CPT analyses (CPT-1 through CPT-3) are presented in Appendix C on Figures C-1 through C-3; calculations for these CPTs are attached in Appendix C.

4.3.3 Summary

Our analyses indicate that several deeper layers could potentially experience liquefaction triggering that could result in soil softening and post-liquefaction total settlement ranging from less than ½ inch at the north end of the site to approximately ¾ inch at the southern end of the site based on the Yoshimine et al. (2006) method. As discussed in the SCEC report, differential movement for level ground sites over deep soil sites will be about half of the total settlement. In our opinion, differential settlements are anticipated to be on the order of ½ inch or less over a horizontal distance of 50 feet.

4.3.4 Ground Rupture Potential

The methods used to estimate liquefaction settlements assume that there is a sufficient cap of non-liquefiable material to prevent ground rupture or sand boils. For ground rupture to occur, the pore water pressure within the liquefiable soil layer will need to be great enough to break through the overlying non-liquefiable layer, which could cause significant ground deformation and settlement. The work of Youd and Garris (1995) indicates that the 20-foot thick layer of non-liquefiable cap is sufficient to prevent ground rupture; therefore the above total settlement estimates are reasonable.

4.4 LATERAL SPREADING

Lateral spreading is horizontal/lateral ground movement of relatively flat-lying soil deposits towards a free face such as an excavation, channel, or open body of water; typically lateral spreading is associated with liquefaction of one or more subsurface layers near the bottom of the exposed slope. As failure tends to propagate as block failures, it is difficult to analyze and estimate where the first tension crack will form.

The site is flanked by Arroyo del Valle along the entire south end of the site, with moderately steep banks up to approximately 25 feet high and inclined at approximately 1.2:1 to 2:1. Although the potential for liquefaction-induced settlement to occur at the site is considered moderate to high by the State, the magnitude of settlement is estimate to be ½ to ¾ inch or less. In addition, the potentially liquefiable layers appear to be relatively discontinuous.

As part of our preliminary liquefaction analyses, we calculated the Lateral Displacement Index (LDI) for potentially liquefiable layers based on methods presented in the 2008 monograph, *Soil Liquefaction During Earthquakes* (Idriss and Boulanger, 2008). LDI is a summation of the maximum shear strains versus depth, which is a measurement of the potential maximum displacement at that exploration location. Summations of the LDI values to a depth equal to twice the open face height were included. Estimated displacements in the area of CPT-2 and CPT-3 based on the LDI calculations are generally on the order of a few to several inches, which are anticipated to occur within 10 to 20 feet of the creek bank. To further evaluate the potential for creek bank instability at the south end of the site, we also performed a slope stability analysis, as summarized in the following sections.

4.5 SEISMIC SETTLEMENT/UNSATURATED SAND SHAKING

Loose unsaturated sandy soils can settle during strong seismic shaking. As the soils encountered at the site were predominantly stiff to very stiff clays and medium dense to dense sands, in our opinion, the potential for significant differential seismic settlement affecting the proposed improvements is low. Loose undocumented fills should be further evaluated during the design-level geotechnical investigation, as discussed in the "Conclusions" section of this report.

4.6 CREEK BANK STABILITY

4.6.1 Summary of Conditions

Based on our review of historic topographic maps dating back to 1906 and aerial photographs dating back to 1939, the Arroyo del Valle creek channel appears to have remained essentially unchanged, with the exception of a denser riparian canopy along the creek banks. Prior to completion of the Lake Del Valle dam (1968) that controls water flow into Arroyo del Valle, the creek channel appeared as a dry creek bed during periods of low rainfall. After construction of the dam, water flow in the creek appears to be nearly year-round. There were no indications of creek bank failures or significant changes in the creek channel alignment in the historic photographs reviewed.

As with most creeks incised into alluvial soils, there is a potential for future bank erosion, channel scour or minor shallow slumping along the stretch of Arroyo del Valle in the site vicinity. Since the site is located on the inside of a slight bend in the creek channel, it appears that toe scour has generally occurred on the southern (opposite) channel bank and deposition has generally occurred on the northern (adjacent) channel bank. This was also observed in the aerial photographs prior to year-round flows in the creek channel. Lastly, as discussed, the presence of relatively dense, mature vegetation (including several large trees), indicates that creek flows have had little to no recent impact on creek bank erosion.

Based on our site reconnaissance, subsurface exploration and review of available historic aerial photographs and topographic maps, in our opinion, the potential for future bank scour, erosion or shallow soil movement on the creek bank immediately adjacent to the site is low to moderate.

We performed a preliminary slope stability analysis to estimate potential impacts to the proposed development due to creek bank instability. Cross Section A-A' was prepared to represent the worst-case creek bank slope configuration, as shown on Figure 4. The ground surface elevations were based on topographic plans prepared by RJA dated August 29, 2012. A surface load of 500 psf was included to represent a typical residential structure supported on a mat foundation. A ground water depth of approximately 20 feet was also used in our analysis.

4.6.2 Method of Analysis

The lateral stability of a slope is influenced by the composition, inclination, and height of a slope. Stability is usually expressed as a ratio of resisting moments and forces divided by driving

moments and forces termed the factor of safety (FS). Factors of safety are calculated for static and seismic conditions. The stability of the existing creek bank slope was evaluated using the computer program GSTABL7 and circular and block modes of failure. Input parameters for the analysis include slope geometry, soil layers or zones, soil unit weights and strength parameters, and ground water conditions.

In evaluating the stability of slopes under seismic conditions, GSTABL7 uses a "pseudo-static" method of analysis. The pseudo-static method models the effects of transient or pulsating earthquake loading on a potential slide mass by using an equivalent sustained horizontal force determined as the product of a seismic coefficient and the weight of the potential slide mass. The slope is first analyzed to establish the minimum factor of safety under static conditions. Once this minimum failure surface is located, an additional horizontal force acting in the direction of potential failure is imposed on the sliding mass. This additional force is equal to the soil mass multiplied by a seismic coefficient.

The ground motion parameter used in a pseudo-static stability analysis is referred to as the seismic coefficient "K". CGS (2008) has published recommendations for the selection of the "K"-value in a publication titled "Guidelines for Evaluation and Mitigation of Seismic Hazards in California – SP 117A." The site is located near the active Calaveras Fault Zone and high ground shaking can be expected during a seismic event near the site. Based on an estimated maximum horizontal ground acceleration of 0.44g, a displacement threshold (u) of 15 centimeters, and an earthquake magnitude (M) of 6.8, we have performed our pseudo-static analysis using a "K"-value of 0.18, which, in our opinion, is reasonable for preliminary analytical purposes.

The minimum allowable factor of safety with respect to slope stability generally ranges from 1.5 to 2 for static conditions and 1.0 for seismic conditions. A pseudo-static factor of safety of one typically implies "movement" of the slope mass, but does not necessarily result in complete slope failure. On a preliminary basis, acceptable factors of safety for static and seismic (pseudo-static) conditions may be considered to be 1.5 and 1.0, respectively.

4.6.3 Soil Properties

To estimate the strength of the underlying alluvial and fluvial soils, we reviewed SPT N-value correlations from our borings and CPTs, and undrained shear strength correlations from CPT data to depths of approximately 36½ to 50 feet.

Due to the variability of the older alluvial soils, a range of soil strength parameters were estimated based on correlations from our recently completed explorations, and our experience and engineering judgment. For our analysis, the subsurface conditions were modeled as layers, including an upper fine-grained alluvial soil, underlain by older coarse-grained soils. Due to the presences of relatively thin potentially liquefiable sand layers below the ground water table, residual shear strength values were considered for short-term, undrained seismic load conditions based on correlated SPT N-values. The soil strength parameters used in our preliminary analysis are summarized in Table 2.

Table 2: Summary of Soil Strength Properties

Soil Description	Static Conditions		Seismic Conditions	
	Cohesion (psf)	Friction Angle (degrees)	Cohesion (psf)	Friction Angle (degrees)
Stiff Sandy Silt/Clay	100	25	1,500	0
Medium Dense to Dense Sand	0	34	0	32-34*
Stiff Clay	100	25	1,500	0
Dense Sand/Gravel	0	36	0	36

**A zone of potentially liquefiable, medium dense sand between depths of about 29 to 31 feet (CPT-3) was modeled with residual undrained shear strength of 800 psf for the seismic loading condition.*

4.6.4 Results of the Analysis

We computed the minimum static and seismic factors of safety with respect to sliding for Generalized Cross Section A-A' shown in Figure 4, which was considered to represent the steepest and highest creek bank condition adjacent to the proposed development. The results of our analyses are summarized in the following table, and indicate that the resulting factors of safety are generally above minimum acceptable levels of 1.5 for static loading conditions. For seismic loading conditions, the factor of safety was estimated to range from 1.3 to 1.5, which is well above the minimum acceptable of 1.0.

Table 3: Results of Preliminary Creek Bank Stability Analyses – Cross Section A-A'

Description	Factor of Safety	
	Static	Pseudo-Static*
Section A-A' (circular failure modes)	1.6 to 2.0	1.4 to 1.5
Section A-A' (block failure modes)	n/a	1.3 to 1.5

*Seismic coefficient = 0.18

4.6.5 Slope Deformation Analysis

Because of the proximity of some of the proposed residential lots to the top of the existing creek bank, we performed a preliminary review of the potential for slope deformation during seismic events. The procedure involves calculating the yield acceleration, defined as the inertial force necessary to cause the static factor of safety to reach 1.0, from the traditional limit-equilibrium slope stability analysis, for a single critical failure surface. A simplified Newmark analysis was performed with GSTABL7 to estimate a probable maximum displacement. This analysis, in combination with the results of the pseudo-static analysis, is typically used to evaluate the final

design-level slope to determine if the estimated movement is acceptable or if mitigation is required. The results of our slope deformation analysis indicate probable maximum displacements near the top of the bank on the order of one inch or less.

Based on our analysis and the estimated factors of safety, in our opinion, displacements will be limited during strong ground shaking; however, some ground displacement is possible within approximately 10 feet of the top of creek bank.

Based on our review of the conceptual development plan, the building setback from the top of the creek bank slope could range from approximately 15 to 20 feet. On a preliminary basis, the proposed residential structures should be set back at least 15 feet from the top of the creek bank. Proposed site improvements to be located within 15 feet of the top of creek bank, such as underground utilities, fences or backyard improvements, may experience some movement following strong ground shaking. Further discussion of long-term creek bank stability and building setbacks from the creek are presented in the "Conclusions" section of this report.

4.7 FLOODING

Based on our internet search of the Federal Emergency Management Agency (FEMA) flood map public database, the site is generally located within Zone X, determined as an "area of 0.2 percent annual chance flood; areas of 1 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; areas protected by levees from 1 percent annual chance flood." The adjacent Arroyo del Valle is generally considered to be within Zone AE, which is considered to be a special flood hazard area subject to inundation by the 1 percent annual chance flood and a base flood elevation estimated to be at approximately Elevation 343 feet. We recommend the project civil engineer be retained to confirm this information and verify the base flood elevation, if appropriate.

The Association of Bay Area Governments has compiled a database of Dam Failure Inundation Hazard Maps (ABAG, 1995). The generalized hazard maps were prepared by dam owners as required by the State Office of Emergency Services; they are intended for planning purposes only. Based on our review of these maps, the site is located within a dam failure inundation area for the Del Valle Reservoir.

SECTION 5: CONCLUSIONS

5.1 SUMMARY

From a geotechnical viewpoint, the project is feasible provided the concerns listed below are addressed in the project design. The preliminary recommendations that follow are intended for conceptual planning and preliminary design. A design-level geotechnical investigation should be performed once site development plans are prepared indicating where proposed structures are planned. The design-level investigation findings will be used to confirm the preliminary recommendations and develop detailed recommendations for design and construction. Descriptions of each geotechnical concern with brief outlines of our preliminary recommendations follow the listed concerns.

- Potential for liquefaction-induced settlements
- Presence of localized undocumented fills
- Building setbacks adjacent to Arroyo del Valle

5.1.1 Potential for Liquefaction-Induced Settlements

As discussed, our preliminary liquefaction analysis indicates that there is a potential for liquefaction of localized sand layers during a significant seismic event. Although the potential for liquefied sands to vent to the ground surface through cracks in the surficial soils is low, our analysis indicates that liquefaction-induced settlement on the order of ¼ to ¾ inch could occur, resulting in differential settlement up to ½ inch over a horizontal distance of 50 feet. Foundations will need to be designed to tolerate the anticipated total and differential settlements. Preliminary foundation recommendations are presented in the "Foundations" section.

5.1.2 Undocumented Fill

Approximately 1 foot of undocumented fill was encountered in our geotechnical explorations. As discussed in the "Subsurface Conditions" section of this report, other localized fills may be present in former septic tank, sump pump and leach field areas. Due to the potential variability of undocumented fills, on a preliminary basis, we recommend that all undocumented fill material be removed and replaced with compacted fill. Preliminary recommendations addressing this concern are presented in the "Earthwork" section of this report.

5.1.3 Setbacks Adjacent to Arroyo del Valle

Our evaluation of potential creek bank instability was based on our site reconnaissance, research of published and unpublished geologic maps and reports, review of historic aerial photographs, our subsurface exploration and our preliminary creek bank stability analysis. The intent of this work was to identify the presence of existing landslides or other indications of potential future creek bank instability.

As discussed in the "Geologic Hazards" section, as with most creeks incised into alluvial soils, there is a potential for future bank erosion or channel scour along the stretch of Arroyo del Valle in the site vicinity. Since the creek channel curves inward near the site, it appears that active toe scour is occurring on the southern (opposite) channel bank and deposition has generally occurred on the northern (adjacent) channel bank; however, channel scour remains a potential concern. Although the potential for creek bank movement is considered low under static loading conditions, there is a low to moderate potential for bank movement during or following strong ground shaking in the vicinity based on our slope stability analysis.

Therefore, on a preliminary basis, we recommend that building foundations be setback at least 15 feet from the top of the creek bank. If reduced building setbacks are required, it may be necessary to mitigate potential slope movement directly behind the top of bank. This could

possibly consist of installing buried secant or stitch piers or other ground improvement near the top of the creek bank. Other site improvements, such as swimming pools, patios, fences or sound walls constructed near the top of the creek bank may be susceptible to movement due to long-term soil creep or localized shallow slumping adjacent to the top of the creek bank during periods of heavy rainfall or peak channel flow. Foundations supporting these improvements will likely need to be deeper than conventional fence posts or wall piers; pools and slabs in this area may need to be more heavily reinforced. Final building setbacks from the top of the Arroyo del Valle creek bank should be further evaluated during the design-level geotechnical investigation.

5.2 DESIGN-LEVEL GEOTECHNICAL INVESTIGATION

The preliminary recommendations contained in this study were based on limited site development information and limited exploration. As site conditions may vary significantly between the small-diameter explorations performed during this investigation, we also recommend that we be retained to 1) perform a design-level geotechnical investigation, once detailed site development plans are available; 2) to review the geotechnical aspects of the project structural, civil, and landscape plans and specifications, allowing sufficient time to provide the design team with any comments prior to issuing the plans for construction; and 3) be present to provide geotechnical observation and testing during earthwork and foundation construction.

SECTION 6: EARTHWORK

6.1 ANTICIPATED EARTHWORK MEASURES

On a preliminary basis, we recommend that any existing debris, slabs, septic tanks, sump pumps, leach fields, and/or abandoned underground utilities be removed entirely and the resulting excavations backfilled with engineered fill. Additionally, any native soils that are disturbed during demolition of the existing improvements should also be removed and replaced as engineered fill. Any existing undocumented fill encountered during grading, including fill surrounding former septic tank, sump pumps and leach field areas, will likely need to be over-excavated down to native soils within the proposed building footprints and 5 feet laterally beyond. In general, shallow undocumented fill will likely need to be over-excavated approximately 1 foot in future building areas prior to placing engineered fill.

All on-site soils below the stripped layer are suitable for use as fill at the site. Imported fill material for use as general fill should be predominantly granular with a Plasticity Index of 15 or less. All fill as well as scarified surface soils in those areas to receive fill or slabs-on-grade should be compacted to at least 90 percent relative compaction as determined by ASTM Test Designation D-1557, latest edition; and be at least 2 percent above optimum. The upper 6 inches of subgrade in pavement areas and all aggregate base materials should be compacted to at least 95 percent relative compaction (ASTM D-1557, latest edition). Utility trench backfill should be compacted to at least 90 percent relative compaction (ASTM D-1557, latest edition) by mechanical means only.

Surface water runoff should not be allowed to pond adjacent to building foundations, slabs-on-grade, or pavements. Hardscape surfaces should slope at least 1 to 2 percent towards suitable discharge facilities; landscape areas should slope at least 2 to 3 percent away from buildings. Runoff should not be allowed to flow over the Arroyo del Valle creek bank. In addition, storm water quality improvements, such as bio-infiltration swales or ponds, should not be constructed near the top of the creek bank.

SECTION 7: FOUNDATIONS

7.1 SUMMARY OF RECOMMENDATIONS

On a preliminary basis, the proposed single-family residential structures may be supported on shallow foundations provided the recommendations in the "Earthwork" section and the sections below are followed. As mentioned above, we are recommending a minimum building setback of at least 15 feet from the top of creek bank.

7.2 SEISMIC DESIGN CRITERIA

We assume that the project structural design will be based on the 2010 California Building Code (CBC), which provides criteria for the seismic design of buildings in Chapter 16. The "Seismic Coefficients" used to design buildings are established based on a series of tables and figures addressing different site factors, including the soil profile in the upper 100 feet below grade and mapped spectral acceleration parameters based on distance to the controlling seismic source/fault system. Based on our borings and review of local geology, the site is underlain by deep alluvial soils with typical SPT "N" values between 15 and 50 blows per foot. Therefore, we have classified the site as Soil Classification D.

7.3 SHALLOW FOUNDATIONS

7.3.1 Post-Tensioned Mat Foundations

The planned residential structures may be supported on post-tensioned (PT) concrete mat foundations, which should be designed in accordance with the procedures developed by the Post-Tensioning Institute (2007) and the 2010 California Building Code.

To reduce potential differential movement, on a preliminary basis, mats should be designed for a maximum average areal bearing pressure of 500 psf for dead plus live loads; at column or wall loading, the maximum localized allowable bearing pressure should be limited to about 2,000 to 3,000 psf. When evaluating wind and seismic conditions, allowable bearing pressures may be increased by one-third. Additional reinforcing steel may be required to help span irregularities and differential settlement.

7.3.2 Mat Foundation Settlement

We estimate that differential due to combined static and seismic settlements will be on the order of ½ inch or less across a typical mat foundation area.

SECTION 8: CONCRETE SLABS AND PEDESTRIAN PAVEMENTS

8.1 EXTERIOR FLATWORK

Exterior concrete flatwork subject to pedestrian and/or occasional light pick up loading should be at least 4 inches thick and supported on 4 inches of aggregate base material overlying prepared subgrade. Walkways and patios can likely be constructed directly over prepared subgrade soils.

SECTION 9: VEHICULAR PAVEMENTS

9.1 ASPHALT CONCRETE

The following asphalt concrete pavement recommendations tabulated below are based on the Procedure 608 of the Caltrans Highway Design Manual, estimated traffic indices for various pavement-loading conditions, and on an assumed design R-value of 10. The design R-value was chosen based on experience with similar soil conditions in this portion of the City of Pleasanton and engineering judgment considering the variable surface conditions.

Table 4: Preliminary Asphalt Concrete Pavement Recommendations (R-value = 10)

Design Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)	Total Pavement Section Thickness (inches)
4.0	2.5	7.0	9.0
4.5	2.5	9.0	11.5
5.0	3.0	9.0	12.0
5.5	3.0	11.0	14.0
6.0	3.5	12.0	15.5
6.5	4.0	13.0	17.0

As required by the City of Pleasanton, additional R-value testing of exposed subgrade soils should be performed once street cuts are made to confirm the final design R-value. If testing indicates a significantly higher R-value, it may be feasible to reduce pavement sections.

Frequently, the full asphalt concrete section is not constructed prior to construction traffic loading. This can result in significant loss of asphalt concrete layer life, rutting, or other pavement failures. To improve the pavement life and reduce the potential for pavement distress through construction, we recommend the full design asphalt concrete section be constructed prior to construction traffic loading. Alternatively, a higher traffic index may be chosen for the areas where construction traffic will use the pavements.

SECTION 10: LIMITATIONS

This report, an instrument of professional service, has been prepared for the sole use of Ponderosa Homes specifically to support the design of the proposed residential development located at 4202 Stanley Boulevard in Pleasanton, California. The opinions, conclusions, and preliminary recommendations presented in this report have been formulated in accordance with accepted geotechnical engineering practices that exist in Northern California at the time this report was prepared. No warranty, expressed or implied, is made or should be inferred.

Preliminary recommendations in this report are based upon the soil and ground water conditions encountered during our limited subsurface exploration. Preparation of a design-level investigation is anticipated to provide additional information and refine the preliminary recommendations presented herein. If variations or unsuitable conditions are encountered during the construction phase, Cornerstone must be contacted to provide supplemental recommendations, as needed.

Ponderosa Homes may have provided Cornerstone with plans, reports and other documents prepared by others. Ponderosa Homes understands that Cornerstone reviewed and relied on the information presented in these documents and cannot be responsible for their accuracy.

Cornerstone prepared this report with the understanding that it is the responsibility of the owner or his representatives to see that the recommendations contained in this report are presented to other members of the design team and incorporated into the project plans and specifications, and that appropriate actions are taken to implement the geotechnical recommendations during construction.

Conclusions and recommendations presented in this report are valid as of the present time for the development as currently planned. Changes in the condition of the property or adjacent properties may occur with the passage of time, whether by natural processes or the acts of other persons. In addition, changes in applicable or appropriate standards may occur through legislation or the broadening of knowledge. Therefore, the conclusions and recommendations presented in this report may be invalidated, wholly or in part, by changes beyond Cornerstone's control. This report should be reviewed by Cornerstone after a period of three (3) years has elapsed from the date of this report. In addition, if the current project design is changed, then Cornerstone must review the proposed changes and provide supplemental recommendations, as needed.

An electronic transmission of this report may also have been issued. While Cornerstone has taken precautions to produce a complete and secure electronic transmission, please check the electronic transmission against the hard copy version for conformity.

Recommendations provided in this report are based on the assumption that Cornerstone will be retained to provide observation and testing services during construction to confirm that conditions are similar to that assumed for design, and to form an opinion as to whether the work has been performed in accordance with the project plans and specifications. If we are not retained for these services, Cornerstone cannot assume any responsibility for any potential

claims that may arise during or after construction as a result of misuse or misinterpretation of Cornerstone's report by others. Furthermore, Cornerstone will cease to be the Geotechnical-Engineer-of-Record if we are not retained for these services.

SECTION 11: REFERENCES

Boulanger, R.W. and Idriss, I.M., 2004, Evaluating the Potential for Liquefaction or Cyclic Failure of Silts and Clays, Department of Civil & Environmental Engineering, College of Engineering, University of California at Davis.

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Youd et al., 2001, "Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils," ASCE Journal of Geotechnical and Geoenvironmental Engineering, Vo. 127, No. 10, October, 2001.

AERIAL PHOTOGRAPHS

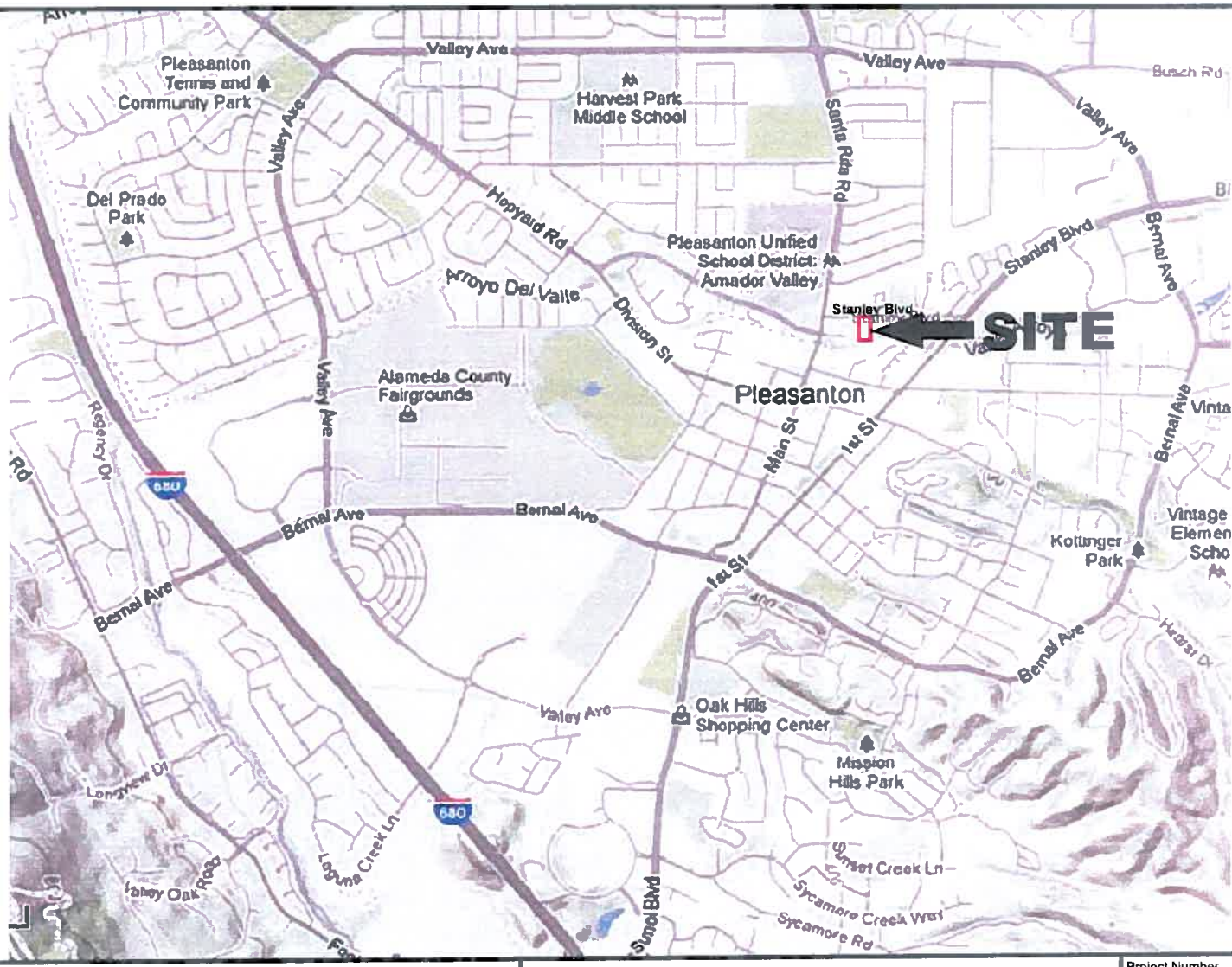
Geomorphic features on the following aerial photographs obtained from Environmental Data Resources (EDR) were interpreted as part of this investigation:

Year	Scale	Type	Source
1939	1"=555'	B/W	Fairchild
1949	1"=655'	B/W	USGS
1958	1"=555'	B/W	Cartwright
1965	1"=333'	B/W	Cartwright
1974	1"=601'	B/W	NASA
1982	1"=690'	B/W	USGS
1998	1"=666'	B/W	USGS
2005	1"=500'	Color	EDR
2006	1"=500'	Color	EDR

HISTORIC TOPOGRAPHIC MAPS:

Geomorphic features on the following USGS topographic maps obtained from Environmental Data Resources (EDR) were interpreted as part of this investigation:

Year	Quad	Series	Scale
1906	Pleasanton	15-Minute	1:62500
1947	Pleasanton	15-Minute	1:50000
1953	Livermore	7.5-Minute	1:24000
1961	Livermore	7.5-Minute	1:24000
1968	Livermore	7.5-Minute	1:24000
1973	Livermore	7.5-Minute	1:24000
1980	Livermore	7.5-Minute	1:24000



CORNERSTONE EARTH GROUP

Vicinity Map

4202 Stanley Boulevard
Pleasanton, CA

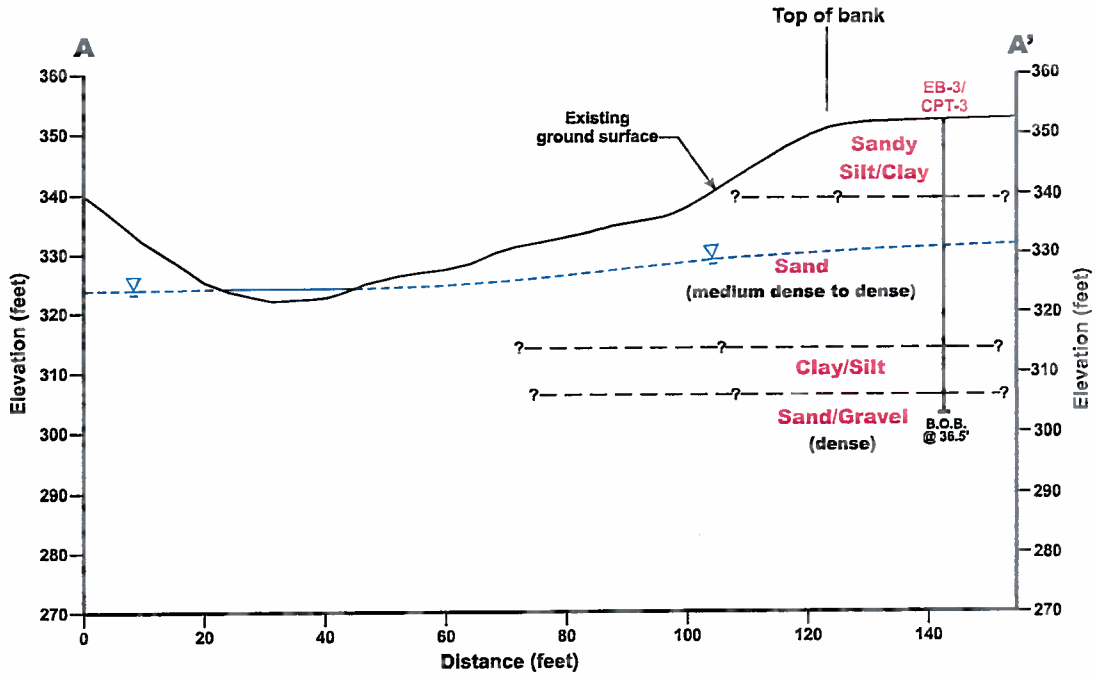
Project Number	132-5-1
Figure Number	Figure 1
Date	January 2012
Drawn By	RRN

CORNERSTONE EARTH GROUP

Site Plan

4202 Stanley Boulevard
Pleasanton, CA

Project Number	Figure Number	Date	Drawn By
132-5-1	Figure 2	January 2012	RRN



Section A-A'

(View Looking West)
1"=20' H:V

Symbols

Assumed high ground water level

Estimated contact between soil layers; queried where uncertain

Notes:
1) Surficial fills associated with existing pavements, landscaping or utilities are not shown.
2) The subsurface profile is conceptual and is based on limited subsurface data obtained from widely spaced borings. Actual subsurface conditions may vary significantly between borings.
3) See Figure 2 for location of cross section.

Project Number 132-5-1
Figure Number Figure 3
Date January 2013
Drawn by RRN

Generalized Cross Section A-A'

4202 Stanley Boulevard
Pleasanton, CA

CORNERSTONE EARTH GROUP

APPENDIX A: FIELD INVESTIGATION

The field investigation consisted of a surface reconnaissance and a subsurface exploration program using truck-mounted, hollow-stem auger drilling equipment and 20-ton truck-mounted Cone Penetration Test equipment. Three 8-inch-diameter exploratory borings were drilled on January 16 and December 18, 2012, to depths ranging from approximately 15 to 40 feet. Three CPT soundings were also performed in accordance with ASTM D 5778-95 (revised, 2002) on January 19, 2012, to depths of approximately 50 feet. The approximate exploration locations are shown on the Site Plan, Figure 2. The soils encountered were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D2488). Boring logs, as well as a key to the classification of the soil, are included as part of this appendix.

Exploration locations were approximated using existing site boundaries and other site features as references. Exploration elevations were not determined. The exploration locations should be considered accurate only to the degree implied by the method used.

Representative soil samples were obtained from the borings at selected depths. All samples were returned to our laboratory for evaluation and appropriate testing. The standard penetration resistance blow counts were obtained by dropping a 140-pound hammer through a 30-inch free fall. The 2-inch O.D. split-spoon sampler was driven 18 inches and the number of blows was recorded for each 6 inches of penetration (ASTM D1586). 2.5-inch I.D. samples were obtained using a Modified California Sampler driven into the soil with the 140-pound hammer previously described. Unless otherwise indicated, the blows per foot recorded on the boring log represent the accumulated number of blows required to drive the last 12 inches. The various samplers are denoted at the appropriate depth on the boring logs.

The CPT soundings involved advancing an instrumented cone-tipped probe into the ground while simultaneously recording the resistance at the cone tip (q_c) and along the friction sleeve (f_s) at approximately 5-centimeter intervals. Based on the tip resistance and tip to sleeve ratio (R_f), the CPT classified the soil behavior type and estimated engineering properties of the soil, such as equivalent Standard Penetration Test (SPT) blow count, internal friction angle within sand layers, and undrained shear strength in silts and clays. A pressure transducer behind the tip of the CPT cone measured pore water pressure (u_2). Graphical logs of the CPT data is included as part of this appendix.

Field tests included an evaluation of the unconfined compressive strength of the soil samples using a pocket penetrometer device. The results of these tests are presented on the individual boring logs at the appropriate sample depths.

Attached exploration logs and related information depict subsurface conditions at the locations indicated and on the date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these exploration locations. The passage of time may result in altered subsurface conditions due to environmental changes. In addition, any stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

UNIFIED SOIL CLASSIFICATION (ASTM D-2487-98)

MATERIAL TYPES	CRITERIA FOR ASSIGNING SOIL GROUP NAMES			GROUP SYMBOL	SOIL GROUP NAMES & LEGEND
COARSE-GRAINED SOILS >50% RETAINED ON NO. 200 SIEVE	GRAVELS >50% OF COARSE FRACTION RETAINED ON NO 4. SIEVE	CLEAN GRAVELS <5% FINES	Cu>4 AND 1<Cc<3	GW	WELL-GRADED GRAVEL
			Cu>4 AND 1>Cc>3	GP	POORLY-GRADED GRAVEL
		GRAVELS WITH FINES >12% FINES	FINES CLASSIFY AS ML OR CL	GM	SILTY GRAVEL
			FINES CLASSIFY AS CL OR CH	GC	CLAYEY GRAVEL
	SANDS >50% OF COARSE FRACTION PASSES ON NO 4. SIEVE	CLEAN SANDS <5% FINES	Cu>6 AND 1<Cc<3	SW	WELL-GRADED SAND
			Cu>6 AND 1>Cc>3	SP	POORLY-GRADED SAND
		SANDS AND FINES >12% FINES	FINES CLASSIFY AS ML OR CL	SM	SILTY SAND
			FINES CLASSIFY AS CL OR CH	SC	CLAYEY SAND
FINE-GRAINED SOILS >50% PASSES NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT<50	INORGANIC	PI>7 AND PLOTS>"A" LINE	CL	LEAN CLAY
			PI>4 AND PLOTS<"A" LINE	ML	SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OL	ORGANIC CLAY OR SILT
	SILTS AND CLAYS LIQUID LIMIT>50	INORGANIC	PI PLOTS >"A" LINE	CH	FAT CLAY
			PI PLOTS <"A" LINE	MH	ELASTIC SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OH	ORGANIC CLAY OR SILT
HIGHLY ORGANIC SOILS		PRIMARILY ORGANIC MATTER, DARK IN COLOR, AND ORGANIC ODOR		PT	PEAT

OTHER MATERIAL SYMBOLS

- Poorly-Graded Sand with Clay
- Clayey Sand
- Sandy Silt
- Artificial/Undocumented Fill
- Poorly-Graded Gravelly Sand
- Topsoil
- Well-Graded Gravel with Clay
- Well-Graded Gravel with Silt
- Sand
- Silt
- Well Graded Gravelly Sand
- Gravelly Silt
- Asphalt
- Boulders and Cobble

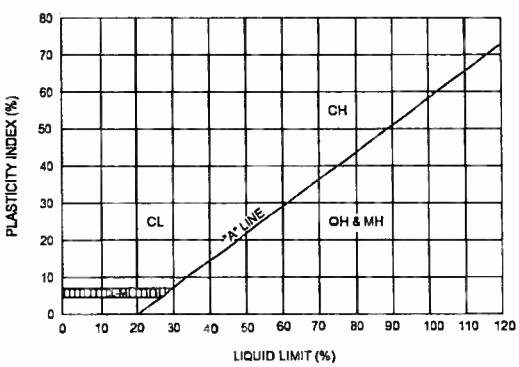
SAMPLER TYPES

- SPT
- Modified California (2.5" I.D.)
- Rock Core
- Shelby Tube
- No Recovery
- Grab Sample

ADDITIONAL TESTS

CA	-	CHEMICAL ANALYSIS (CORROSIVITY)	PI	-	PLASTICITY INDEX
CD	-	CONSOLIDATED DRAINED TRIAXIAL	SW		SWELL TEST
CN	-	CONSOLIDATION	TC	-	CYCLIC TRIAXIAL
CU	-	CONSOLIDATED UNDRAINED TRIAXIAL	TV	-	TORVANE SHEAR
DS	-	DIRECT SHEAR	UC	-	UNCONFINED COMPRESSION
PP	-	POCKET PENETROMETER (TSF)	(1.5)	-	(WITH SHEAR STRENGTH IN KSF)
(3.0)	-	(WITH SHEAR STRENGTH IN KSF)			
RV	-	R-VALUE	UU	-	UNCONSOLIDATED UNDRAINED TRIAXIAL
SA	-	SIEVE ANALYSIS: % PASSING #200 SIEVE			
	-	WATER LEVEL			

PLASTICITY CHART



PENETRATION RESISTANCE
(RECORDED AS BLOWS / FOOT)

SAND & GRAVEL		SILT & CLAY		
RELATIVE DENSITY	BLOWS/FOOT*	CONSISTENCY	BLOWS/FOOT*	STRENGTH** (KSF)
VERY LOOSE	0 - 4	VERY SOFT	0 - 2	0 - 0.25
LOOSE	4 - 10	SOFT	2 - 4	0.25 - 0.5
MEDIUM DENSE	10 - 30	MEDIUM STIFF	4 - 8	0.5-1.0
DENSE	30 - 50	STIFF	8 - 15	1.0 - 2.0
VERY DENSE	OVER 50	VERY STIFF	15 - 30	2.0 - 4.0
		HARD	OVER 30	OVER 4.0

* NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1-3/8 INCH I.D.) SPLIT-BARREL SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE (ASTM-1586 STANDARD PENETRATION TEST).

** UNDRAINED SHEAR STRENGTH IN KIPS/SQ. FT. AS DETERMINED BY LABORATORY TESTING OR APPROXIMATED BY THE STANDARD PENETRATION TEST, POCKET PENETROMETER, TORVANE, OR VISUAL OBSERVATION.

CORNERSTONE EARTH GROUP

LEGEND TO SOIL DESCRIPTIONS

Figure Number A-1

BORING NUMBER EB-1

CORNERSTONE EARTH GROUP

PROJECT NAME 4202 Stanley Boulevard
PROJECT NUMBER 132-5-1
PROJECT LOCATION Pleasanton, CA
GROUND ELEVATION
BORING DEPTH 40 ft.
LATITUDE
LONGITUDE
GROUND WATER LEVELS:
AT TIME OF DRILLING Not Encountered
AT END OF DRILLING Not Encountered

DATE STARTED 1/16/12 DATE COMPLETED 1/16/12
DRILLING CONTRACTOR Exploration Geoservices, Inc.
DRILLING METHOD Mobile B-53, 8 inch Hollow-Stem Auger
LOGGED BY NBZ
NOTES

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (○ HAND PENETROMETER, △ TORVANE, ● UNCONFINED COMPRESSION, ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL; 1.0, 2.0, 3.0, 4.0)
	0		**Silty Sand with Gravel (SM) [Fill]** medium dense, moist, grayish brown, fine to coarse sand, fine angular gravel	41	MC-1A	97	4			
			Poorly Graded Sand with Silt and Gravel (SC-SM) dense to very dense, moist, brown, fine sand, some coarse sand, fine subangular gravel, some coarse subangular to subrounded gravel	50 5"	MC-2	103	2			
	5			42	SPT-3		2		7	
	10			48	SPT-4		2		8	
	15			56	SPT-5		2			
	20			71	SPT-6		4			
	25			65	SPT					
	30			53	SPT-8		5			
	35		**Sandy Silty Clay (CL-ML)** hard, moist, brown, fine to medium sand, low plasticity	44	SPT-9		9			○
	40		Bottom of Boring at 40.0 feet.	39	SPT					○

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BORING NUMBER EB-2

CORNERSTONE EARTH GROUP

PROJECT NAME 4202 Stanley Boulevard
PROJECT NUMBER 132-5-1
PROJECT LOCATION Pleasanton, CA
GROUND ELEVATION
BORING DEPTH 16.5 ft.
LATITUDE
LONGITUDE
GROUND WATER LEVELS:
AT TIME OF DRILLING Not Encountered
AT END OF DRILLING Not Encountered

DATE STARTED 1/16/12 DATE COMPLETED 1/16/12
DRILLING CONTRACTOR Exploration Geoservices, Inc.
DRILLING METHOD Mobile B-53, 8 inch Hollow-Stem Auger
LOGGED BY NBZ
NOTES

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (HAND PENETROMETER ○, TORVANE △, UNCONFINED COMPRESSION ●, UNCONSOLIDATED-UNDRAINED TRIAXIAL ▲; 1.0 2.0 3.0 4.0)
	0		**Sandy Silt (ML) [Fill]** very stiff, moist, brown, fine to medium sand, low plasticity	11	MC-1A	87	7	4		○
			Silt with Sand (ML) very stiff, moist, brown, fine to medium sand, low plasticity Liquid Limit = 25, Plastic Limit = 21	14	MC-2B	75	7			○
	5			8	SPT-3		9		79	
			Sandy Silt (ML) medium stiff, moist, brown, fine sand, low plasticity	10	SPT-4		11		63	
	10									
			Silty Sand (SM) medium dense, moist, brown, fine sand	19	MC-5B	98	3			
	15			16	SPT-6					
			Bottom of Boring at 16.5 feet.							
	20									
	25									
	30									
	35									

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BORING NUMBER EB-3

CORNERSTONE EARTH GROUP

PROJECT NAME 4202 Stanley Boulevard
PROJECT NUMBER 132-5-1
PROJECT LOCATION Pleasanton, CA

DATE STARTED 12/18/12 DATE COMPLETED 12/18/12
GROUND ELEVATION _____ BORING DEPTH 36.5 ft.
DRILLING CONTRACTOR Exploration Geoservices, Inc.
LATITUDE _____ LONGITUDE _____
DRILLING METHOD Mobile B-53, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY RRB
AT TIME OF DRILLING Not Encountered
NOTES _____
AT END OF DRILLING Not Encountered

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (○ HAND PENETROMETER, △ TORVANE, ● UNCONFINED COMPRESSION, ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL; 1.0 2.0 3.0 4.0)
	0		**Sandy Silt (ML)** very stiff to hard, moist, brown, fine sand, low plasticity	5	MC-1	84	14			
				12	MC-2B	97	15			
	5			16	MC-3B	90	13			>4.5
			trace fine rounded gravel @ 8'	22	MC-4B	108	8			>4.5
	10									
			Poorly Graded Sand with Silt (SP-SM) medium dense to dense, moist, brown, fine to medium sand, some fine rounded to subangular gravel	29	MC-5A	109	3			
				26	SPT-6		2		5	
	15		fine to coarse gravel	31	SPT-7		5			
	20		increase in coarse sand @ 20'	51	SPT-8		2			
	25		becomes medium dense	17	SPT-9		3		7	
	30		becomes very dense	65	SPT-10		3			
	35			54	SPT-11		3			

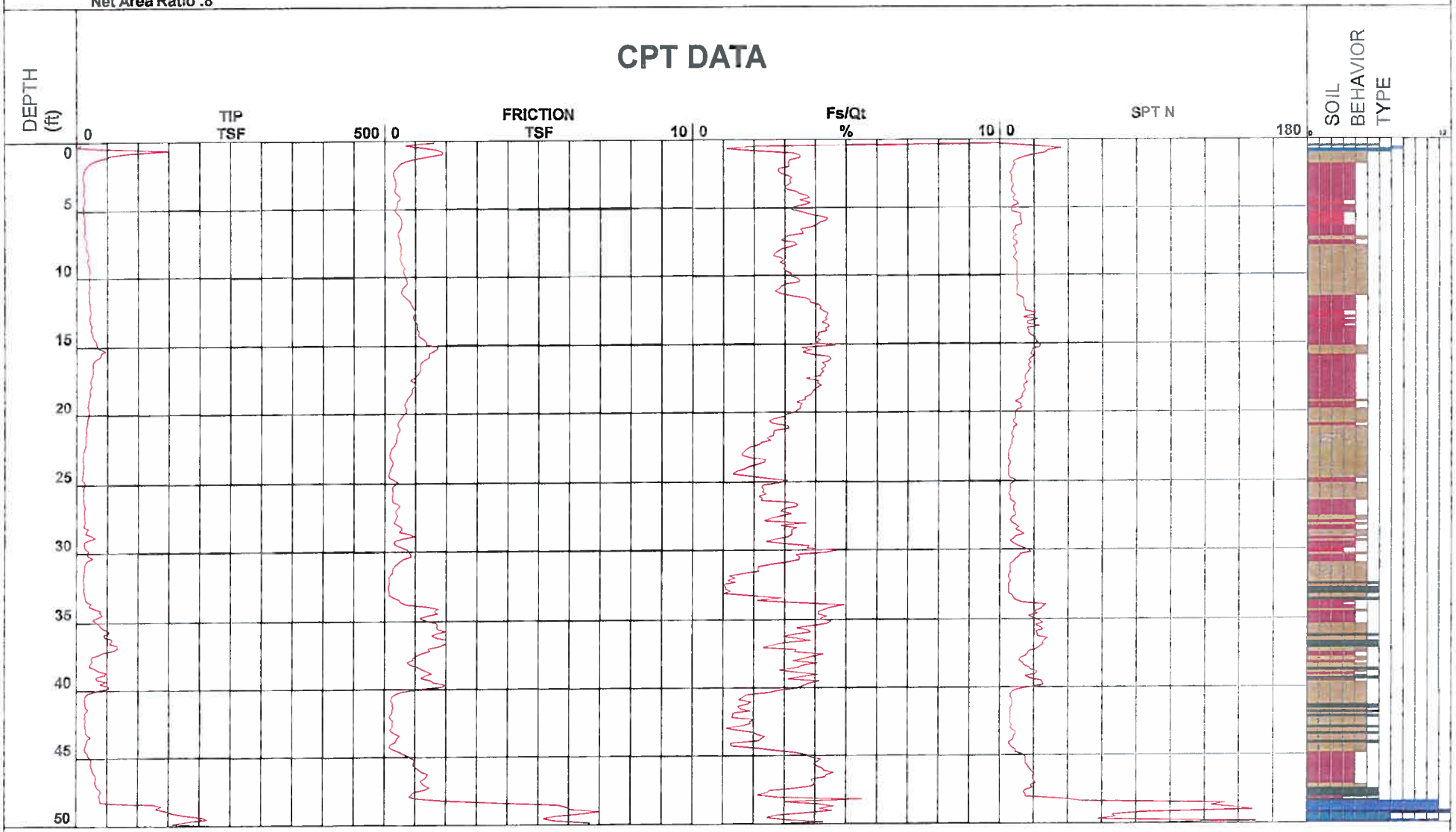
Bottom of Boring at 36.5 feet.

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 1/30/13 07:35 - P:\DRAFTING\GINT FILES\132-5-1 4202 STANLEY BLVD.GPJ

Cornerstone Earth Group

Project	4202 Stanley Blvd Pleasanton	Operator	RA/TF	Filename	SDF(901).cpt
Job Number	132-5-1	Cone Number	DSG0906	GPS	
Hole Number	CPT-01	Date and Time	1/19/2012 3:53:58 PM	Maximum Depth	50.36 ft
Water Table Depth	12.00 ft				

Net Area Ratio .8



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

Cone Size 10cm squared

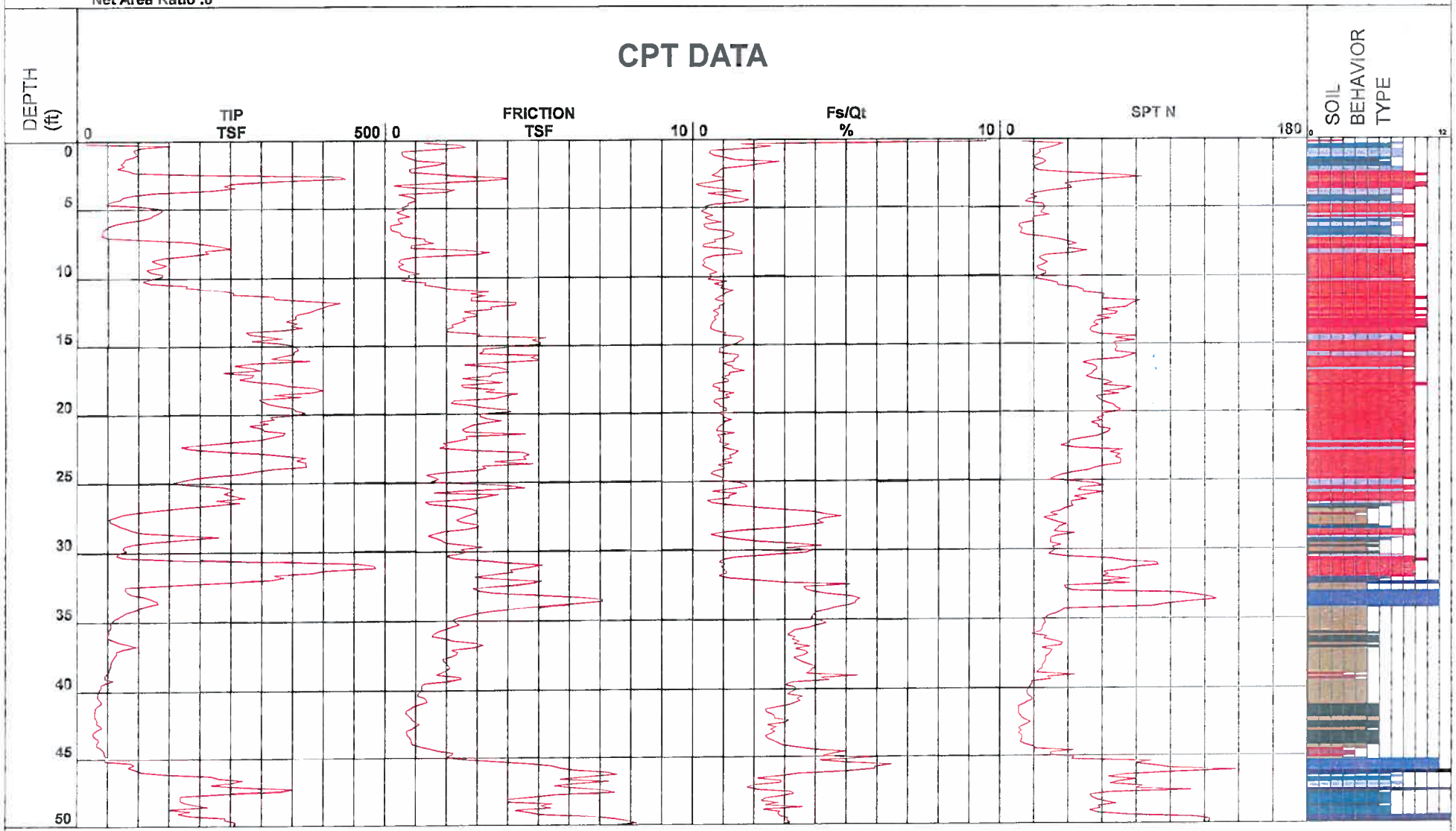
*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	4202 Stanley Blvd Pleasanton	Operator	RA/TF	Filename	SDF(902).cpt
Job Number	132-5-1	Cone Number	DSG0906	GPS	
Hole Number	CPT-02	Date and Time	1/19/2012 4:35:55 PM	Maximum Depth	50.52 ft
Water Table Depth	12.00 ft				

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

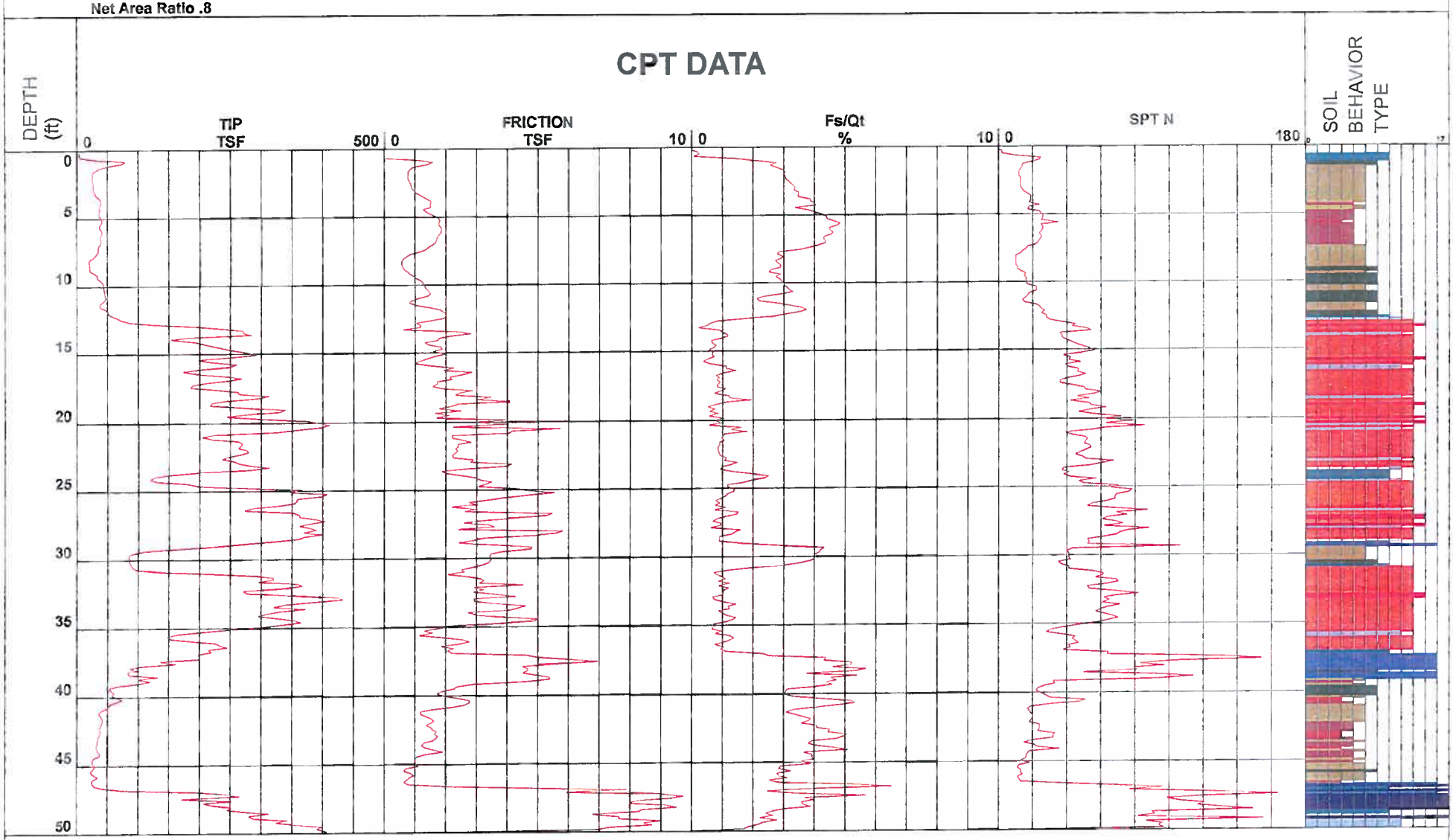
*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	4202 Stanley Blvd Pleasanton	Operator	RA/TF	Filename	SDF(903).cpt
Job Number	132-5-1	Cone Number	DSG0906	GPS	
Hole Number	CPT-03	Date and Time	1/19/2012 5:30:18 PM	Maximum Depth	50.20 ft
Water Table Depth	12.00 ft				

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

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

APPENDIX B: LABORATORY TEST PROGRAM

The laboratory testing program was performed to evaluate the physical and mechanical properties of the soils retrieved from the site to aid in verifying soil classification.

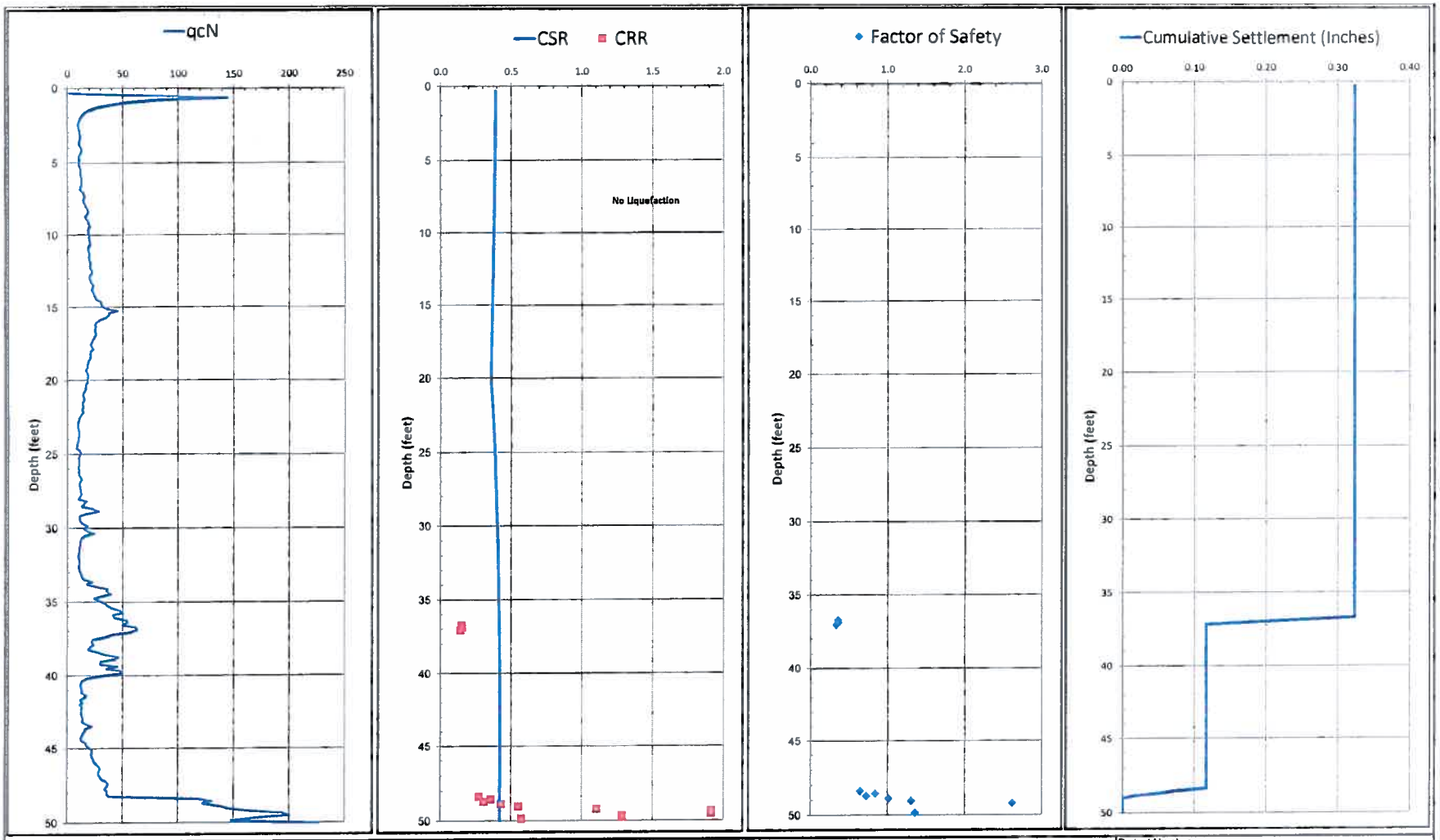
Moisture Content: The natural water content was determined (ASTM D2216) on 24 samples of the materials recovered from the borings. These water contents are recorded on the boring logs at the appropriate sample depths.

Dry Densities: In place dry density determinations (ASTM D2937) were performed on 10samples to measure the unit weight of the subsurface soils. Results of these tests are shown on the boring logs at the appropriate sample depths.

Washed Sieve Analyses: The percent soil fraction passing the No. 200 sieve (ASTM D1140) was determined on six subsurface soil samples to aid soil classification. Results of these tests are shown on the boring logs at the appropriate sample depths.

Plasticity Index: One Plasticity Index determination (ASTM D4318) was performed on a sample of the subsurface soil to measure the range of water contents over which this material exhibits plasticity. The Plasticity Index was used to classify the soil in accordance with the Unified Soil Classification System and to evaluate the soil expansion potential. Results of this test are shown on the boring log at the appropriate sample depth.

APPENDIX C: LIQUEFACTION ANALYSES CALCULATIONS



CORNERSTONE EARTH GROUP

Liquefaction Analysis Summary

4202 Stanley Boulevard
Pleasanton, California

Project Number	132-5-1
Figure Number	Figure C-1
1/30/2012	CPT No. 1

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.60

Total Settlement:	0.32	(Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	Q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted Q_{cN}	C_N	Q_{c1N}	Q_{c1N-cs}	Stress Reduction Coeff, rd	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.330	2.300	0.700	41.3	41.3	110.515	30.710	3.06		Unsaturated	51.3			2.17	1.70	3.70	35.31	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	58.000	1.200	81.3	81.3	322.048	2.070	1.81		Unsaturated	13.1			54.82	1.70	93.19	122.00	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.680	152.400	1.700	82.5	82.5	729.311	1.116	1.41		Unsaturated	8.8			144.05	1.70	244.88	246.99	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	88.100	1.900	102.5	102.5	378.123	2.158	1.79		Unsaturated	12.8			83.27	1.70	141.56	175.84	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	57.400	1.900	122.5	122.5	225.244	3.314	2.07		Unsaturated	18.5			54.25	1.70	92.23	139.15	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	40.800	1.400	143.8	143.8	146.969	3.454	2.19		Unsaturated	21.5			38.37	1.70	65.24	109.75	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	29.100	1.000	163.8	163.8	98.594	3.446	2.30		Unsaturated	24.3			27.50	1.70	46.78	88.46	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	21.700	0.700	185.0	185.0	69.070	3.240	2.38		Unsaturated	26.6			20.51	1.70	34.87	74.20	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	17.300	0.500	205.0	205.0	52.223	2.907	2.43		Unsaturated	28.2			16.35	1.70	27.80	65.48	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	14.600	0.500	225.0	225.0	41.993	3.451	2.55		Unsaturated	31.9			13.80	1.70	23.48	60.75	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	12.700	0.400	246.3	246.3	34.848	3.180	2.59		Unsaturated	33.1			12.00	1.70	20.41	58.88	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	11.900	0.300	266.3	266.3	31.354	2.550	2.56		Unsaturated	32.2			11.25	1.70	19.12	54.99	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	10.800	0.300	287.5	287.5	40.732	2.815	2.50		Unsaturated	30.3			10.21	1.70	17.35	52.21	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	10.100	0.300	307.5	307.5	36.270	3.018	2.58		Unsaturated	32.2			9.55	1.70	18.23	51.11	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	10.400	0.300	327.5	327.5	35.716	2.931	2.55		Unsaturated	32.0			9.83	1.70	18.71	51.73	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	11.000	0.400	348.8	348.8	36.147	3.695	2.62		Unsaturated	34.2			10.40	1.70	17.67	53.38	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	11.600	0.400	368.8	368.8	36.657	3.504	2.60		Unsaturated	33.5			10.98	1.70	18.64	54.57	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	11.700	0.400	390.0	390.0	35.524	3.477	2.61		Unsaturated	33.7			11.06	1.70	18.80	54.83	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	12.200	0.400	410.0	410.0	35.762	3.335	2.59		Unsaturated	33.3			11.53	1.70	19.80	55.83	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.450	11.900	0.400	431.3	431.3	33.628	3.423	2.62		Unsaturated	34.2			11.25	1.70	19.12	55.33	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	10.900	0.300	451.3	451.3	29.760	2.810	2.80		Unsaturated	33.6			10.30	1.70	17.51	53.09	1.00	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	11.000	0.400	471.3	471.3	29.113	3.716	2.69		Unsaturated	36.6			10.40	1.70	17.67	53.88	1.00	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	12.800	0.400	492.5	492.5	32.920	3.188	2.60		Unsaturated	33.7			12.10	1.70	20.57	57.20	0.99	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	13.600	0.500	512.5	512.5	34.030	3.747	2.64		Unsaturated	35.0			12.85	1.70	21.85	59.11	0.99	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	13.300	0.500	533.8	533.8	32.308	3.836	2.66		Unsaturated	35.8			12.57	1.70	21.37	58.56	0.99	0.387	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	12.000	0.400	553.8	553.8	28.320	3.412	2.67		Unsaturated	36.1			11.34	1.70	19.28	55.78	0.99	0.387	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	10.800	0.400	573.8	573.8	36.647	3.805	2.62		Unsaturated	34.3			10.21	1.70	17.35	52.97	0.99	0.387	1.095	n.a.	n.a.	n.a.	0.00	0.00
4.760	11.300	0.400	595.0	595.0	36.983	3.838	2.81		Unsaturated	33.8			10.88	1.70	18.18	53.97	0.99	0.387	1.093	n.a.	n.a.	n.a.	0.00	0.00
4.920	11.000	0.400	615.0	615.0	34.772	3.741	2.83		Unsaturated	34.7			10.40	1.70	17.87	53.46	0.99	0.388	1.090	n.a.	n.a.	n.a.	0.00	0.00
5.090	11.100	0.400	636.3	636.3	33.892	3.710	2.64		Unsaturated	34.9			10.49	1.70	17.84	53.70	0.99	0.386	1.088	n.a.	n.a.	n.a.	0.00	0.00
5.250	11.400	0.400	656.3	656.3	33.743	3.613	2.63		Unsaturated	34.7			10.78	1.70	18.32	54.32	0.99	0.386	1.086	n.a.	n.a.	n.a.	0.00	0.00
5.410	12.600	0.500	678.3	678.3	36.264	4.078	2.85		Unsaturated	35.1			11.91	1.70	20.25	56.97	0.99	0.386	1.086	n.a.	n.a.	n.a.	0.00	0.00
5.580	12.700	0.500	697.5	697.5	35.418	4.048	2.65		Unsaturated	35.3			12.00	1.70	20.41	57.21	0.99	0.386	1.084	n.a.	n.a.	n.a.	0.00	0.00
5.740	12.500	0.500	717.5	717.5	33.843	4.118	2.67		Unsaturated	36.0			11.81	1.70	20.09	56.86	0.99	0.385	1.082	n.a.	n.a.	n.a.	0.00	0.00
5.910	13.000	0.600	738.8	738.8	34.195	4.750	2.71		Unsaturated	37.4			12.29	1.70	20.89	58.08	0.99	0.385	1.080	n.a.	n.a.	n.a.	0.00	0.00
6.070	13.600	0.600	758.8	758.8	34.848	4.538	2.69		Unsaturated	36.7			12.85	1.70	21.85	59.31	0.99	0.385	1.079	n.a.	n.a.	n.a.	0.00	0.00
6.230	13.600	0.500	778.8	778.8	33.928	3.785	2.64		Unsaturated	35.1			12.85	1.70	21.85	59.12	0.99	0.385	1.077	n.a.	n.a.	n.a.	0.00	0.00
6.400	13.700	0.500	800.0	800.0	33.250	3.759	2.65		Unsaturated	35.3			12.95	1.70	22.01	59.36	0.99	0.384	1.075	n.a.	n.a.	n.a.	0.00	0.00
6.560	13.800	0.500	820.0	820.0	32.171	3.791	2.66		Unsaturated	35.7			12.85	1.70	21.85	59.20	0.98	0.384	1.073	n.a.	n.a.	n.a.	0.00	0.00
6.730	12.400	0.400	841.3	841.3	28.480	3.339	2.67		Unsaturated	35.8			11.72	1.70	19.92	56.62	0.98	0.384	1.069	n.a.	n.a.	n.a.	0.00	0.00
6.890	12.300	0.400	861.3	861.3	27.563	3.370	2.68		Unsaturated	36.3			11.63	1.70	19.76	56.45	0.98	0.384	1.068	n.a.	n.a.	n.a.	0.00	0.00
7.050	15.000	0.500	881.3	881.3	33.043	3.434	2.62		Unsaturated	34.4			14.18	1.89	23.94	61.84	0.98	0.383	1.069	n.a.	n.a.	n.a.	0.00	0.00
7.220	16.000	0.500	902.5	902.5	26.684	3.216	2.68		Unsaturated	36.2			15.12	1.66	25.06	63.57	0.98	0.383	1.068	n.a.	n.a.	n.a.	0.00	0.00
7.380	16.400	0.500	922.5	922.5	26.937	3.137	2.67		Unsaturated	35.8			15.50	1.63	25.34	63.90	0.98	0.383	1.066	n.a.	n.a.	n.a.	0.00	0.00
7.550	15.500	0.500	943.8	943.8	31.848	3.327	2.63		Unsaturated	34.5			14.65	1.62	23.78	61.81	0.98	0.383	1.063	n.a.	n.a.	n.a.	0.00	0.00
7.710	15.800	0.500	963.8	963.8	31.374	3.307	2.63		Unsaturated	34.8			14.74	1.60	23.63	61.44	0.98	0.382	1.062	n.a.	n.a.	n.a.	0.00	0.00
7.870	17.100	0.500	983.8	983.8	26.833	3.011	2.68		Unsaturated	35.5			16.16	1.57	25.43	63.98	0.98	0.382	1.061	n.a.	n.a.	n.a.	0.00	0.00
8.040	18.100	0.500	1005.0	1005.0	28.010	2.841	2.63		Unsaturated	34.4			17.11	1.55	28.50	65.27	0.98	0.382	1.060	n.a.	n.a.	n.a.	0.00	0.00
8.200	19.200	0.500	1025.0	1025.0	29.337	2.676	2.59		Unsaturated	33.4			18.15	1.53	27.70	66.70	0.98	0.382	1.059	n.a.	n.a.	n.a.	0.00	0.00
8.370	20.100	0.500	1048.3	1048.3	30.295	2.554	2.57		Unsaturated	32.6			19.00	1.50	28.59	67.75	0.98	0.381	1.058	n.a.	n.a.	n.a.	0.00	0.00
8.530	19.000	0.500	1066.3	1066.3	28.201	2.708	2.61		Unsaturated	33.9			17.96	1.49	26.84	65.65	0.98	0.381	1.056	n.a.	n.a.	n.a.	0.00	0.00
8.690	17.300	0.500	1086.3	1086.3	30.853	2.984	2.61		Unsaturated	33.8			16.35	1.49	24.34	62.28	0.98	0.381	1.053	n.a.	n.a.	n.a.	0.00	0.00
8.880	18.200	0.500	1107.5	1107.5	28.241	2.833	2.65		Unsaturated	35.2			17.20	1.47	25.24	63.89	0.98	0.380	1.052	n.a.	n.a.	n.a.	0.00	0.00
9.020	20.000	0.600	1127.5	1127.5	28.543	3.087	2.64		Unsaturated	35.0			18.90	1.44	27.30	66.44	0.97	0.380	1.051	n.a.	n.a.	n.a.	0.00	0.00
9.190	20.300	0.600	1148.8	1148.8	28.592	3.042	2.84		Unsaturated	34.9			19.19	1.43	27.41	66.56	0.97	0.380	1.050	n.a.	n.a.	n.a.	0.00	0.00
9.350	21.700	0.700	1168.8	1168.8	30.239	3.315	2.64		Unsaturated	35.1			20.51	1.41	28.90	68.59	0.97	0.380	1.049	n.a.	n.a.	n.a.	0.00	0.00
9.510	20.800	0.600	1186.8	1188.8	28.595	2.969	2.63		Unsaturated	34.6			19.66	1.40	27.52	66.67	0.97	0.379	1.047	n.a.	n.a.	n.a.	0.00	0.00
9.680	20.100	0.600	1210.0	1210.0	32.223	3.078	2.60		Unsaturated	33.6			19.00	1.39	26.40	65.01	0.97	0.379	1.045	n.a.	n.a.	n.a.	0.00	0.00
9.840	20.400	0.700	1230.0	1230.0	32.171	3.538	2.64		Unsaturated	35.0			19.28	1.38	26.52	65.36	0.97	0.379	1.044	n.a.	n.a.	n.a.	0.00	0.00
10.010	21.300	0.700	1251.3	1251.3	33.046	3.386	2.62		Unsaturated	34.3			20.13	1.36	27.36	66.41	0.97	0.379	1.043	n.a.	n.a.	n.a.	0.00	0.00
10.170	20.900	0.700	1271.3	1271.3	31.881	3.454	2.64		Unsaturated	34.9			19.75	1.35	26.84	65.53	0.97	0.378	1.041	n.a.	n.a.	n.a.	0.00	0.00
10.340	21.100	0.700	1292.5	1292.5	31.850	3.422	2.84		Unsaturated	34.9			19.94	1.34	26.83	65.52	0.97	0.378	1.040	n.a.	n.a.	n.a.	0.00	0.00
10.500	21.400	0.700	1312.5	1312.5	31.810	3.375	2.83		Unsaturated	34.7			20.23	1.32	28.76	65.87	0.97	0.378	1.039	n.a.	n.a.	n.a.	0.00	0.00
10.660	22.000	0.700	1332.5	1332.5	32.021	3.281	2.62		Unsaturated	34.3			20.79	1.31	27.25	66.26	0.97	0.377	1.038	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No. 1

PGA (A_{max}) 0.60

Total Settlement: 0.32 (inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	QcN near interfaces (soft layer)	Thin Layer Factor (K_H)	Interprated Q_{cN}	C_N	Q_{c1N}	Q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'_{vc}=1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (inches)
10.830	20.800	0.800	1353.8	1353.8	29.434	3.012	2.62		Unsaturated	34.4			19.47	1.30	25.37	83.75	0.97	0.377	1.036	n.a.	n.a.	n.a.	0.00	0.00
10.990	19.900	0.800	1373.8	1373.8	27.972	3.123	2.85		Unsaturated	35.4			18.81	1.29	24.33	62.49	0.97	0.377	1.034	n.a.	n.a.	n.a.	0.00	0.00
11.160	20.800	0.600	1395.0	1395.0	28.534	3.015	2.84		Unsaturated	34.8			19.47	1.28	24.94	63.23	0.97	0.377	1.033	n.a.	n.a.	n.a.	0.00	0.00
11.320	21.100	0.600	1415.0	1415.0	28.823	2.942	2.83		Unsaturated	34.4			19.94	1.27	25.31	63.66	0.96	0.376	1.032	n.a.	n.a.	n.a.	0.00	0.00
11.480	21.000	0.700	1435.0	1435.0	28.268	3.451	2.68		Unsaturated	36.2			19.85	1.26	24.99	63.48	0.96	0.376	1.031	n.a.	n.a.	n.a.	0.00	0.00
11.650	20.900	0.800	1456.3	1456.3	27.704	3.966	2.72		Unsaturated	37.9			19.75	1.25	24.66	63.21	0.96	0.376	1.030	n.a.	n.a.	n.a.	0.00	0.00
11.810	21.700	0.800	1476.3	1476.3	28.399	3.816	2.70		Unsaturated	37.2			20.51	1.24	25.38	64.10	0.96	0.375	1.029	n.a.	n.a.	n.a.	0.00	0.00
11.980	22.500	0.900	1497.5	1497.5	29.050	4.138	2.72		Unsaturated	37.8			21.27	1.23	26.06	65.08	0.96	0.375	1.028	n.a.	n.a.	n.a.	0.00	0.00
12.140	21.900	0.900	1517.5	1517.5	27.863	4.257	2.74		Unsaturated	38.6			20.70	1.22	25.20	63.99	0.96	0.375	1.027	n.a.	n.a.	n.a.	0.00	0.00
12.300	22.500	0.900	1537.5	1537.5	28.288	4.142	2.73		Unsaturated	38.1			21.27	1.21	25.87	64.59	0.96	0.375	1.026	n.a.	n.a.	n.a.	0.00	0.00
12.470	23.800	1.000	1558.8	1558.8	29.537	4.344	2.73		Unsaturated	38.1			22.50	1.20	26.90	66.24	0.96	0.374	1.025	n.a.	n.a.	n.a.	0.00	0.00
12.630	23.400	1.000	1578.8	1578.8	28.844	4.423	2.74		Unsaturated	38.7			22.12	1.19	26.27	65.43	0.96	0.374	1.024	n.a.	n.a.	n.a.	0.00	0.00
12.800	21.600	1.000	1600.0	1600.0	28.000	4.808	2.80		Unsaturated	40.7			20.42	1.18	24.11	62.67	0.96	0.374	1.022	n.a.	n.a.	n.a.	0.00	0.00
12.960	21.400	0.900	1620.0	1620.0	25.420	4.371	2.78		Unsaturated	39.9			20.23	1.17	23.73	62.10	0.96	0.373	1.021	n.a.	n.a.	n.a.	0.00	0.00
13.120	22.300	1.000	1640.0	1640.0	28.195	4.655	2.79		Unsaturated	40.3			21.08	1.16	24.52	63.19	0.96	0.373	1.020	n.a.	n.a.	n.a.	0.00	0.00
13.290	22.800	1.000	1661.3	1661.3	26.449	4.552	2.78		Unsaturated	39.9			21.55	1.15	24.87	63.64	0.96	0.373	1.019	n.a.	n.a.	n.a.	0.00	0.00
13.450	25.100	1.100	1681.3	1681.3	28.859	4.534	2.75		Unsaturated	38.8			23.72	1.14	27.13	66.81	0.95	0.372	1.019	n.a.	n.a.	n.a.	0.00	0.00
13.620	24.800	1.100	1702.5	1702.5	27.899	4.832	2.77		Unsaturated	39.5			23.25	1.14	26.41	65.89	0.95	0.372	1.018	n.a.	n.a.	n.a.	0.00	0.00
13.780	23.700	1.100	1722.5	1722.5	28.518	4.816	2.79		Unsaturated	40.5			22.40	1.13	25.30	64.25	0.95	0.372	1.018	n.a.	n.a.	n.a.	0.00	0.00
13.940	24.900	1.100	1742.5	1742.5	27.560	4.578	2.77		Unsaturated	39.5			23.53	1.12	26.37	65.84	0.95	0.372	1.016	n.a.	n.a.	n.a.	0.00	0.00
14.110	26.100	1.100	1763.8	1763.8	28.596	4.362	2.74		Unsaturated	38.5			24.67	1.11	27.43	66.99	0.95	0.371	1.015	n.a.	n.a.	n.a.	0.00	0.00
14.270	26.900	1.100	1783.8	1783.8	29.161	4.229	2.73		Unsaturated	38.0			25.43	1.10	28.07	67.81	0.95	0.371	1.014	n.a.	n.a.	n.a.	0.00	0.00
14.440	28.200	1.200	1805.0	1805.0	30.247	4.396	2.73		Unsaturated	38.0			26.65	1.10	29.21	69.34	0.95	0.371	1.013	n.a.	n.a.	n.a.	0.00	0.00
14.600	32.300	1.300	1825.0	1825.0	34.397	4.142	2.67		Unsaturated	35.9			30.53	1.09	33.17	74.45	0.95	0.370	1.013	n.a.	n.a.	n.a.	0.00	0.00
14.760	32.600	1.400	1845.0	1845.0	34.339	4.420	2.69		Unsaturated	36.6			30.81	1.08	33.27	74.67	0.95	0.370	1.012	n.a.	n.a.	n.a.	0.00	0.00
14.930	34.000	1.400	1866.3	1866.3	35.437	4.234	2.66		Unsaturated	35.8			32.14	1.07	34.46	76.17	0.95	0.370	1.011	n.a.	n.a.	n.a.	0.00	0.00
15.090	37.500	1.700	1886.3	1886.3	38.781	4.850	2.67		Unsaturated	35.8			35.44	1.06	37.73	80.57	0.95	0.369	1.010	n.a.	n.a.	n.a.	0.00	0.00
15.260	47.800	1.700	1907.5	1907.5	48.835	3.829	2.53		Unsaturated	31.4			45.18	1.05	47.65	93.00	0.95	0.369	1.010	n.a.	n.a.	n.a.	0.00	0.00
15.420	40.400	1.600	1927.5	1927.5	40.920	4.057	2.61		Unsaturated	33.8			38.19	1.05	40.15	83.50	0.95	0.369	1.009	n.a.	n.a.	n.a.	0.00	0.00
15.580	40.000	1.400	1947.5	1947.5	38.449	3.587	2.59		Unsaturated	33.2			37.81	1.05	39.54	82.57	0.94	0.368	1.008	n.a.	n.a.	n.a.	0.00	0.00
15.750	37.400	1.500	1968.8	1968.8	38.994	4.119	2.64		Unsaturated	35.0			35.35	1.04	36.78	79.17	0.94	0.368	1.007	n.a.	n.a.	n.a.	0.00	0.00
15.910	31.900	1.400	1988.8	1988.8	31.080	4.530	2.73		Unsaturated	38.0			30.15	1.04	31.23	72.06	0.94	0.368	1.005	n.a.	n.a.	n.a.	0.00	0.00
16.080	28.300	1.300	2010.0	2010.0	27.159	4.763	2.78		Unsaturated	40.1			26.75	1.03	27.58	67.28	0.94	0.368	1.004	n.a.	n.a.	n.a.	0.00	0.00
16.240	27.000	1.200	2030.0	2030.0	25.601	4.818	2.79		Unsaturated	40.5			25.52	1.02	26.15	65.40	0.94	0.367	1.003	n.a.	n.a.	n.a.	0.00	0.00
16.400	27.600	1.200	2050.0	2050.0	25.927	4.516	2.78		Unsaturated	40.1			26.09	1.02	26.58	65.95	0.94	0.367	1.003	n.a.	n.a.	n.a.	0.00	0.00
16.570	28.800	1.200	2071.3	2071.3	24.878	4.858	2.80		Unsaturated	40.9			25.33	1.01	25.85	64.75	0.94	0.367	1.002	n.a.	n.a.	n.a.	0.00	0.00
16.730	27.100	1.200	2091.3	2091.3	24.918	4.606	2.80		Unsaturated	40.8			25.61	1.01	25.79	64.94	0.94	0.366	1.001	n.a.	n.a.	n.a.	0.00	0.00
16.900	27.600	1.200	2112.5	2112.5	25.130	4.521	2.79		Unsaturated	40.5			26.09	1.00	26.11	65.35	0.94	0.366	1.000	n.a.	n.a.	n.a.	0.00	0.00
17.060	26.400	1.100	2132.5	2132.5	23.760	4.342	2.80		Unsaturated	40.7			24.95	1.00	24.84	63.65	0.94	0.366	0.999	n.a.	n.a.	n.a.	0.00	0.00
17.230	25.200	1.100	2153.8	2153.8	22.401	4.580	2.83		Unsaturated	42.0			23.82	0.99	23.57	62.00	0.94	0.365	0.999	n.a.	n.a.	n.a.	0.00	0.00
17.390	24.100	1.000	2173.8	2173.8	21.174	4.345	2.84		Unsaturated	42.1			22.78	0.98	22.41	60.44	0.94	0.365	0.998	n.a.	n.a.	n.a.	0.00	0.00
17.550	22.900	0.800	2193.8	2193.8	19.877	3.669	2.81		Unsaturated	41.1			21.64	0.98	21.17	58.73	0.93	0.365	0.997	n.a.	n.a.	n.a.	0.00	0.00
17.720	23.800	1.000	2215.0	2215.0	20.309	4.446	2.86		Unsaturated	42.9			22.31	0.97	21.70	59.51	0.93	0.364	0.996	n.a.	n.a.	n.a.	0.00	0.00
17.880	25.200	1.000	2235.0	2235.0	21.550	4.152	2.82		Unsaturated	41.4			23.82	0.97	23.05	61.27	0.93	0.364	0.996	n.a.	n.a.	n.a.	0.00	0.00
18.050	22.600	0.900	2256.3	2256.3	19.033	4.192	2.88		Unsaturated	43.1			21.36	0.96	20.54	57.95	0.93	0.364	0.995	n.a.	n.a.	n.a.	0.00	0.00
18.210	22.300	0.900	2276.3	2276.3	18.594	4.253	2.87		Unsaturated	43.6			21.08	0.96	20.16	57.45	0.93	0.363	0.994	n.a.	n.a.	n.a.	0.00	0.00
18.370	22.700	0.900	2296.3	2296.3	18.771	4.176	2.87		Unsaturated	43.3			21.46	0.95	20.41	57.78	0.93	0.363	0.994	n.a.	n.a.	n.a.	0.00	0.00
18.540	22.000	0.900	2317.5	2317.5	17.986	4.318	2.89		Unsaturated	44.2			20.79	0.95	19.86	56.80	0.93	0.363	0.993	n.a.	n.a.	n.a.	0.00	0.00
18.700	20.700	0.800	2337.5	2337.5	18.711	4.096	2.90		Unsaturated	44.6			19.57	0.94	18.39	55.10	0.93	0.362	0.993	n.a.	n.a.	n.a.	0.00	0.00
18.870	20.200	0.700	2358.8	2358.8	18.128	3.880	2.88		Unsaturated	43.9			19.09	0.93	17.94	54.34	0.93	0.362	0.992	n.a.	n.a.	n.a.	0.00	0.00
19.030	19.500	0.700	2378.8	2378.8	15.395	3.823	2.91		Unsaturated	44.9			18.43	0.93	17.13	53.40	0.93	0.362	0.991	n.a.	n.a.	n.a.	0.00	0.00
19.190	19.500	0.700	2398.8	2398.8	15.258	3.825	2.91		Unsaturated	45.1			18.43	0.92	17.04	53.28	0.93	0.361	0.991	n.a.	n.a.	n.a.	0.00	0.00
19.360	18.400	0.700	2420.0	2420.0	14.207	4.072	2.95		Unsaturated	48.7			17.39	0.92	15.98	51.88	0.93	0.361	0.990	n.a.	n.a.	n.a.	0.00	0.00
19.520	19.500	0.700	2440.0	2440.0	14.984	3.829	2.92		Unsaturated	45.3			18.43	0.91	16.85	53.04	0.92	0.361	0.990	n.a.	n.a.	n.a.	0.00	0.00
19.690	20.200	0.700	2461.3	2461.3	15.414	3.690	2.90		Unsaturated	44.5			19.09	0.91	17.37	53.72	0.92	0.360	0.989	n.a.	n.a.	n.a.	0.00	0.00
19.850	20.300	0.700	2481.3	2481.3	15.363	3.673	2.90		Unsaturated	44.5			19.19	0.91	17.37	53.72	0.92	0.360	0.988	n.a.	n.a.	n.a.	0.00	0.00
20.010	19.800	0.700	2501.2	2500.6	14.838	3.774	2.92		[illegible]	45.3			18.71	0.96	n.a.	n.a.	0.92	0.360	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	19.400	0.600	2521.8	2510.4	14.451	3.308	2.89		[illegible]	44.3			18.34	0.96	n.a.	n.a.	0.92	0.361	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	18.300	0.500	2540.8	2519.6	13.518	2.936	2.88		[illegible]	44.0			17.30	0.95	n.a.	n.a.	0.92	0.362	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	18.000	0.500	2561.2	2529.4	13.220	2.991	2.90		[illegible]	44.5			17.01	0.95	n.a.	n.a.	0.92	0.363	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	17.500	0.400	2580.4	2538.8	12.771	2.488	2.88		[illegible]	43.1			16.54	0.95	n.a.	n.a.	0.92	0.364	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	16.300	0.400	2599.8	2547.8	11.775	2.887	2.91		[illegible]	45.0			15.41	0.95	n.a.	n.a.	0.92	0.365	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	15.300	0.500	2620.0	2557.8	10.840	3.574	3.01		[illegible]	49.1			14.46	0.95	n.a.	n.a.	0.92	0.366	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	16.100	0.500	2639.2	2566.8	11.517	3.363	2.98		[illegible]	47.7			15.22	0.95	n.a.	n.a.	0.92	0.367	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.60

Total Settlement:	0.32	(Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	Q_cN near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted Q_cN	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, rd	CSR	K_σ for Sand	CRR$_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
21.330	16.700	0.400	2859.8	2578.8	11.931	2.802	2.90			44.8			15.78	0.95	n.a.	n.a.	0.92	0.368	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	15.200	0.400	2878.8	2585.8	10.720	2.886	2.98			47.1			14.37	0.95	n.a.	n.a.	0.91	0.369	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	15.100	0.400	2898.0	2595.0	10.598	2.909	2.97			47.4			14.27	0.95	n.a.	n.a.	0.91	0.370	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	15.800	0.400	2718.4	2604.8	10.934	2.809	2.95			46.6			14.74	0.95	n.a.	n.a.	0.91	0.371	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	14.800	0.400	2737.8	2614.0	10.276	2.978	2.99			48.1			13.99	0.95	n.a.	n.a.	0.91	0.372	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.150	15.300	0.300	2758.0	2623.8	10.611	2.155	2.90			44.5			14.46	0.94	n.a.	n.a.	0.91	0.373	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	14.000	0.300	2777.2	2633.1	9.579	2.379	2.98			46.9			13.23	0.94	n.a.	n.a.	0.91	0.374	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	12.500	0.200	2796.4	2642.3	8.403	1.802	2.94			46.3			11.81	0.94	n.a.	n.a.	0.91	0.375	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	11.500	0.200	2816.8	2652.1	7.810	1.982	3.00			48.7			10.87	0.94	n.a.	n.a.	0.91	0.376	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	10.800	0.200	2838.0	2661.3	7.051	2.132	3.05			50.6			10.21	0.94	n.a.	n.a.	0.91	0.377	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	10.600	0.200	2858.4	2671.1	6.866	2.181	3.06			51.3			10.02	0.94	n.a.	n.a.	0.91	0.378	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	10.400	0.200	2875.8	2680.3	6.687	2.232	3.07			51.9			9.83	0.94	n.a.	n.a.	0.91	0.379	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.300	10.900	0.200	2896.0	2690.1	7.027	2.116	3.04			50.6			10.30	0.94	n.a.	n.a.	0.90	0.380	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	11.200	0.300	2915.2	2699.3	7.218	3.079	3.12			54.0			10.59	0.94	n.a.	n.a.	0.90	0.381	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	11.500	0.300	2934.4	2708.5	7.408	2.990	3.10			53.2			10.87	0.94	n.a.	n.a.	0.90	0.381	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	11.400	0.200	2954.8	2718.3	7.301	2.016	3.02			49.6			10.78	0.94	n.a.	n.a.	0.90	0.382	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	10.800	0.200	2974.0	2727.5	6.829	2.148	3.06			51.2			10.21	0.94	n.a.	n.a.	0.90	0.383	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.120	10.800	0.200	2994.4	2737.3	6.797	2.150	3.06			51.3			10.21	0.93	n.a.	n.a.	0.90	0.384	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	10.200	0.100	3013.6	2746.5	6.330	1.150	2.96			47.0			9.84	0.93	n.a.	n.a.	0.90	0.385	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	9.600	0.100	3032.8	2755.7	5.867	1.237	3.00			48.9			9.07	0.93	n.a.	n.a.	0.90	0.385	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	9.300	0.200	3053.2	2765.5	5.822	2.573	3.17			58.3			8.79	0.93	n.a.	n.a.	0.90	0.386	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	12.100	0.300	3072.4	2774.8	7.614	2.840	3.08			52.3			11.44	0.93	n.a.	n.a.	0.90	0.387	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.940	13.600	0.400	3092.8	2784.5	8.858	3.319	3.07			51.9			12.85	0.93	n.a.	n.a.	0.90	0.388	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	12.300	0.300	3112.0	2793.8	7.691	2.792	3.07			51.9			11.63	0.93	n.a.	n.a.	0.89	0.388	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	11.300	0.300	3131.2	2803.0	6.946	3.082	3.13			54.6			10.68	0.93	n.a.	n.a.	0.89	0.389	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	11.300	0.300	3151.6	2812.8	6.914	3.085	3.14			54.7			10.68	0.93	n.a.	n.a.	0.89	0.390	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	11.800	0.300	3170.8	2822.0	7.239	2.937	3.11			53.4			11.15	0.93	n.a.	n.a.	0.89	0.391	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.760	11.500	0.300	3191.2	2831.8	6.995	3.029	3.13			54.3			10.87	0.93	n.a.	n.a.	0.89	0.391	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	11.000	0.300	3210.4	2841.0	6.814	3.193	3.18			55.8			10.40	0.93	n.a.	n.a.	0.89	0.392	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	11.800	0.300	3229.6	2850.2	7.007	3.004	3.13			54.2			10.96	0.92	n.a.	n.a.	0.89	0.393	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	11.300	0.300	3250.0	2860.0	6.766	3.101	3.15			55.1			10.68	0.92	n.a.	n.a.	0.89	0.393	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	11.700	0.300	3269.2	2869.2	7.016	2.981	3.12			54.1			11.06	0.92	n.a.	n.a.	0.89	0.394	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.580	13.000	0.400	3289.6	2879.0	7.888	3.523	3.12			54.0			12.29	0.92	n.a.	n.a.	0.89	0.395	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	14.300	0.500	3308.8	2888.2	8.757	3.954	3.11			53.6			13.52	0.92	n.a.	n.a.	0.88	0.395	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	12.700	0.400	3328.0	2897.4	7.618	3.625	3.14			54.9			12.00	0.92	n.a.	n.a.	0.88	0.396	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	12.100	0.400	3348.4	2907.2	7.172	3.837	3.18			56.5			11.44	0.92	n.a.	n.a.	0.88	0.397	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	12.600	0.400	3367.6	2916.4	7.486	3.864	3.15			55.3			11.91	0.92	n.a.	n.a.	0.88	0.397	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	13.100	0.400	3388.0	2926.2	7.798	3.507	3.12			54.1			12.38	0.92	n.a.	n.a.	0.88	0.398	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	13.100	0.400	3407.2	2935.5	7.765	3.510	3.13			54.2			12.38	0.92	n.a.	n.a.	0.88	0.398	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	14.100	0.400	3426.4	2944.7	8.413	3.229	3.08			52.0			13.33	0.92	n.a.	n.a.	0.88	0.399	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	12.700	0.300	3448.8	2954.5	7.431	2.733	3.08			52.3			12.00	0.92	n.a.	n.a.	0.88	0.400	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	11.400	0.400	3466.0	2963.7	6.524	4.136	3.23			59.0			10.78	0.91	n.a.	n.a.	0.88	0.400	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	18.800	0.500	3486.4	2973.5	11.473	2.931	2.94			48.3			17.77	0.91	n.a.	n.a.	0.88	0.401	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	18.700	0.800	3505.8	2982.7	10.023	4.014	3.07			51.7			15.78	0.91	n.a.	n.a.	0.88	0.401	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	14.700	0.500	3524.8	2991.9	8.848	3.865	3.11			53.6			13.89	0.91	n.a.	n.a.	0.87	0.402	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	24.800	0.800	3545.2	3001.7	15.343	3.474	2.86			44.0			23.44	0.91	n.a.	n.a.	0.87	0.402	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	30.000	1.000	3564.4	3010.9	18.744	3.544	2.82			41.5			28.35	0.91	n.a.	n.a.	0.87	0.403	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	18.100	0.600	3584.8	3020.7	10.797	3.679	3.02			49.8			17.11	0.91	n.a.	n.a.	0.87	0.403	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	12.300	0.300	3604.0	3029.9	6.930	2.858	3.12			53.9			11.63	0.91	n.a.	n.a.	0.87	0.404	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	12.300	0.300	3623.2	3039.1	6.902	2.860	3.12			53.9			11.63	0.91	n.a.	n.a.	0.87	0.404	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	12.800	0.400	3643.6	3048.9	7.201	3.644	3.16			55.9			12.10	0.91	n.a.	n.a.	0.87	0.405	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	14.900	0.800	3662.8	3058.1	8.547	4.591	3.16			55.8			14.08	0.91	n.a.	n.a.	0.87	0.405	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	19.700	0.700	3683.2	3067.9	11.842	3.920	3.01			49.2			18.82	0.91	n.a.	n.a.	0.87	0.406	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	16.700	0.800	3702.4	3077.2	9.851	5.388	3.16			55.8			15.78	0.91	n.a.	n.a.	0.87	0.406	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.190	19.200	0.800	3722.8	3088.9	11.234	4.614	3.07			51.6			18.15	0.91	n.a.	n.a.	0.86	0.407	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	25.700	0.900	3742.0	3096.2	15.393	3.777	2.91			44.8			24.29	0.90	n.a.	n.a.	0.86	0.407	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	17.600	0.600	3761.2	3105.4	10.124	3.817	3.05			51.0			16.64	0.90	n.a.	n.a.	0.86	0.408	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	14.300	0.500	3781.6	3115.2	7.967	4.029	3.15			55.4			13.52	0.90	n.a.	n.a.	0.86	0.408	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	13.100	0.400	3800.8	3124.4	7.169	3.572	3.18			55.7			12.38	0.90	n.a.	n.a.	0.86	0.409	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.010	12.700	0.300	3821.2	3134.2	6.885	2.781	3.11			53.7			12.00	0.90	n.a.	n.a.	0.86	0.409	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	12.700	0.300	3840.4	3143.4	6.859	2.783	3.12			53.8			12.00	0.90	n.a.	n.a.	0.86	0.409	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	12.100	0.300	3859.8	3152.6	6.452	2.950	3.15			55.4			11.44	0.90	n.a.	n.a.	0.86	0.410	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	11.700	0.300	3880.0	3162.4	6.173	3.074	3.18			56.8			11.06	0.90	n.a.	n.a.	0.86	0.410	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	11.700	0.200	3899.2	3171.8	6.149	2.051	3.09			52.5			11.06	0.90	n.a.	n.a.	0.86	0.411	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.60

Total Settlement:	0.32	(Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	CRR$_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (inches)
31.830	11.000	0.100	3919.6	3181.4	5.683	1.106	3.00		Clay	48.5			10.40	0.90	n.a.	n.a.	0.86	0.411	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	11.100	0.200	3938.8	3190.8	5.723	2.190	3.13		Clay	54.4			10.49	0.90	n.a.	n.a.	0.85	0.411	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	11.700	0.100	3956.0	3199.8	6.076	1.029	2.96		Clay	48.9			11.06	0.90	n.a.	n.a.	0.85	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	11.800	0.200	3978.4	3209.6	6.113	2.039	3.09		Clay	52.8			11.15	0.90	n.a.	n.a.	0.85	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	11.800	0.100	3997.6	3218.8	6.090	1.020	2.95		Clay	48.8			11.15	0.90	n.a.	n.a.	0.85	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.650	11.300	0.100	4018.0	3228.6	5.755	1.078	2.99		Clay	48.1			10.68	0.89	n.a.	n.a.	0.85	0.413	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	11.800	0.100	4037.2	3237.9	6.042	1.022	2.96		Clay	46.9			11.15	0.89	n.a.	n.a.	0.85	0.413	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	12.700	0.200	4056.4	3247.1	6.573	1.874	3.04		Clay	50.8			12.00	0.89	n.a.	n.a.	0.85	0.413	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.140	13.900	0.100	4076.8	3256.9	7.284	0.843	2.85		Clay	42.6			13.14	0.89	n.a.	n.a.	0.85	0.414	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.300	14.400	0.300	4096.0	3266.1	7.584	2.429	3.05		Clay	50.8			13.81	0.89	n.a.	n.a.	0.85	0.414	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.470	16.300	0.500	4116.4	3275.9	8.895	3.511	3.09		Clay	52.4			15.41	0.89	n.a.	n.a.	0.85	0.414	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	24.200	0.500	4135.6	3285.1	13.474	2.259	2.82		Clay	41.5			22.87	0.89	n.a.	n.a.	0.84	0.415	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	19.800	0.700	4154.8	3294.3	10.638	3.995	3.05		Clay	50.7			18.53	0.89	n.a.	n.a.	0.84	0.415	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	28.100	1.400	4175.2	3304.1	15.746	5.382	3.00		Clay	48.5			26.56	0.89	n.a.	n.a.	0.84	0.415	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	38.800	1.700	4194.4	3313.3	22.155	4.632	2.84		Clay	42.3			36.67	0.89	n.a.	n.a.	0.84	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.290	37.700	1.600	4214.8	3323.1	21.421	4.495	2.84		Clay	42.4			35.83	0.89	n.a.	n.a.	0.84	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	41.900	1.700	4234.0	3332.3	23.877	4.273	2.79		Clay	40.5			39.60	0.89	n.a.	n.a.	0.84	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	34.400	1.400	4253.2	3341.5	19.317	4.338	2.87		Clay	43.3			32.51	0.89	n.a.	n.a.	0.84	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	28.200	1.100	4273.6	3351.3	14.380	4.571	2.98		Clay	47.9			24.78	0.89	n.a.	n.a.	0.84	0.417	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	31.800	1.300	4292.8	3360.5	17.848	4.384	2.90		Clay	44.6			30.06	0.89	n.a.	n.a.	0.84	0.417	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.110	36.500	1.600	4313.2	3370.3	20.380	4.659	2.87		Clay	43.4			34.50	0.88	n.a.	n.a.	0.84	0.417	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	39.200	1.700	4332.4	3379.6	21.918	4.590	2.84		Clay	42.3			37.05	0.88	n.a.	n.a.	0.83	0.417	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	43.000	1.700	4351.6	3388.8	24.094	4.164	2.78		Clay	40.1			40.64	0.88	n.a.	n.a.	0.83	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	50.900	1.700	4372.0	3398.6	28.667	3.490	2.88		Clay	36.2			48.11	0.88	n.a.	n.a.	0.83	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	53.100	2.000	4391.2	3407.8	29.875	3.929	2.70		Clay	36.9			50.19	0.88	n.a.	n.a.	0.83	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	44.100	1.700	4411.6	3417.6	24.517	4.058	2.77		Clay	39.6			41.68	0.88	n.a.	n.a.	0.83	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	45.800	1.500	4430.8	3426.8	25.436	3.442	2.71		Clay	37.4			43.29	0.88	n.a.	n.a.	0.83	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.260	57.000	1.700	4451.2	3436.6	31.877	3.104	2.81		Clay	33.8			53.88	0.88	n.a.	n.a.	0.83	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	57.800	2.000	4470.4	3445.8	32.135	3.812	2.85		Clay	35.2			54.44	0.88	n.a.	n.a.	0.83	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	53.400	2.000	4489.6	3455.0	29.812	3.910	2.70		Clay	37.0			50.47	0.88	n.a.	n.a.	0.83	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	65.500	2.000	4510.0	3464.8	46.715	3.162	2.49		Sand	30.0			61.91	0.78	48.05	93.12	0.83	0.419	0.950	0.132	0.150	0.36	0.03	0.07
36.910	86.500	1.800	4529.2	3474.0	47.384	2.802	2.45		Sand	28.8			62.85	0.78	48.75	93.59	0.82	0.419	0.950	0.132	0.151	0.36	0.03	0.07
37.080	61.000	1.400	4549.6	3483.8	43.258	2.384	2.43		Sand	28.2			57.86	0.77	44.33	87.49	0.82	0.420	0.952	0.123	0.141	0.34	0.04	0.07
37.240	43.400	1.500	4568.8	3493.0	23.542	3.648	2.75		Clay	39.0			41.02	0.88	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	36.500	1.200	4588.0	3502.2	19.534	3.508	2.80		Clay	40.9			34.50	0.88	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	24.800	1.100	4608.4	3512.0	12.811	4.890	3.04		Clay	50.3			23.44	0.87	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	23.400	0.900	4627.6	3521.2	11.977	4.268	3.02		Clay	49.7			22.12	0.87	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.900	25.300	0.900	4648.0	3531.0	13.014	3.917	2.97		Clay	47.6			23.91	0.87	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	22.400	0.700	4667.2	3540.3	11.336	3.488	2.99		Clay	48.3			21.17	0.87	n.a.	n.a.	0.82	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	20.500	0.800	4686.4	3549.5	10.231	4.406	3.09		Clay	52.5			19.38	0.87	n.a.	n.a.	0.82	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	29.900	1.100	4706.8	3559.3	15.479	3.993	2.92		Clay	45.3			28.26	0.87	n.a.	n.a.	0.82	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	35.600	1.200	4726.0	3568.5	18.628	3.610	2.83		Clay	41.8			33.65	0.87	n.a.	n.a.	0.82	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.720	48.300	1.400	4748.4	3578.3	25.870	3.048	2.87		Clay	38.1			45.85	0.87	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	45.400	1.500	4765.6	3587.5	23.982	3.487	2.73		Clay	38.3			42.91	0.87	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	32.400	1.300	4784.8	3598.7	18.888	4.332	2.92		Clay	45.2			30.62	0.87	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	32.300	1.200	4805.2	3608.5	18.580	4.014	2.90		Clay	44.5			30.53	0.87	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	47.700	1.500	4824.4	3615.7	25.051	3.312	2.71		Clay	37.2			45.09	0.87	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.540	38.300	1.800	4844.8	3625.5	19.792	4.460	2.87		Clay	43.3			36.20	0.87	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	52.400	2.000	4864.0	3634.7	27.495	4.003	2.73		Clay	38.1			49.53	0.87	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	51.400	1.900	4883.2	3643.9	26.871	3.881	2.73		Clay	38.0			48.58	0.87	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	32.600	1.100	4903.6	3653.7	18.503	3.849	2.87		Clay	43.5			30.81	0.87	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	18.900	0.500	4922.8	3662.9	8.976	3.042	3.04		Clay	50.4			17.86	0.87	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.360	14.600	0.400	4943.2	3672.7	8.805	3.298	3.17		Clay	58.2			13.80	0.86	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.520	13.600	0.200	4962.4	3682.0	6.040	1.799	3.07		Clay	51.6			12.85	0.86	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.680	12.800	0.200	4981.6	3691.2	5.586	1.940	3.11		Clay	53.8			12.10	0.86	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.850	13.700	0.200	5002.0	3701.0	6.052	1.786	3.06		Clay	51.5			12.95	0.86	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.010	13.900	0.300	5021.2	3710.2	6.140	2.634	3.14		Clay	55.0			13.14	0.86	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.180	14.200	0.300	5041.6	3720.0	6.279	2.569	3.13		Clay	54.4			13.42	0.86	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.340	18.300	0.300	5060.8	3729.2	8.457	1.902	2.95		Clay	46.7			17.30	0.86	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	18.100	0.200	5080.0	3738.4	7.254	1.475	2.96		Clay	46.9			15.22	0.86	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	12.600	0.200	5100.4	3748.2	5.382	1.990	3.13		Clay	54.5			11.91	0.86	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	14.800	0.200	5119.8	3757.4	8.515	1.834	3.02		Clay	49.5			13.99	0.86	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.000	12.300	0.200	5140.0	3767.2	5.166	2.055	3.15		Clay	55.5			11.83	0.86	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	14.500	0.200	5159.2	3776.4	8.313	1.878	3.04		Clay	50.2			13.71	0.86	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00

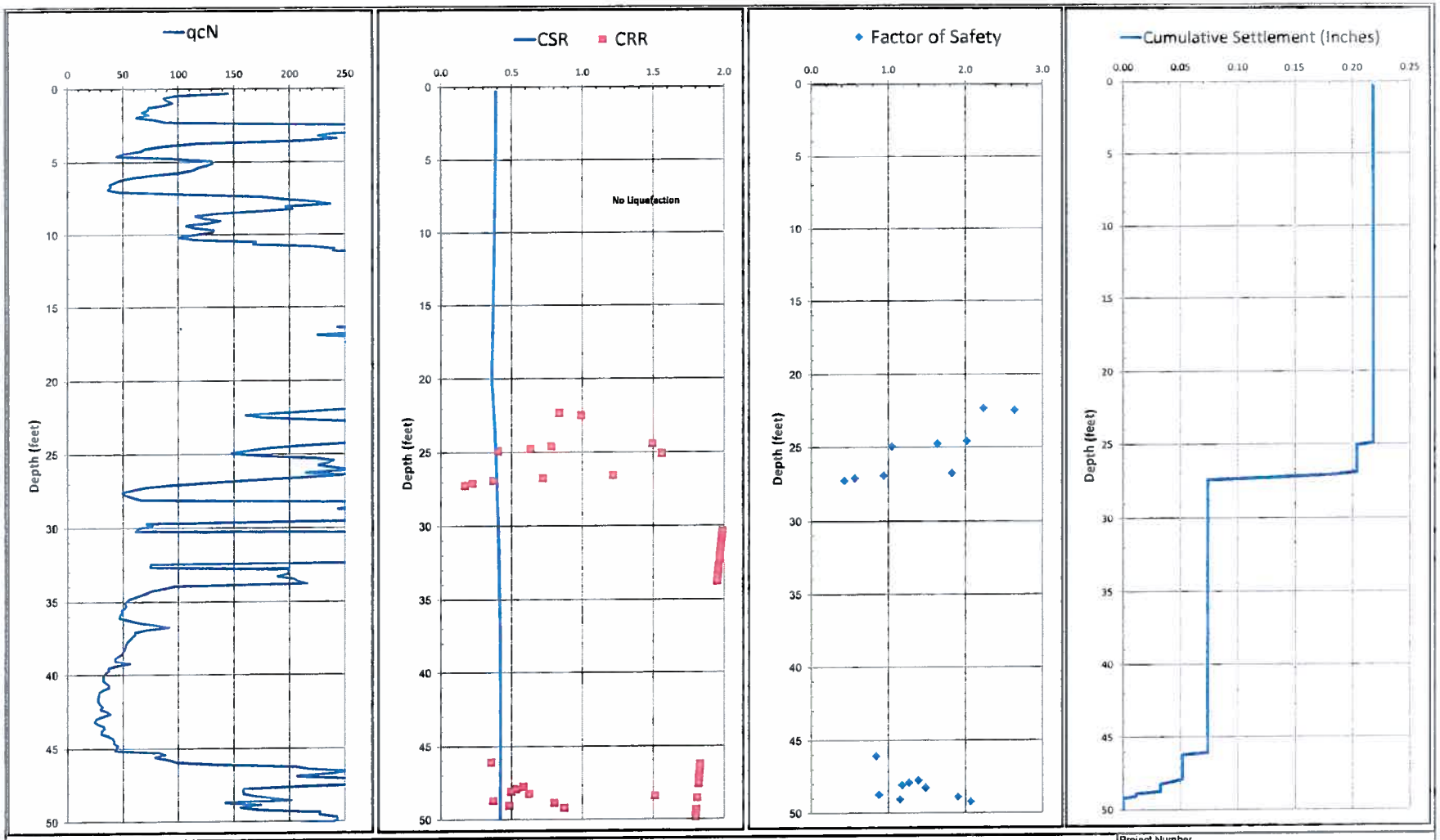
CORNERSTONE EARTH GROUP

CPT No.	1

PGA (A_{max})	0.60

Total Settlement:	0.32	(Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	Ic	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	QcN near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-cs}	Stress Reduction Coeff, rd	CSR	Ke for Sand	CRR$_{M=7.5,\ \sigma'vc\ =\ 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
42.320	13.500	0.300	5178.4	3785.6	5.784	2.750	3.18			56.5			12.78	0.86	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	13.400	0.200	5198.8	3795.4	5.891	1.852	3.10			52.9			12.87	0.86	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	13.500	0.300	5218.0	3804.6	5.725	2.755	3.18			56.7			12.78	0.86	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.820	14.600	0.200	5238.4	3814.4	6.282	1.689	3.04			50.3			13.80	0.86	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	15.000	0.200	5257.8	3823.6	6.471	1.617	3.02			49.5			14.18	0.86	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.150	14.500	0.200	5278.0	3833.4	6.188	1.686	3.04			50.6			13.71	0.85	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	17.800	0.300	5297.2	3842.7	7.886	1.980	2.99			48.2			16.82	0.85	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.470	23.000	0.500	5316.4	3851.9	10.562	2.458	2.93			45.8			21.74	0.85	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	17.600	0.400	5336.8	3861.7	7.733	2.679	3.06			51.4			16.84	0.85	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	18.800	0.400	5358.0	3870.9	7.193	2.873	3.11			53.3			15.89	0.85	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.970	15.500	0.300	5378.4	3880.7	8.803	2.342	3.09			52.8			14.65	0.85	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.130	14.200	0.200	5395.8	3889.9	5.914	1.739	3.07			51.6			13.42	0.85	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	12.900	0.200	5414.8	3899.1	5.228	1.962	3.14			54.9			12.19	0.85	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	13.900	0.300	5435.2	3908.9	5.722	2.683	3.17			58.4			13.14	0.85	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	17.700	0.500	5454.4	3918.1	7.843	3.339	3.12			53.9			16.73	0.85	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.790	18.300	0.600	5474.8	3927.9	7.924	3.855	3.14			54.9			17.30	0.85	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	21.000	0.800	5494.0	3937.1	9.272	4.383	3.12			53.9			19.85	0.85	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	23.700	0.900	5513.2	3946.3	10.814	4.297	3.07			51.8			22.40	0.85	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	23.800	1.000	5533.6	3956.1	10.532	4.800	3.10			53.0			22.31	0.85	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	23.200	0.900	5552.8	3965.3	10.301	4.407	3.08			52.4			21.93	0.85	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.610	23.600	0.900	5573.2	3975.1	10.472	4.324	3.07			51.9			22.31	0.85	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	25.000	1.000	5592.4	3984.4	11.148	4.504	3.08			51.4			23.63	0.85	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	26.100	1.100	5611.6	3993.6	11.686	4.722	3.06			51.3			24.67	0.85	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	28.200	1.200	5632.0	4003.4	12.681	4.727	3.03			50.1			26.65	0.85	n.a.	n.a.	0.77	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	30.500	1.400	5651.2	4012.6	13.794	5.059	3.02			49.6			28.83	0.84	n.a.	n.a.	0.77	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.430	31.300	1.400	5671.6	4022.4	14.153	4.918	3.01			49.0			29.58	0.84	n.a.	n.a.	0.77	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	30.400	1.300	5690.8	4031.6	13.889	4.718	3.01			49.0			28.73	0.84	n.a.	n.a.	0.77	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	29.800	1.200	5710.0	4040.8	13.338	4.454	3.00			48.7			28.17	0.84	n.a.	n.a.	0.77	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	31.300	1.200	5730.4	4050.8	14.040	4.220	2.97			47.3			29.58	0.84	n.a.	n.a.	0.77	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	32.700	1.300	5749.6	4059.8	14.693	4.359	2.96			47.0			30.91	0.84	n.a.	n.a.	0.76	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.250	37.400	1.500	5770.0	4069.6	16.962	4.348	2.91			45.0			35.35	0.84	n.a.	n.a.	0.76	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	39.000	1.300	5789.2	4078.8	17.704	3.601	2.84			42.4			36.86	0.84	n.a.	n.a.	0.76	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	38.400	1.000	5808.4	4088.0	17.368	2.817	2.79			40.2			36.29	0.84	n.a.	n.a.	0.76	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	36.000	0.900	5828.8	4097.8	16.148	2.720	2.80			40.8			34.03	0.84	n.a.	n.a.	0.76	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	38.000	0.800	5848.0	4107.0	17.081	2.281	2.74			38.4			35.92	0.84	n.a.	n.a.	0.76	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.070	38.000	1.100	5868.4	4118.8	17.035	3.137	2.82			41.5			35.92	0.84	n.a.	n.a.	0.76	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	39.700	2.200	5887.6	4126.0	17.817	5.985	2.99			48.1			37.52	0.84	n.a.	n.a.	0.76	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	124.900	3.800	5906.8	4135.3	82.450	3.116	2.31		Sand	24.8			118.05	0.76	89.62	145.22	0.76	0.421	0.897	0.251	0.271	0.64	0.02	0.04
48.560	137.900	5.800	5927.2	4145.1	91.125	4.150	2.38		Sand	28.7			130.34	0.77	100.60	161.28	0.76	0.421	0.881	0.335	0.355	0.84	0.01	0.02
48.720	129.300	5.900	5946.4	4154.3	85.216	4.670	2.44		Sand	28.4			122.21	0.76	93.40	152.84	0.75	0.421	0.889	0.285	0.305	0.72	0.02	0.04
48.890	146.000	6.100	5968.8	4164.1	96.361	4.265	2.37		Sand	26.5			138.00	0.78	107.28	170.00	0.75	0.421	0.870	0.407	0.426	1.01	0.01	0.01
49.050	154.400	7.000	5986.0	4173.3	101.901	4.623	2.39		Sand	26.8			145.94	0.78	114.48	179.81	0.75	0.421	0.857	0.533	0.549	1.30	0.00	0.00
49.220	174.400	8.500	6008.4	4183.1	115.220	3.792	2.28		Sand	24.0			164.84	0.80	131.63	199.55	0.75	0.421	0.822	1.115	1.102	2.82	0.00	0.00
49.380	205.900	5.600	6025.6	4192.3	138.239	2.780	2.13		Sand	20.0			194.81	0.82	159.17	227.97	0.75	0.421	0.795	2.000	1.912	4.54	0.00	0.00
49.540	211.700	5.200	6044.8	4201.5	139.973	2.492	2.09		Sand	19.0			200.09	0.82	164.00	231.33	0.75	0.421	0.794	2.000	1.910	4.54	0.00	0.00
49.710	180.900	5.500	6065.2	4211.3	119.188	3.092	2.21		Sand	21.9			170.98	0.80	136.86	202.98	0.75	0.421	0.813	1.311	1.281	3.05	0.00	0.00
49.870	156.800	8.700	6084.4	4220.5	102.903	4.358	2.38		Sand	26.2			148.20	0.78	115.95	181.21	0.75	0.421	0.852	0.556	0.570	1.35	0.00	0.00
50.040	240.600	8.700	6104.8	4230.3	158.795	2.820	2.10		Sand	19.2			227.41	0.83	189.42	264.24	0.75	0.420	0.792	2.000	1.905	4.53	0.00	0.00



CORNERSTONE EARTH GROUP

Liquefaction Analysis Summary

4202 Stanley Boulevard
Pleasanton, California

Project Number	132-5-1
Figure Number	Figure C-2
1/30/2012	CPT No. 2

CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.60

Total Settlement:	0.22 (Inches)

Depth (ft)	Qc (tsf)	fs (tsf)	σvc (psf)	Instu σ'vc (psf)	Q	F (%)	Ic	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	QcN near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted QcN	CN	QcIN	QcIN-CS	Stress Reduction Coeff, rd	CSR	Kσ for Sand	CRRM=7.5, σ'vc = 1 atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain εv	Settlement (Inches)
0.330	152.800	2.400	41.3	41.3	1034.249	1.571	1.49		Unsaturated	7.9			144.42	1.70	245.52	252.33	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	103.500	2.600	81.3	81.3	574.819	2.513	1.77		Unsaturated	12.3			97.83	1.70	166.30	201.43	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	92.300	1.800	82.5	82.5	441.624	1.951	1.72		Unsaturated	11.5			87.24	1.70	148.31	175.26	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	94.800	0.800	102.5	102.5	408.896	0.833	1.34		Unsaturated	5.9			89.80	1.70	152.33	152.70	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	99.900	0.500	122.5	122.5	392.196	0.501	1.27		Unsaturated	5.2			94.42	1.70	160.52	160.58	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	91.500	0.800	143.8	143.8	331.549	0.656	1.41		Unsaturated	6.8			86.48	1.70	147.02	146.53	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	78.100	0.800	163.8	163.8	265.080	1.025	1.62		Unsaturated	9.7			73.82	1.70	125.49	139.21	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	76.700	1.100	185.0	185.0	244.862	1.436	1.75		Unsaturated	12.0			72.50	1.70	123.24	150.46	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	71.200	2.000	205.0	205.0	215.898	2.813	2.02		Unsaturated	17.4			67.30	1.70	114.40	163.98	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	77.800	1.700	225.0	225.0	224.601	2.194	1.92		Unsaturated	15.3			73.35	1.70	124.69	168.93	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	88.300	1.100	246.3	246.3	183.354	1.662	1.88		Unsaturated	14.4			62.87	1.70	106.53	143.51	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	82.900	0.800	268.3	268.3	220.538	0.987	1.85		Unsaturated	10.3			78.38	1.70	133.20	150.80	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	94.000	0.800	287.5	287.5	240.867	0.852	1.58		Unsaturated	9.3			88.85	1.70	151.04	163.27	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.480	216.400	1.700	307.5	307.5	538.185	0.786	1.34		Unsaturated	8.0			204.54	1.88	340.23	340.94	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	426.400	2.700	327.5	327.5	1024.040	0.633	1.12		Unsaturated	3.8			403.02	1.84	659.34	659.34	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	435.400	4.200	348.8	348.8	1013.280	0.985	1.29		Unsaturated	5.4			411.53	1.61	662.18	662.53	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	328.700	3.300	368.8	368.8	743.810	1.005	1.36		Unsaturated	6.2			310.88	1.59	492.61	494.18	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	253.900	1.700	390.0	390.0	558.559	0.870	1.27		Unsaturated	5.2			239.98	1.56	374.92	375.04	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	239.100	0.300	410.0	410.0	512.984	0.128	0.82		Unsaturated	1.7			225.99	1.54	348.44	348.44	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.450	256.200	0.900	431.3	431.3	535.948	0.352	1.07		Unsaturated	3.3			242.18	1.52	368.42	368.42	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	220.300	2.300	451.3	451.3	450.438	1.045	1.48		Unsaturated	7.8			208.22	1.50	313.03	320.87	1.00	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	123.400	2.000	471.3	471.3	246.679	1.624	1.79		Unsaturated	12.7			116.64	1.57	182.94	223.33	1.00	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	91.900	0.500	492.5	492.5	179.564	0.546	1.55		Unsaturated	8.7			86.86	1.70	147.67	158.54	0.99	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	74.400	0.800	512.5	512.5	142.397	1.079	1.82		Unsaturated	13.2			70.32	1.70	119.55	153.08	0.99	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	70.400	1.000	533.8	533.8	131.986	1.428	1.93		Unsaturated	15.4			66.54	1.70	113.12	155.38	0.99	0.387	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	53.600	1.000	553.8	553.8	98.521	1.875	2.10		Unsaturated	19.3			50.86	1.70	86.12	133.02	0.99	0.387	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	47.200	0.800	573.8	573.8	85.154	1.705	2.12		Unsaturated	19.7			44.61	1.70	75.84	120.88	0.99	0.387	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	103.900	0.800	595.0	595.0	184.665	0.772	1.64		Unsaturated	10.1			98.20	1.59	158.20	174.08	0.99	0.387	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	137.200	0.500	615.0	615.0	240.002	0.365	1.34		Unsaturated	6.0			129.88	1.51	195.98	196.49	0.99	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	138.200	0.600	636.3	636.3	237.665	0.435	1.39		Unsaturated	6.6			130.62	1.49	195.17	196.55	0.99	0.386	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.250	132.500	0.400	656.3	656.3	224.324	0.303	1.32		Unsaturated	5.8			125.24	1.50	187.74	188.03	0.99	0.386	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.410	124.500	0.600	676.3	676.3	207.590	0.483	1.47		Unsaturated	7.6			117.67	1.50	176.65	180.73	0.99	0.386	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.580	119.400	0.800	697.5	697.5	195.990	0.672	1.58		Unsaturated	9.1			112.85	1.49	187.74	180.05	0.99	0.386	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.740	106.000	0.400	717.5	717.5	171.473	0.379	1.47		Unsaturated	7.6			100.19	1.53	153.06	157.08	0.99	0.385	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.910	78.900	0.500	738.8	738.8	125.621	0.637	1.71		Unsaturated	11.3			74.57	1.56	116.33	136.62	0.99	0.385	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.070	61.700	0.800	758.8	758.8	96.790	0.978	1.92		Unsaturated	15.2			58.32	1.57	91.83	128.54	0.99	0.385	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.230	50.800	0.200	778.8	778.8	78.541	0.397	1.77		Unsaturated	12.4			48.02	1.64	78.84	102.06	0.99	0.385	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.400	45.500	0.200	800.0	800.0	69.327	0.443	1.85		Unsaturated	13.8			43.01	1.63	70.18	97.74	0.99	0.384	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.560	40.400	0.200	820.0	820.0	60.718	0.500	1.92		Unsaturated	15.3			38.19	1.63	62.13	93.27	0.98	0.384	1.096	n.a.	n.a.	n.a.	0.00	0.00
6.730	41.400	0.500	841.3	841.3	61.429	1.220	2.13		Unsaturated	20.0			39.13	1.57	61.58	102.97	0.98	0.384	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.890	39.000	0.500	861.3	861.3	57.141	1.296	2.17		Unsaturated	21.0			36.86	1.57	57.74	99.48	0.98	0.384	1.095	n.a.	n.a.	n.a.	0.00	0.00
7.050	48.700	0.600	881.3	881.3	70.681	1.243	2.09		Unsaturated	19.0			46.03	1.51	69.69	111.55	0.98	0.383	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.220	113.700	1.300	902.5	902.5	163.901	1.148	1.79		Unsaturated	12.8			107.47	1.35	145.80	180.58	0.98	0.383	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.380	184.600	1.300	922.5	922.5	283.593	0.706	1.50		Unsaturated	8.0			174.48	1.27	222.38	229.49	0.98	0.383	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.550	206.900	1.600	943.8	943.8	292.154	0.775	1.50		Unsaturated	8.0			195.56	1.24	242.80	250.28	0.98	0.383	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.710	234.200	0.900	963.8	963.8	327.327	0.385	1.25		Unsaturated	5.0			221.38	1.23	272.40	272.44	0.98	0.382	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.870	250.100	0.800	983.8	983.8	348.010	0.321	1.18		Unsaturated	4.3			238.39	1.22	289.32	289.33	0.98	0.382	1.100	n.a.	n.a.	n.a.	0.00	0.00
8.040	207.900	2.800	1005.0	1005.0	284.441	1.254	1.68		Unsaturated	10.5			196.50	1.22	239.15	267.48	0.98	0.382	1.100	n.a.	n.a.	n.a.	0.00	0.00
8.200	214.400	3.400	1025.0	1025.0	290.486	1.590	1.74		Unsaturated	11.9			202.65	1.21	245.35	286.93	0.98	0.382	1.100	n.a.	n.a.	n.a.	0.00	0.00
8.370	180.700	2.900	1046.3	1046.3	242.186	1.610	1.79		Unsaturated	12.8			170.79	1.21	206.26	250.40	0.98	0.381	1.100	n.a.	n.a.	n.a.	0.00	0.00
8.530	141.800	1.000	1066.3	1066.3	187.831	0.709	1.81		Unsaturated	9.6			133.84	1.27	170.04	185.50	0.98	0.381	1.100	n.a.	n.a.	n.a.	0.00	0.00
8.690	122.000	0.500	1086.3	1066.3	160.225	0.412	1.52		Unsaturated	8.3			115.31	1.30	149.84	156.45	0.98	0.381	1.100	n.a.	n.a.	n.a.	0.00	0.00
8.860	131.400	0.500	1107.5	1107.5	170.947	0.382	1.47		Unsaturated	7.7			124.20	1.28	159.04	163.34	0.98	0.380	1.100	n.a.	n.a.	n.a.	0.00	0.00
9.020	145.800	0.600	1127.5	1127.5	188.057	0.413	1.48		Unsaturated	7.5			137.81	1.28	173.06	176.78	0.97	0.380	1.100	n.a.	n.a.	n.a.	0.00	0.00
9.190	135.200	0.400	1148.8	1148.8	172.898	0.297	1.41		Unsaturated	6.9			127.79	1.28	161.39	163.22	0.97	0.380	1.100	n.a.	n.a.	n.a.	0.00	0.00
9.350	113.800	0.500	1168.8	1168.8	143.731	0.442	1.57		Unsaturated	9.1			107.37	1.27	136.78	147.27	0.97	0.380	1.093	n.a.	n.a.	n.a.	0.00	0.00
9.510	121.400	0.800	1188.8	1188.8	152.340	0.662	1.66		Unsaturated	10.4			114.74	1.25	143.17	162.18	0.97	0.379	1.100	n.a.	n.a.	n.a.	0.00	0.00
9.680	139.200	1.100	1210.0	1210.0	173.232	0.794	1.66		Unsaturated	10.5			131.57	1.22	160.40	181.87	0.97	0.379	1.100	n.a.	n.a.	n.a.	0.00	0.00
9.840	138.400	0.800	1230.0	1230.0	170.813	0.581	1.58		Unsaturated	9.2			130.81	1.22	159.77	172.16	0.97	0.379	1.100	n.a.	n.a.	n.a.	0.00	0.00
10.010	122.100	0.800	1251.3	1251.3	149.309	0.659	1.66		Unsaturated	10.5			115.41	1.22	141.35	160.78	0.97	0.379	1.092	n.a.	n.a.	n.a.	0.00	0.00
10.170	107.500	0.600	1271.3	1271.3	130.314	0.561	1.67		Unsaturated	10.6			101.61	1.23	125.42	144.03	0.97	0.378	1.077	n.a.	n.a.	n.a.	0.00	0.00
10.340	120.800	1.300	1292.5	1292.5	145.310	1.082	1.81		Unsaturated	13.1			114.18	1.20	136.86	172.84	0.97	0.378	1.097	n.a.	n.a.	n.a.	0.00	0.00
10.500	179.500	1.300	1312.5	1312.5	214.633	0.727	1.57		Unsaturated	9.0			169.66	1.18	197.29	210.39	0.97	0.378	1.100	n.a.	n.a.	n.a.	0.00	0.00
10.660	177.300	1.800	1332.5	1332.5	210.384	1.019	1.88		Unsaturated	10.8			167.56	1.15	192.93	219.42	0.97	0.377	1.100	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.60

Total Settlement:	0.22	(Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	Ic	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	QcN near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted QcN	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, rd	CSR	Ka for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
10.830	234.800	2.200	1353.8	1353.8	278.424	0.940	1.58		Unsaturated	9.1			221.74	1.13	249.47	265.84	0.97	0.377	1.100	n.a.	n.a.	n.a.	0.00	0.00
10.990	254.200	3.400	1373.8	1373.8	297.385	1.341	1.88		Unsaturated	10.7			240.28	1.12	269.27	302.23	0.97	0.377	1.100	n.a.	n.a.	n.a.	0.00	0.00
11.160	253.400	2.800	1395.0	1395.0	294.187	1.108	1.61		Unsaturated	9.7			239.51	1.12	267.34	289.83	0.97	0.377	1.100	n.a.	n.a.	n.a.	0.00	0.00
11.320	320.600	3.300	1415.0	1415.0	369.741	1.032	1.53		Unsaturated	8.4			303.02	1.11	336.96	350.39	0.96	0.376	1.100	n.a.	n.a.	n.a.	0.00	0.00
11.480	321.000	2.800	1435.0	1435.0	367.603	0.874	1.47		Unsaturated	7.7			303.40	1.11	336.14	343.34	0.96	0.376	1.100	n.a.	n.a.	n.a.	0.00	0.00
11.650	378.800	2.800	1456.3	1456.3	430.753	0.741	1.37		Unsaturated	6.4			358.03	1.10	395.13	396.82	0.96	0.378	1.100	n.a.	n.a.	n.a.	0.00	0.00
11.810	427.600	4.300	1476.3	1476.3	483.036	1.007	1.45		Unsaturated	7.4			404.16	1.10	444.43	451.54	0.96	0.375	1.100	n.a.	n.a.	n.a.	0.00	0.00
11.980	408.800	4.200	1497.5	1497.5	458.462	1.029	1.47		Unsaturated	7.7			386.39	1.10	423.29	432.18	0.96	0.375	1.100	n.a.	n.a.	n.a.	0.00	0.00
12.140	398.500	3.400	1517.5	1517.5	443.924	0.855	1.42		Unsaturated	6.9			376.65	1.09	411.18	414.94	0.96	0.375	1.100	n.a.	n.a.	n.a.	0.00	0.00
12.300	388.200	3.500	1537.5	1537.5	429.595	0.903	1.44		Unsaturated	7.3			366.92	1.09	399.17	404.78	0.96	0.375	1.096	n.a.	n.a.	n.a.	0.00	0.00
12.470	377.800	2.600	1558.8	1558.8	415.192	0.890	1.36		Unsaturated	6.2			357.09	1.08	387.08	388.31	0.96	0.374	1.092	n.a.	n.a.	n.a.	0.00	0.00
12.630	358.100	3.000	1578.8	1578.8	390.988	0.840	1.44		Unsaturated	7.3			338.47	1.08	365.66	370.78	0.96	0.374	1.088	n.a.	n.a.	n.a.	0.00	0.00
12.800	354.800	3.000	1600.0	1600.0	384.783	0.847	1.45		Unsaturated	7.4			335.35	1.08	361.01	366.85	0.96	0.374	1.084	n.a.	n.a.	n.a.	0.00	0.00
12.960	355.900	2.500	1620.0	1620.0	383.577	0.704	1.39		Unsaturated	6.8			336.39	1.07	360.95	363.02	0.96	0.373	1.080	n.a.	n.a.	n.a.	0.00	0.00
13.120	340.400	2.800	1640.0	1640.0	364.560	0.786	1.43		Unsaturated	7.1			321.74	1.07	344.11	348.17	0.96	0.373	1.076	n.a.	n.a.	n.a.	0.00	0.00
13.290	358.300	2.400	1661.3	1661.3	381.323	0.671	1.37		Unsaturated	6.4			338.66	1.07	360.98	362.56	0.96	0.373	1.073	n.a.	n.a.	n.a.	0.00	0.00
13.450	347.600	2.200	1681.3	1681.3	367.892	0.634	1.37		Unsaturated	6.3			328.54	1.06	349.10	350.40	0.96	0.372	1.069	n.a.	n.a.	n.a.	0.00	0.00
13.620	368.100	2.200	1702.5	1702.5	384.873	0.602	1.34		Unsaturated	5.9			348.03	1.06	366.46	367.15	0.95	0.372	1.065	n.a.	n.a.	n.a.	0.00	0.00
13.780	338.800	2.000	1722.5	1722.5	351.927	0.595	1.38		Unsaturated	6.2			318.34	1.06	336.09	337.17	0.95	0.372	1.062	n.a.	n.a.	n.a.	0.00	0.00
13.940	275.300	2.100	1742.5	1742.5	285.835	0.765	1.50		Unsaturated	8.0			260.21	1.05	273.89	282.29	0.95	0.372	1.058	n.a.	n.a.	n.a.	0.00	0.00
14.110	282.300	3.100	1763.8	1763.8	291.344	1.102	1.61		Unsaturated	9.7			266.82	1.05	279.95	303.35	0.95	0.371	1.055	n.a.	n.a.	n.a.	0.00	0.00
14.270	309.100	3.000	1783.8	1783.8	317.285	0.973	1.55		Unsaturated	8.7			292.16	1.05	305.62	320.87	0.95	0.371	1.051	n.a.	n.a.	n.a.	0.00	0.00
14.440	332.800	5.200	1805.0	1805.0	339.655	1.567	1.70		Unsaturated	11.1			314.56	1.04	328.03	370.94	0.95	0.371	1.048	n.a.	n.a.	n.a.	0.00	0.00
14.600	284.900	4.800	1825.0	1825.0	289.028	1.690	1.76		Unsaturated	12.3			269.28	1.04	280.00	330.15	0.95	0.370	1.044	n.a.	n.a.	n.a.	0.00	0.00
14.760	329.200	5.100	1845.0	1845.0	332.288	1.554	1.70		Unsaturated	11.1			311.15	1.04	322.61	365.41	0.95	0.370	1.041	n.a.	n.a.	n.a.	0.00	0.00
14.930	350.000	5.100	1866.3	1866.3	351.314	1.461	1.68		Unsaturated	10.5			330.81	1.03	341.86	379.34	0.95	0.370	1.038	n.a.	n.a.	n.a.	0.00	0.00
15.090	357.100	4.100	1886.3	1888.3	358.545	1.151	1.56		Unsaturated	9.1			337.52	1.03	347.92	388.94	0.95	0.369	1.034	n.a.	n.a.	n.a.	0.00	0.00
15.260	360.300	3.200	1907.5	1907.5	357.728	0.891	1.49		Unsaturated	7.8			340.55	1.03	350.00	358.77	0.95	0.369	1.031	n.a.	n.a.	n.a.	0.00	0.00
15.420	353.000	3.200	1927.5	1927.5	348.628	0.909	1.50		Unsaturated	8.0			333.65	1.02	341.88	352.07	0.95	0.369	1.028	n.a.	n.a.	n.a.	0.00	0.00
15.580	352.600	3.100	1947.5	1947.5	346.429	0.882	1.49		Unsaturated	7.9			333.27	1.02	340.85	349.78	0.94	0.368	1.025	n.a.	n.a.	n.a.	0.00	0.00
15.750	333.000	5.000	1968.8	1968.8	325.338	1.506	1.69		Unsaturated	11.0			314.74	1.02	320.79	362.19	0.94	0.368	1.022	n.a.	n.a.	n.a.	0.00	0.00
15.910	318.100	4.800	1988.8	1988.8	307.212	1.523	1.71		Unsaturated	11.3			298.77	1.02	303.70	346.89	0.94	0.366	1.019	n.a.	n.a.	n.a.	0.00	0.00
16.080	378.300	5.200	2010.0	2010.0	365.894	1.378	1.63		Unsaturated	10.0			357.56	1.01	362.44	395.14	0.94	0.368	1.015	n.a.	n.a.	n.a.	0.00	0.00
16.240	289.100	3.900	2030.0	2030.0	278.000	1.354	1.70		Unsaturated	11.1			273.25	1.01	276.28	313.56	0.94	0.367	1.012	n.a.	n.a.	n.a.	0.00	0.00
16.400	257.200	2.600	2050.0	2050.0	245.998	1.015	1.63		Unsaturated	10.0			243.10	1.01	245.14	289.24	0.94	0.367	1.010	n.a.	n.a.	n.a.	0.00	0.00
16.570	286.400	3.700	2071.3	2071.3	272.819	1.297	1.69		Unsaturated	10.9			270.70	1.01	272.23	307.41	0.94	0.367	1.006	n.a.	n.a.	n.a.	0.00	0.00
16.730	296.700	4.000	2091.3	2091.3	281.095	1.353	1.69		Unsaturated	11.0			280.43	1.00	281.31	318.56	0.94	0.366	1.004	n.a.	n.a.	n.a.	0.00	0.00
16.900	238.400	4.000	2112.5	2112.5	224.518	1.685	1.83		Unsaturated	13.5			225.33	1.00	225.43	277.90	0.94	0.366	1.000	n.a.	n.a.	n.a.	0.00	0.00
17.060	287.300	3.500	2132.5	2132.5	269.494	1.223	1.67		Unsaturated	10.6			271.55	1.00	270.99	303.11	0.94	0.366	0.998	n.a.	n.a.	n.a.	0.00	0.00
17.230	284.400	3.400	2153.8	2153.8	265.434	1.200	1.67		Unsaturated	10.6			268.81	1.00	267.58	298.98	0.94	0.365	0.995	n.a.	n.a.	n.a.	0.00	0.00
17.390	264.700	2.500	2173.8	2173.8	245.830	0.948	1.81		Unsaturated	9.7			250.19	0.99	248.42	269.52	0.94	0.365	0.992	n.a.	n.a.	n.a.	0.00	0.00
17.550	287.800	3.300	2193.8	2193.8	268.141	1.151	1.65		Unsaturated	10.3			272.02	0.99	269.45	298.53	0.93	0.365	0.989	n.a.	n.a.	n.a.	0.00	0.00
17.720	327.500	3.800	2215.0	2215.0	301.528	1.184	1.62		Unsaturated	9.9			309.55	0.99	305.83	332.55	0.93	0.384	0.988	n.a.	n.a.	n.a.	0.00	0.00
17.880	342.800	2.500	2235.0	2235.0	314.052	0.732	1.46		Unsaturated	7.5			323.82	0.99	319.18	324.84	0.93	0.384	0.984	n.a.	n.a.	n.a.	0.00	0.00
18.050	385.300	2.800	2256.3	2256.3	351.845	0.677	1.40		Unsaturated	6.7			364.18	0.98	358.06	360.59	0.93	0.384	0.981	n.a.	n.a.	n.a.	0.00	0.00
18.210	400.300	3.600	2276.3	2276.3	363.757	0.902	1.49		Unsaturated	7.8			378.36	0.98	371.14	380.33	0.93	0.383	0.978	n.a.	n.a.	n.a.	0.00	0.00
18.370	381.800	3.300	2296.3	2296.3	345.375	0.867	1.49		Unsaturated	7.8			360.87	0.98	353.17	362.05	0.93	0.363	0.975	n.a.	n.a.	n.a.	0.00	0.00
18.540	320.400	4.300	2317.5	2317.5	288.324	1.347	1.69		Unsaturated	10.9			302.84	0.98	295.65	332.83	0.93	0.363	0.973	n.a.	n.a.	n.a.	0.00	0.00
18.700	363.600	3.900	2337.5	2337.5	325.828	1.076	1.58		Unsaturated	9.1			343.67	0.97	334.76	355.09	0.93	0.362	0.970	n.a.	n.a.	n.a.	0.00	0.00
18.870	296.800	3.800	2358.8	2358.8	284.648	1.218	1.67		Unsaturated	10.7			280.53	0.97	272.61	305.48	0.93	0.362	0.967	n.a.	n.a.	n.a.	0.00	0.00
19.030	303.100	2.300	2378.8	2378.8	289.139	0.762	1.52		Unsaturated	8.2			266.48	0.97	277.77	287.90	0.93	0.362	0.965	n.a.	n.a.	n.a.	0.00	0.00
19.190	311.100	2.200	2398.8	2398.8	275.107	0.710	1.49		Unsaturated	7.8			294.05	0.97	284.47	291.98	0.93	0.361	0.962	n.a.	n.a.	n.a.	0.00	0.00
19.360	328.300	2.800	2420.0	2420.0	289.089	0.856	1.53		Unsaturated	8.5			310.30	0.97	299.51	312.17	0.93	0.361	0.960	n.a.	n.a.	n.a.	0.00	0.00
19.520	351.300	3.100	2440.0	2440.0	308.137	0.886	1.52		Unsaturated	8.4			332.04	0.96	319.79	332.26	0.92	0.361	0.957	n.a.	n.a.	n.a.	0.00	0.00
19.690	355.500	4.000	2461.3	2461.3	310.478	1.129	1.81		Unsaturated	9.6			336.01	0.96	322.88	347.50	0.92	0.360	0.955	n.a.	n.a.	n.a.	0.00	0.00
19.850	371.600	4.100	2481.3	2481.3	323.268	1.107	1.59		Unsaturated	9.3			351.23	0.96	336.78	359.20	0.92	0.360	0.952	n.a.	n.a.	n.a.	0.00	0.00
20.010	358.300	3.100	2501.3	2501.3	310.400	0.868	1.52		Sand	8.3			338.66	0.96	324.04	335.58	0.92	0.360	0.950	2.000	2.284	6.35	0.00	0.00
20.180	314.400	3.100	2522.5	2522.5	271.077	0.990	1.60		Sand	9.5			297.18	0.95	283.70	304.84	0.92	0.361	0.947	2.000	2.278	6.31	0.00	0.00
20.340	320.700	3.300	2542.5	2542.5	275.433	1.033	1.61		Sand	9.6			303.12	0.95	288.78	311.74	0.92	0.362	0.945	2.000	2.273	6.28	0.00	0.00
20.510	297.200	3.800	2563.8	2563.8	254.101	1.284	1.70		Sand	11.2			280.91	0.95	267.04	304.43	0.92	0.363	0.942	2.000	2.267	6.24	0.00	0.00
20.670	310.700	3.300	2583.8	2583.8	284.654	1.067	1.63		Sand	10.0			293.87	0.95	278.59	304.41	0.92	0.364	0.940	2.000	2.261	6.21	0.00	0.00
20.830	281.000	2.900	2603.8	2603.8	238.321	1.037	1.65		Sand	10.3			285.80	0.95	251.45	278.51	0.92	0.365	0.938	2.000	2.255	6.18	0.00	0.00
21.000	301.300	2.700	2625.0	2625.0	254.572	0.900	1.58		Sand	9.3			284.78	0.94	269.04	287.46	0.92	0.368	0.935	2.000	2.250	6.14	0.00	0.00
21.160	304.700	2.500	2645.0	2645.0	256.474	0.824	1.55		Sand	8.8			288.00	0.94	271.53	285.99	0.92	0.367	0.933	2.000	2.244	6.11	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.60

Total Settlement:	0.22	(Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	Ic	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	Q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted Q_{cN}	C_N	Q_{c1N}	Q_{c1N-CS}	Stress Reduction Coeff, rd	CSR	K_σ for Sand	CRR M=7.5, $\sigma'vc$ = 1 atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
21.330	338.800	2.700	2666.3	2666.3	283.985	0.801	1.52		Sand	8.2			320.04	0.94	301.10	311.88	0.92	0.388	0.931	2.000	2.238	6.08	0.00	0.00
21.490	334.900	4.800	2686.3	2686.3	279.814	1.379	1.70		Sand	11.2			318.54	0.94	297.23	337.59	0.91	0.389	0.928	2.000	2.233	6.05	0.00	0.00
21.950	316.600	2.600	2706.3	2706.3	293.475	0.825	1.55		Sand	8.7			299.24	0.94	280.44	294.28	0.91	0.370	0.928	2.000	2.228	6.01	0.00	0.00
21.820	298.600	2.700	2727.5	2727.5	247.452	0.908	1.80		Sand	9.4			282.23	0.94	263.95	283.70	0.91	0.371	0.924	2.000	2.222	5.98	0.00	0.00
21.980	250.600	2.400	2747.5	2747.5	206.727	0.963	1.67		Sand	10.6			236.86	0.93	220.70	247.95	0.91	0.372	0.922	2.000	2.217	5.95	0.00	0.00
22.150	214.700	1.900	2768.8	2768.8	176.260	0.891	1.89		Sand	11.0			202.93	0.92	188.65	214.21	0.91	0.373	0.919	2.000	2.211	5.92	0.00	0.00
22.310	170.100	2.100	2788.8	2788.8	138.898	1.245	1.87		Sand	14.2			160.78	0.91	146.23	189.68	0.91	0.374	0.935	0.742	0.835	2.23	0.00	0.00
22.470	186.600	1.900	2808.8	2808.8	151.931	0.972	1.77		Sand	12.3			176.37	0.91	160.30	194.19	0.91	0.375	0.930	0.885	0.990	2.64	0.00	0.00
22.640	235.500	2.900	2830.0	2830.0	191.317	1.239	1.77		Sand	12.4			222.59	0.92	205.65	246.50	0.91	0.378	0.913	2.000	2.195	5.84	0.00	0.00
22.800	299.500	4.500	2850.0	2850.0	242.759	1.510	1.77		Sand	12.4			283.08	0.92	281.69	310.28	0.91	0.377	0.911	2.000	2.190	5.81	0.00	0.00
22.970	339.800	4.700	2871.3	2871.3	274.388	1.380	1.71		Sand	11.3			320.98	0.92	298.15	337.88	0.91	0.378	0.908	2.000	2.185	5.78	0.00	0.00
23.130	372.300	4.500	2891.3	2891.3	299.870	1.213	1.64		Sand	10.1			351.89	0.92	324.07	354.94	0.91	0.379	0.906	2.000	2.180	5.75	0.00	0.00
23.300	357.600	4.600	2912.5	2912.5	286.922	1.292	1.87		Sand	10.7			338.00	0.92	310.67	348.75	0.90	0.380	0.904	2.000	2.175	5.73	0.00	0.00
23.460	371.900	3.800	2932.5	2932.5	297.418	0.972	1.57		Sand	9.0			351.51	0.92	322.52	340.72	0.90	0.381	0.902	2.000	2.170	5.70	0.00	0.00
23.620	371.800	4.800	2952.5	2952.5	296.319	1.298	1.67		Sand	10.5			351.42	0.92	321.85	357.53	0.90	0.381	0.900	2.000	2.165	5.68	0.00	0.00
23.790	373.000	3.200	2973.8	2973.8	296.208	0.861	1.53		Sand	8.4			352.55	0.91	322.28	335.07	0.90	0.382	0.898	2.000	2.160	5.65	0.00	0.00
23.950	317.200	3.300	2993.8	2993.8	250.867	1.045	1.64		Sand	10.1			299.81	0.91	273.58	300.41	0.90	0.383	0.896	2.000	2.155	5.63	0.00	0.00
24.120	291.800	3.000	3015.0	3015.0	229.860	1.033	1.66		Sand	10.4			275.80	0.91	251.21	279.73	0.90	0.384	0.894	2.000	2.150	5.60	0.00	0.00
24.280	270.500	1.900	3035.0	3035.0	212.284	0.708	1.57		Sand	9.0			255.87	0.91	231.89	245.77	0.90	0.385	0.892	2.000	2.145	5.58	0.00	0.00
24.440	225.300	1.400	3055.0	3055.0	176.025	0.626	1.59		Sand	9.4			212.95	0.89	189.05	204.05	0.90	0.385	0.899	1.382	1.494	3.88	0.00	0.00
24.610	191.500	1.600	3076.3	3076.3	148.911	0.842	1.73		Sand	11.7			181.00	0.88	159.07	188.43	0.90	0.386	0.914	0.709	0.778	2.02	0.00	0.00
24.770	174.200	1.800	3096.3	3096.3	134.904	1.043	1.82		Sand	13.4			164.65	0.87	143.89	182.15	0.90	0.387	0.918	0.573	0.632	1.63	0.00	0.00
24.940	156.700	1.500	3117.5	3117.5	120.808	0.967	1.84		Sand	13.6			148.11	0.86	127.85	164.86	0.90	0.386	0.929	0.361	0.404	1.04	0.01	0.01
25.100	185.500	2.800	3137.5	3137.5	142.770	1.522	1.92		Sand	15.3			175.33	0.88	154.40	205.09	0.89	0.388	0.890	1.457	1.559	4.01	0.00	0.00
25.260	235.700	4.100	3157.5	3157.5	181.151	1.751	1.90		Sand	14.9			222.78	0.90	200.45	259.06	0.89	0.389	0.980	2.000	2.116	5.44	0.00	0.00
25.430	253.900	4.600	3178.9	3178.8	194.572	1.823	1.89		Sand	14.7			239.99	0.90	215.55	275.40	0.99	0.390	0.878	2.000	2.111	5.41	0.00	0.00
25.590	249.800	3.100	3198.8	3198.8	190.803	1.249	1.77		Sand	12.4			238.11	0.90	211.71	253.92	0.89	0.391	0.876	2.000	2.107	5.39	0.00	0.00
25.760	239.400	1.800	3220.0	3220.0	182.198	0.873	1.80		Sand	9.5			229.29	0.86	198.88	215.27	0.99	0.391	0.874	2.000	2.102	5.37	0.00	0.00
25.920	255.600	3.700	3240.0	3240.0	193.999	1.457	1.92		Sand	13.3			241.59	0.89	215.90	265.46	0.99	0.392	0.872	2.000	2.098	5.35	0.00	0.00
26.080	273.200	3.200	3260.0	3260.0	208.797	1.178	1.73		Sand	11.7			258.22	0.89	230.40	268.55	0.89	0.393	0.870	2.000	2.093	5.33	0.00	0.00
26.250	227.400	2.700	3281.3	3281.3	171.356	1.196	1.79		Sand	12.9			214.93	0.88	199.19	230.86	0.89	0.393	0.869	2.000	2.089	5.31	0.00	0.00
26.410	264.500	1.300	3301.3	3301.3	198.902	0.495	1.49		Sand	7.8			250.00	0.88	219.02	225.16	0.89	0.394	0.867	2.000	2.084	5.29	0.00	0.00
26.580	221.700	1.500	3322.5	3322.5	165.974	0.682	1.63		Sand	10.0			209.55	0.86	180.62	200.17	0.89	0.395	0.881	1.147	1.215	3.08	0.00	0.00
26.740	173.800	2.300	3342.5	3342.5	129.446	1.336	1.91		Sand	15.1			164.27	0.85	140.14	186.79	0.88	0.395	0.896	0.868	0.720	1.82	0.00	0.00
26.900	135.800	2.800	3362.5	3362.5	100.561	2.088	2.13		Sand	19.9			128.36	0.84	107.40	161.48	0.88	0.396	0.918	0.336	0.371	0.94	0.01	0.02
27.070	99.000	3.000	3383.8	3383.8	72.731	3.083	2.35		Sand	25.7			93.57	0.81	78.06	128.13	0.88	0.397	0.938	0.198	0.224	0.56	0.02	0.05
27.230	74.800	3.000	3403.8	3403.8	54.475	4.104	2.52		Sand	31.1			70.70	0.79	56.03	104.13	0.88	0.397	0.948	0.149	0.170	0.43	0.03	0.06
27.400	63.000	2.700	3425.0	3425.0	35.788	4.405	2.67		Sand	36.1			59.55	0.88	n.a.	n.a.	0.88	0.398	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	52.600	2.500	3445.0	3445.0	29.537	4.914	2.77		Sand	39.5			49.72	0.88	n.a.	n.a.	0.88	0.399	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	54.800	2.300	3465.0	3485.0	30.631	4.334	2.72		Sand	37.7			51.80	0.88	n.a.	n.a.	0.88	0.399	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.880	82.600	2.500	3486.3	3488.3	34.913	4.108	2.68		Sand	35.6			59.17	0.88	n.a.	n.a.	0.88	0.400	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	70.700	3.000	3506.3	3506.3	39.328	4.351	2.64		Sand	35.0			66.82	0.88	n.a.	n.a.	0.88	0.400	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	82.100	3.100	3527.5	3527.5	58.810	3.859	2.48		Sand	29.7	185	1.58	257.40	0.97	224.93	329.07	0.88	0.401	0.847	2.000	2.036	5.08	0.00	0.00
28.380	91.500	2.700	3547.5	3547.5	65.498	3.009	2.37		Sand	28.4	185	1.58	257.40	0.87	224.80	325.20	0.88	0.401	0.845	2.000	2.032	5.06	0.00	0.00
28.540	107.000	2.000	3567.5	3567.5	76.590	1.901	2.16		Sand	21.3	195	1.58	257.40	0.97	224.28	315.03	0.87	0.402	0.843	2.000	2.028	5.05	0.00	0.00
28.710	165.500	1.700	3588.8	3588.8	118.813	1.038	1.88		Sand	14.1		1.58	244.03	0.87	212.28	267.48	0.87	0.402	0.842	2.000	2.024	5.03	0.00	0.00
28.870	231.800	1.400	3608.8	3608.8	166.481	0.609	1.60		Sand	9.5		1.56	341.78	0.87	296.88	319.53	0.87	0.403	0.840	2.000	2.020	5.01	0.00	0.00
28.040	178.000	1.700	3630.0	3630.0	127.142	0.985	1.82		Sand	13.3		1.56	262.46	0.87	227.63	279.29	0.87	0.403	0.838	2.000	2.016	5.00	0.00	0.00
29.200	125.300	1.900	3650.0	3650.0	88.860	1.539	2.07		Sand	18.6	178	1.58	277.68	0.97	240.48	326.74	0.87	0.404	0.838	2.000	2.012	4.98	0.00	0.00
29.360	92.800	2.000	3670.0	3670.0	85.285	2.199	2.28		Sand	23.8	178	1.56	277.88	0.86	240.13	341.39	0.87	0.404	0.835	2.000	2.008	4.96	0.00	0.00
29.530	77.700	2.600	3691.3	3691.3	54.293	3.428	2.47		Sand	29.3	178	1.56	277.68	0.86	239.77	349.52	0.87	0.405	0.833	2.000	2.004	4.95	0.00	0.00
29.690	75.400	3.200	3711.3	3711.3	39.833	4.351	2.84		Sand	34.9			71.27	0.86	n.a.	n.a.	0.87	0.405	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	81.200	2.500	3732.5	3732.5	58.459	3.151	2.43	Plastic	Sand	28.2			78.75	0.86	n.a.	n.a.	0.87	0.406	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	68.300	2.700	3752.4	3751.2	35.415	4.085	2.85		Sand	35.4			64.56	0.86	n.a.	n.a.	0.87	0.406	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.190	85.300	2.400	3772.8	3760.9	33.722	3.785	2.85		Sand	35.2			81.72	0.86	n.a.	n.a.	0.86	0.407	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	76.400	2.000	3792.0	3770.2	52.756	2.684	2.40		Sand	27.4	300	1.35	405.00	0.86	347.76	489.80	0.86	0.407	0.827	2.000	1.988	4.88	0.00	0.00
30.510	163.700	2.300	3811.2	3779.4	114.426	1.422	1.97		Sand	16.3	300	1.35	405.00	0.86	347.53	446.86	0.86	0.408	0.826	2.000	1.987	4.87	0.00	0.00
30.680	346.300	3.400	3831.6	3789.2	243.245	0.987	1.63		Sand	9.9		1.35	441.88	0.86	378.92	411.54	0.86	0.408	0.825	2.000	1.985	4.86	0.00	0.00
30.840	455.600	4.000	3850.8	3798.4	320.050	0.882	1.51		Sand	8.2		1.35	581.34	0.86	498.19	514.07	0.86	0.409	0.824	2.000	1.983	4.85	0.00	0.00
31.010	482.700	5.100	3871.2	3808.2	338.724	1.081	1.56		Sand	8.9		1.35	815.92	0.86	527.47	553.65	0.88	0.409	0.824	2.000	1.981	4.84	0.00	0.00
31.170	485.800	4.600	3890.4	3817.4	340.349	0.951	1.52		Sand	8.3		1.35	819.62	0.88	530.30	548.84	0.88	0.409	0.823	2.000	1.979	4.83	0.00	0.00
31.330	401.400	4.100	3909.8	3826.8	280.752	1.026	1.80		Sand	9.5		1.35	512.18	0.86	438.07	468.51	0.86	0.410	0.822	2.000	1.978	4.83	0.00	0.00
31.500	382.900	4.200	3930.0	3836.4	267.400	1.103	1.64		Sand	10.1		1.35	488.58	0.85	417.60	455.12	0.86	0.410	0.821	2.000	1.976	4.82	0.00	0.00
31.660	320.700	3.800	3949.2	3845.8	223.463	1.129	1.70		Sand	11.1		1.35	409.21	0.85	349.54	394.20	0.86	0.411	0.821	2.000	1.974	4.81	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.60

Total Settlement:	0.22	(Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	Ic	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{cIN}	q_{cIN-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
31.930	338.500	3.000	3969.8	3855.4	234.238	0.897	1.81		Sand	9.8		1.35	429.37	0.85	388.52	394.35	0.86	0.411	0.820	2.000	1.972	4.80	0.00	0.00
31.980	315.800	3.700	3988.8	3884.8	219.472	1.179	1.72		Sand	11.4		1.35	402.96	0.85	343.75	391.92	0.95	0.411	0.919	2.000	1.970	4.79	0.00	0.00
32.150	237.300	5.100	4008.0	3873.8	164.397	2.187	2.00		Sand	18.9	300	1.35	405.00	0.85	345.28	448.78	0.85	0.412	0.819	2.000	1.969	4.78	0.00	0.00
32.320	159.000	4.700	4028.4	3883.6	109.525	2.994	2.22		Sand	22.2	300	1.35	405.00	0.85	345.05	474.41	0.85	0.412	0.818	2.000	1.967	4.77	0.00	0.00
32.480	79.900	4.100	4047.6	3892.8	39.959	5.272	2.99			38.9			75.43	0.85	n.a.	n.a.	0.85	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.850	79.100	2.900	4068.0	3902.8	53.638	3.763	2.50	Plastic		30.3			74.76	0.85	n.a.	n.a.	0.85	0.413	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	82.600	3.100	4087.2	3911.9	55.999	3.848	2.49		Sand	30.2	120	1.68	199.20	0.85	169.39	255.23	0.85	0.413	0.816	2.000	1.962	4.75	0.00	0.00
32.970	89.400	3.500	4106.4	3921.1	60.648	4.007	2.48		Sand	28.8	120	1.66	199.20	0.85	169.28	254.87	0.85	0.413	0.815	2.000	1.960	4.74	0.00	0.00
33.140	109.500	4.800	4126.8	3930.9	74.504	4.468	2.46		Sand	29.1	120	1.86	199.20	0.85	169.17	254.20	0.85	0.414	0.814	2.000	1.958	4.73	0.00	0.00
33.300	120.800	6.300	4148.0	3940.1	82.237	5.308	2.49		Sand	30.0		1.88	189.53	0.84	159.50	241.93	0.85	0.414	0.813	2.000	1.956	4.73	0.00	0.00
33.470	130.000	7.100	4168.4	3949.9	88.493	5.550	2.49		Sand	29.9		1.68	203.97	0.85	173.00	259.87	0.85	0.414	0.813	2.000	1.955	4.72	0.00	0.00
33.630	132.400	7.100	4185.6	3959.1	90.042	5.449	2.47		Sand	28.5		1.86	207.74	0.85	176.09	263.75	0.84	0.415	0.812	2.000	1.953	4.71	0.00	0.00
33.790	115.000	6.100	4204.8	3968.3	77.921	5.403	2.51		Sand	30.7	130	1.88	215.80	0.85	182.81	273.48	0.84	0.415	0.811	2.000	1.951	4.70	0.00	0.00
33.960	102.300	5.200	4225.2	3978.1	50.370	5.190	2.82			34.3			96.69	0.85	n.a.	n.a.	0.84	0.415	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	93.300	4.300	4244.4	3987.3	45.734	4.716	2.82			34.2			88.19	0.85	n.a.	n.a.	0.84	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.290	80.300	3.500	4264.8	3997.1	39.112	4.479	2.65			35.3			75.90	0.85	n.a.	n.a.	0.84	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	74.600	3.000	4284.0	4008.3	36.172	4.140	2.85			35.3			70.51	0.85	n.a.	n.a.	0.84	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	88.200	2.700	4303.2	4015.5	32.898	4.088	2.86			38.2			64.46	0.84	n.a.	n.a.	0.84	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	61.400	2.400	4323.8	4025.3	29.433	4.051	2.71			37.4			58.03	0.84	n.a.	n.a.	0.84	0.417	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	57.300	2.200	4342.8	4034.5	27.328	3.991	2.73			38.1			54.18	0.84	n.a.	n.a.	0.84	0.417	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.110	54.700	2.300	4363.2	4044.3	25.971	4.379	2.77			39.7			51.70	0.84	n.a.	n.a.	0.84	0.417	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	55.800	2.400	4382.4	4053.6	26.450	4.477	2.77			39.7			52.74	0.84	n.a.	n.a.	0.83	0.417	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	54.600	2.200	4401.6	4062.8	25.795	4.199	2.76			39.3			51.61	0.84	n.a.	n.a.	0.83	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	52.100	2.000	4422.0	4072.6	24.500	4.009	2.77			39.5			49.24	0.84	n.a.	n.a.	0.83	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	52.400	1.700	4441.2	4081.8	24.587	3.388	2.72			37.7			49.53	0.84	n.a.	n.a.	0.83	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	50.000	1.600	4461.6	4091.6	23.350	3.349	2.73			38.2			47.26	0.84	n.a.	n.a.	0.83	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	49.700	1.500	4480.8	4100.8	23.147	3.181	2.72			37.7			46.98	0.84	n.a.	n.a.	0.83	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.260	59.600	2.000	4501.2	4110.6	27.903	3.487	2.68			38.5			56.33	0.84	n.a.	n.a.	0.83	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	88.100	2.200	4520.4	4119.8	31.983	3.341	2.63			34.5			64.37	0.84	n.a.	n.a.	0.83	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	84.400	2.900	4539.6	4129.0	55.572	3.531	2.47	Plastic		29.4			79.77	0.84	n.a.	n.a.	0.83	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	96.700	3.200	4560.0	4138.8	83.811	3.389	2.42	Plastic		27.7			91.40	0.84	n.a.	n.a.	0.83	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	75.600	2.900	4579.2	4149.0	35.347	3.958	2.64			35.1			71.46	0.84	n.a.	n.a.	0.82	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.080	84.800	2.200	4599.8	4157.8	30.064	3.520	2.89			35.7			61.25	0.84	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	64.600	2.400	4618.8	4167.0	29.897	3.853	2.69			36.7			81.08	0.84	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	61.900	2.300	4638.0	4176.2	28.533	3.660	2.71			37.3			59.51	0.84	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	59.700	2.200	4658.4	4186.0	27.411	3.835	2.72			37.7			58.43	0.84	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	57.400	1.900	4677.8	4195.2	28.249	3.451	2.70			37.1			54.25	0.83	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.900	55.900	1.900	4698.0	4205.0	25.470	3.548	2.72			37.7			52.84	0.83	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	55.400	2.000	4717.2	4214.3	25.172	3.771	2.74			38.5			52.36	0.83	n.a.	n.a.	0.82	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	54.400	2.100	4738.4	4223.5	24.839	4.038	2.77			39.5			51.42	0.83	n.a.	n.a.	0.82	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	53.000	2.100	4756.8	4233.3	23.918	4.148	2.78			40.1			50.09	0.83	n.a.	n.a.	0.82	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	52.000	2.000	4776.0	4242.5	23.366	4.031	2.78			40.1			49.15	0.83	n.a.	n.a.	0.82	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.720	49.400	1.900	4796.4	4252.3	21.936	4.130	2.82			41.3			45.75	0.83	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	45.400	1.700	4815.6	4261.5	20.177	3.954	2.83			41.7			42.91	0.83	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	45.700	2.500	4834.8	4270.7	20.270	5.778	2.93			46.0			43.19	0.83	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	59.300	2.500	4855.2	4280.5	26.573	4.396	2.77			39.5			56.05	0.83	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	46.600	2.100	4874.4	4289.7	20.590	4.755	2.87			43.5			44.05	0.83	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.540	39.200	1.300	4894.8	4299.5	17.096	3.537	2.85			42.7			37.05	0.83	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	39.500	1.200	4914.0	4308.7	17.194	3.239	2.83			41.7			37.33	0.83	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	36.700	1.200	4933.2	4317.9	15.856	3.505	2.88			43.8			34.89	0.83	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	34.700	1.200	4953.6	4327.7	14.892	3.724	2.91			45.1			32.80	0.83	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.100	34.100	1.100	4972.8	4338.9	14.579	3.490	2.90			44.7			32.23	0.83	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.360	34.200	1.100	4993.2	4348.7	14.587	3.470	2.90			44.6			32.33	0.83	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.520	36.200	1.300	5012.4	4358.0	15.470	3.858	2.91			45.0			34.22	0.83	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.680	39.600	1.400	5031.6	4365.2	16.991	3.775	2.87			43.5			37.43	0.83	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.850	39.600	1.400	5052.0	4375.0	16.948	3.776	2.87			43.5			37.43	0.83	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.010	34.300	1.100	5071.2	4384.2	14.490	3.463	2.90			44.7			32.42	0.83	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.180	30.300	0.900	5091.6	4394.0	12.633	3.243	2.93			46.0			28.64	0.82	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.340	30.000	0.800	5110.8	4403.2	12.486	2.915	2.91			45.1			28.36	0.82	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	29.500	0.700	5130.0	4412.4	12.209	2.599	2.89			44.2			27.88	0.82	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	28.000	0.700	5150.4	4422.2	11.881	2.669	2.91			44.9			27.22	0.82	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	29.600	0.800	5168.8	4431.4	12.193	2.961	2.92			45.5			27.98	0.82	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.000	31.600	0.800	5190.0	4441.2	13.062	2.758	2.88			43.8			29.97	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	33.700	0.900	5209.2	4450.4	13.974	2.894	2.97			43.4			31.85	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00

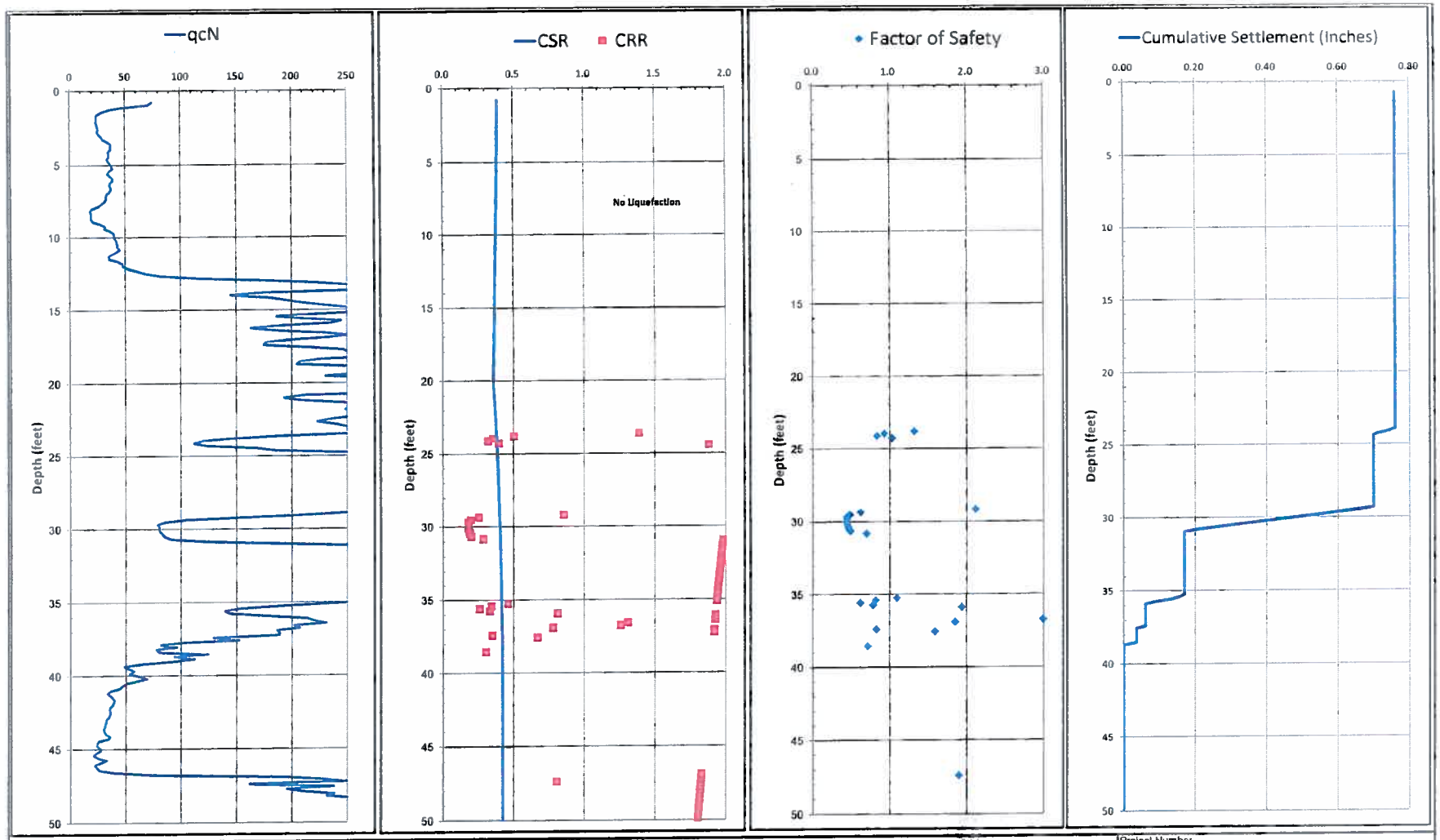
CORNERSTONE EARTH GROUP

CPT No.	2

PGA (A_{max})	0.60

Total Settlement:	0.22	(Inches)

Depth (ft)	Qc (tsf)	f_s (tsf)	σvc (psf)	Insitu σ'vc (psf)	Q	F (%)	Ic	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	QcN near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpretad QcN	CN	Qc1N	Qc1N-CS	Strass Reduction Coeff, rd	CSR	Kσ for Sand	CRRM=7.5, σvc = 1 atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain εv	Settlement (Inches)
42.320	31.800	1.000	5228.4	4459.6	13.089	3.428	2.94		[illegible]	49.0			30.08	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	38.000	1.100	5248.6	4469.4	15.930	3.109	2.84		[illegible]	42.4			35.92	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	40.600	1.000	5268.0	4478.6	16.954	2.934	2.78		[illegible]	39.9			38.37	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.820	33.200	0.900	5288.4	4488.4	13.615	2.945	2.88		[illegible]	43.9			31.38	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	27.800	0.700	5307.6	4497.6	11.182	2.784	2.94		[illegible]	48.2			26.28	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.150	28.300	0.700	5328.0	4507.4	10.488	2.962	2.98		[illegible]	47.7			24.86	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	29.100	0.700	5347.2	4516.7	11.702	2.649	2.91		[illegible]	45.0			27.50	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.470	34.400	0.800	5366.4	4525.9	14.018	2.522	2.83		[illegible]	42.0			32.51	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	35.100	0.900	5386.8	4535.7	14.290	2.777	2.85		[illegible]	42.7			33.19	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	32.700	0.900	5406.0	4544.9	13.200	3.000	2.90		[illegible]	44.5			30.91	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.970	32.400	0.900	5426.4	4554.7	13.038	3.032	2.91		[illegible]	44.8			30.82	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.130	39.100	1.200	5445.6	4563.9	15.941	3.299	2.88		[illegible]	42.9			36.98	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	42.800	1.500	5464.9	4573.1	17.523	3.744	2.86		[illegible]	43.0			40.45	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	44.300	1.700	5495.2	4582.9	18.136	4.091	2.87		[illegible]	43.5			41.87	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	44.500	2.200	5504.4	4592.1	18.182	5.270	2.94		[illegible]	46.3			42.06	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.790	47.800	2.200	5524.8	4601.9	19.573	4.885	2.90		[illegible]	44.5			45.18	0.81	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	47.000	2.000	5544.0	4611.1	19.183	4.522	2.88		[illegible]	43.9			44.42	0.81	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	45.800	2.700	5563.2	4620.3	18.821	6.279	2.99		[illegible]	46.1			43.29	0.81	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	87.800	3.700	5583.6	4630.1	38.833	4.383	2.68		[illegible]	35.7			82.80	0.81	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	93.100	4.800	5602.8	4639.3	38.927	5.094	2.89		[illegible]	38.8			88.00	0.81	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.610	83.800	5.400	5623.2	4649.1	34.840	6.868	2.81		[illegible]	41.1			79.21	0.81	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	96.200	5.700	5642.4	4658.4	40.091	6.104	2.74		[illegible]	38.5			90.93	0.81	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	104.000	8.200	5661.6	4667.6	43.350	8.128	2.72		[illegible]	37.7			98.30	0.81	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	144.200	7.300	5682.0	4677.4	89.966	5.164	2.49		Sand	29.0			136.29	0.74	100.59	182.76	0.77	0.422	0.958	0.345	0.356	0.84	0.01	0.02
46.280	217.800	7.500	5701.2	4686.6	136.515	3.499	2.21		Sand	22.0			205.88	0.80	184.75	239.86	0.77	0.422	0.761	2.000	1.831	4.34	0.00	0.00
46.430	230.900	6.800	5721.6	4696.4	144.877	2.894	2.13		Sand	20.0			218.24	0.81	178.17	249.73	0.77	0.422	0.761	2.000	1.830	4.33	0.00	0.00
46.590	288.900	5.700	5740.8	4705.8	188.815	2.143	1.99		Sand	18.7			254.18	0.81	205.84	274.77	0.77	0.422	0.760	2.000	1.828	4.33	0.00	0.00
46.750	251.700	7.300	5760.0	4714.8	157.553	2.934	2.11		Sand	19.6			237.90	0.81	192.59	289.44	0.77	0.422	0.760	2.000	1.827	4.33	0.00	0.00
46.920	219.300	6.300	5780.4	4724.6	138.868	2.911	2.15		Sand	20.4			207.28	0.80	185.02	238.50	0.77	0.422	0.759	2.000	1.825	4.32	0.00	0.00
47.080	270.700	5.500	5799.6	4733.8	169.230	2.054	1.97		Sand	16.4			255.86	0.81	206.89	274.40	0.76	0.422	0.758	2.000	1.824	4.32	0.00	0.00
47.250	350.200	6.300	5820.0	4743.6	219.235	1.814	1.86		Sand	14.1			331.00	0.81	287.51	332.32	0.76	0.422	0.758	2.000	1.823	4.32	0.00	0.00
47.410	332.300	7.200	5839.2	4752.8	207.728	2.188	1.94		Sand	15.7			314.08	0.81	253.70	327.59	0.76	0.422	0.757	2.000	1.821	4.32	0.00	0.00
47.570	233.100	7.500	5858.4	4762.0	145.019	3.258	2.17		Sand	21.0			220.32	0.81	177.88	254.47	0.76	0.422	0.757	2.000	1.820	4.31	0.00	0.00
47.740	168.300	5.600	5879.8	4771.9	104.079	3.387	2.27		Sand	23.7			159.07	0.75	119.42	193.18	0.78	0.422	0.822	0.592	0.585	1.39	0.00	0.00
47.900	167.800	4.800	5898.0	4781.0	103.532	2.915	2.23		Sand	22.4			159.41	0.75	119.41	190.10	0.76	0.422	0.827	0.537	0.535	1.27	0.00	0.01
48.070	188.300	4.000	5918.4	4790.8	103.860	2.419	2.16		Sand	20.6			159.07	0.74	118.45	177.49	0.78	0.422	0.831	0.497	0.497	1.18	0.01	0.01
48.230	177.300	4.000	5937.6	4800.0	109.402	2.294	2.13		Sand	20.0			187.58	0.75	125.86	185.37	0.76	0.422	0.817	0.637	0.625	1.48	0.00	0.00
48.390	194.400	5.400	5956.8	4809.3	120.012	2.821	2.17		Sand	21.1			183.74	0.77	141.32	207.42	0.78	0.421	0.764	1.646	1.512	3.59	0.00	0.00
48.560	213.500	5.100	5977.2	4819.1	131.848	2.423	2.10		Sand	19.2			201.80	0.78	157.78	223.83	0.76	0.421	0.753	2.000	1.811	4.30	0.00	0.00
48.720	150.900	5.400	5996.4	4828.3	92.544	3.651	2.33		Sand	25.3			142.63	0.73	104.30	185.04	0.75	0.421	0.849	0.363	0.370	0.88	0.01	0.02
48.890	184.300	4.300	6016.8	4838.1	113.322	2.372	2.13		Sand	20.1			174.20	0.76	131.57	192.72	0.75	0.421	0.800	0.834	0.802	1.90	0.00	0.00
49.050	165.200	4.700	6038.0	4847.3	101.280	2.898	2.23		Sand	22.5			158.14	0.74	115.67	176.70	0.75	0.421	0.830	0.486	0.486	1.15	0.01	0.01
49.220	183.200	5.100	6056.4	4857.1	112.401	2.631	2.19		Sand	21.8			173.18	0.76	130.95	194.96	0.75	0.421	0.794	0.913	0.871	2.07	0.00	0.00
49.380	240.900	8.900	6075.6	4866.3	149.251	2.901	2.13		Sand	19.9			227.89	0.80	182.79	257.90	0.75	0.421	0.750	2.000	1.804	4.29	0.00	0.00
49.540	240.500	7.500	6094.8	4875.5	147.856	3.159	2.16		Sand	20.8			227.32	0.80	182.39	259.30	0.75	0.421	0.750	2.000	1.803	4.20	0.00	0.00
49.710	256.700	7.900	6115.2	4885.3	157.779	3.115	2.13		Sand	20.1			242.83	0.80	194.57	273.47	0.75	0.421	0.749	2.000	1.801	4.28	0.00	0.00
49.870	257.400	8.200	6134.4	4894.5	158.059	3.224	2.15		Sand	20.4			243.29	0.80	195.00	274.84	0.75	0.421	0.748	2.000	1.800	4.28	0.00	0.00
50.040	253.400	7.500	6154.8	4904.3	155.412	2.996	2.12		Sand	19.9			239.51	0.80	191.87	269.34	0.75	0.420	0.748	2.000	1.799	4.28	0.00	0.00
50.200	203.600	6.500	6174.0	4913.5	124.371	3.242	2.21		Sand	22.0			192.44	0.77	148.82	218.96	0.75	0.420	0.747	2.000	1.797	4.28	0.00	0.00



CORNERSTONE EARTH GROUP

Liquefaction Analysis Summary

4202 Stanley Boulevard
Pleasanton, California

Project Number	132-5-1
Figure Number	Figure C-3
1/30/2012	CPT No. 3

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.60

Total Settlement:	0.76	(Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	Ic	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpretad q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Strass Raduction Coeff, rd	C6R	Ka for Sand	$CRR_{M=7.5, \sigma'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.820	78.800	1.200	102.5	102.5	337.326	1.528	1.69		Unsaturated	11.0			74.29	1.70	128.29	147.53	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	74.600	1.600	122.5	122.5	292.810	2.147	1.85		Unsaturated	13.8			70.51	1.70	119.87	156.44	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	49.800	1.400	143.8	143.8	180.331	2.915	2.06		Unsaturated	18.4			47.07	1.70	80.02	123.53	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	37.400	1.000	163.8	163.8	126.795	2.880	2.14		Unsaturated	20.3			35.35	1.70	60.09	101.50	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	30.200	0.800	185.0	185.0	98.241	2.657	2.22		Unsaturated	22.2			28.54	1.70	48.53	88.92	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	26.400	0.800	205.0	205.0	79.858	3.042	2.31		Unsaturated	24.8			24.95	1.70	42.42	83.14	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	25.500	0.800	225.0	225.0	73.587	3.151	2.35		Unsaturated	25.8			24.10	1.70	40.97	81.86	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	25.700	0.800	246.3	246.3	70.865	3.128	2.36		Unsaturated	26.1			24.29	1.70	41.29	82.42	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	25.400	0.800	266.3	266.3	67.325	3.166	2.38		Unsaturated	26.8			24.01	1.70	40.81	82.08	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	26.300	0.800	287.5	287.5	67.070	3.059	2.37		Unsaturated	26.4			24.86	1.70	42.26	83.85	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.480	26.800	0.800	307.5	307.5	68.087	3.002	2.37		Unsaturated	26.3			25.33	1.70	43.06	84.89	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	27.100	0.900	327.5	327.5	64.715	3.341	2.41		Unsaturated	27.5			25.81	1.70	43.54	86.12	1.00	0.390	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	26.700	0.900	348.8	348.8	61.756	3.393	2.43		Unsaturated	28.0			25.24	1.70	42.90	85.51	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	28.000	0.900	368.8	368.8	62.979	3.236	2.41		Unsaturated	27.4			26.47	1.70	44.99	88.01	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	30.200	1.000	390.0	390.0	66.059	3.333	2.40		Unsaturated	27.3			28.54	1.70	48.53	92.63	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	31.700	1.100	410.0	410.0	67.827	3.493	2.41		Unsaturated	27.5			29.96	1.70	50.94	95.94	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.450	35.800	1.200	431.3	431.3	74.502	3.372	2.37		Unsaturated	26.3			33.84	1.70	57.52	104.04	1.00	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	39.500	1.400	451.3	451.3	80.385	3.565	2.38		Unsaturated	26.2			37.33	1.70	63.47	111.83	1.00	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	39.300	1.500	471.3	471.3	78.240	3.840	2.40		Unsaturated	27.2			37.15	1.70	63.15	111.98	1.00	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	39.200	1.500	492.5	492.5	76.318	3.851	2.40		Unsaturated	27.4			37.05	1.70	62.99	111.88	0.99	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	37.200	1.500	512.5	512.5	70.952	4.060	2.44		Unsaturated	28.5			35.18	1.70	59.77	108.18	0.99	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	37.500	1.500	533.8	533.8	70.070	4.028	2.44		Unsaturated	28.8			35.44	1.70	60.26	108.83	0.99	0.387	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	37.600	1.300	553.8	553.8	68.959	3.483	2.40		Unsaturated	27.3			35.54	1.70	60.42	108.42	0.99	0.387	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	36.100	1.400	573.8	573.9	65.006	3.909	2.46		Unsaturated	28.9			34.12	1.70	58.01	106.00	0.99	0.387	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	37.100	1.500	595.0	595.0	65.598	4.078	2.47		Unsaturated	29.3			35.07	1.70	59.61	109.27	0.99	0.387	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	39.100	1.700	615.0	615.0	68.012	4.382	2.48		Unsaturated	29.7			36.98	1.70	62.83	112.72	0.99	0.386	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.080	40.500	1.800	636.3	636.3	69.261	4.480	2.48		Unsaturated	28.7			38.28	1.70	65.08	115.75	0.99	0.386	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.250	41.100	1.800	656.3	656.3	69.199	4.415	2.48		Unsaturated	29.8			38.85	1.70	66.04	116.98	0.99	0.386	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.410	38.400	1.900	678.3	678.3	63.837	4.729	2.52		Unsaturated	31.1			38.29	1.70	61.70	111.71	0.99	0.389	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.580	36.700	1.800	697.5	697.5	59.844	4.952	2.56		Unsaturated	32.1			34.69	1.70	58.97	108.38	0.99	0.388	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.740	38.900	1.800	717.5	717.5	62.559	4.870	2.52		Unsaturated	31.1			36.77	1.67	61.39	111.31	0.99	0.385	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.910	41.100	1.900	738.8	738.8	65.155	4.665	2.51		Unsaturated	30.7			38.85	1.64	63.59	114.12	0.99	0.385	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.070	41.100	1.800	758.8	758.8	64.274	4.420	2.50		Unsaturated	30.3			38.85	1.62	62.94	113.09	0.99	0.385	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.230	39.200	1.800	778.8	779.8	60.468	4.638	2.53		Unsaturated	31.3			37.05	1.61	59.77	109.21	0.99	0.385	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.400	38.300	1.700	800.0	800.0	58.259	4.485	2.53		Unsaturated	31.3			36.20	1.60	57.94	106.76	0.99	0.384	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.580	39.500	1.700	820.0	820.0	59.351	4.349	2.52		Unsaturated	30.8			37.33	1.58	58.91	107.91	0.98	0.384	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.730	39.600	1.700	841.3	841.3	58.731	4.339	2.52		Unsaturated	30.9			37.43	1.56	58.41	107.26	0.98	0.384	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.890	38.100	1.700	861.3	861.3	55.808	4.513	2.55		Unsaturated	31.8			38.01	1.55	55.89	104.16	0.98	0.384	1.099	n.a.	n.a.	n.a.	0.00	0.00
7.050	35.600	1.600	881.3	881.3	51.495	4.551	2.57		Unsaturated	32.7			33.65	1.55	52.12	99.33	0.98	0.383	1.093	n.a.	n.a.	n.a.	0.00	0.00
7.220	34.900	1.400	902.5	902.5	49.857	4.064	2.55		Unsaturated	31.8			32.99	1.54	50.70	97.21	0.98	0.383	1.089	n.a.	n.a.	n.a.	0.00	0.00
7.380	35.000	1.300	922.5	922.5	49.442	3.764	2.53		Unsaturated	31.1			33.08	1.52	50.35	98.55	0.98	0.383	1.086	n.a.	n.a.	n.a.	0.00	0.00
7.550	33.200	1.200	943.8	943.8	46.320	3.667	2.54		Unsaturated	31.5			31.38	1.51	47.54	92.89	0.98	0.383	1.081	n.a.	n.a.	n.a.	0.00	0.00
7.710	30.100	0.900	963.8	963.8	41.481	3.039	2.52		Unsaturated	30.8			28.45	1.52	43.13	88.80	0.98	0.382	1.075	n.a.	n.a.	n.a.	0.00	0.00
7.870	27.000	0.800	983.8	983.8	36.746	3.018	2.55		Unsaturated	32.0			25.52	1.52	39.69	91.16	0.98	0.382	1.070	n.a.	n.a.	n.a.	0.00	0.00
8.040	21.400	0.800	1005.0	1005.0	33.262	2.871	2.57		Unsaturated	32.8			20.23	1.53	30.94	70.92	0.99	0.382	1.063	n.a.	n.a.	n.a.	0.00	0.00
8.200	20.100	0.600	1025.0	1025.0	30.750	3.063	2.82		Unsaturated	34.1			19.00	1.52	28.89	68.43	0.98	0.382	1.060	n.a.	n.a.	n.a.	0.00	0.00
8.370	20.800	0.600	1046.3	1046.3	31.378	2.959	2.80		Unsaturated	33.5			18.86	1.50	29.50	69.15	0.98	0.381	1.059	n.a.	n.a.	n.a.	0.00	0.00
8.530	20.700	0.600	1066.3	1066.3	30.797	2.975	2.81		Unsaturated	33.8			18.57	1.49	29.07	68.62	0.98	0.381	1.057	n.a.	n.a.	n.a.	0.00	0.00
8.690	20.700	0.800	1086.3	1086.3	30.364	2.977	2.81		Unsaturated	34.0			18.57	1.47	28.78	68.26	0.98	0.381	1.055	n.a.	n.a.	n.a.	0.00	0.00
8.860	22.700	0.700	1107.5	1107.5	32.933	3.161	2.80		Unsaturated	33.8			21.48	1.45	31.03	71.23	0.98	0.380	1.055	n.a.	n.a.	n.a.	0.00	0.00
9.020	29.200	0.800	1127.5	1127.5	37.079	2.794	2.53		Unsaturated	31.2			27.60	1.41	39.95	81.18	0.97	0.380	1.058	n.a.	n.a.	n.a.	0.00	0.00
9.190	33.800	0.800	1148.8	1148.8	42.622	2.408	2.44		Unsaturated	28.5			31.95	1.38	44.10	87.28	0.97	0.380	1.059	n.a.	n.a.	n.a.	0.00	0.00
9.350	33.400	1.000	1168.8	1168.8	41.734	3.047	2.51		Unsaturated	30.8			31.57	1.37	43.21	86.89	0.97	0.380	1.057	n.a.	n.a.	n.a.	0.00	0.00
9.510	38.500	1.100	1188.8	1188.8	47.800	2.902	2.46		Unsaturated	29.0			36.39	1.34	48.89	93.87	0.97	0.379	1.058	n.a.	n.a.	n.a.	0.00	0.00
9.680	41.900	1.200	1210.0	1210.0	51.815	2.906	2.43		Unsaturated	28.3			39.80	1.32	52.43	98.28	0.97	0.379	1.059	n.a.	n.a.	n.a.	0.00	0.00
9.840	42.900	1.300	1230.0	1230.0	52.421	3.074	2.45		Unsaturated	28.6			40.55	1.31	53.17	99.42	0.97	0.379	1.057	n.a.	n.a.	n.a.	0.00	0.00
10.010	42.900	1.300	1251.3	1251.3	51.861	3.075	2.45		Unsaturated	28.7			40.55	1.30	52.75	98.80	0.97	0.379	1.055	n.a.	n.a.	n.a.	0.00	0.00
10.170	44.300	1.300	1271.3	1271.3	53.246	2.977	2.43		Unsaturated	28.2			41.87	1.29	53.95	100.28	0.97	0.378	1.054	n.a.	n.a.	n.a.	0.00	0.00
10.340	45.000	1.400	1292.5	1292.5	53.640	3.158	2.45		Unsaturated	28.7			42.53	1.28	54.31	100.96	0.97	0.378	1.053	n.a.	n.a.	n.a.	0.00	0.00
10.500	45.800	1.500	1312.5	1312.5	54.178	3.323	2.46		Unsaturated	28.1			43.29	1.27	54.81	101.79	0.97	0.378	1.051	n.a.	n.a.	n.a.	0.00	0.00
10.660	45.800	1.500	1332.5	1332.5	53.758	3.323	2.48		Unsaturated	29.1			43.29	1.26	54.43	101.31	0.97	0.377	1.050	n.a.	n.a.	n.a.	0.00	0.00
10.830	47.700	1.400	1353.8	1353.8	55.567	2.977	2.42		Unsaturated	27.8			45.09	1.25	56.15	103.02	0.97	0.377	1.049	n.a.	n.a.	n.a.	0.00	0.00
10.990	45.600	1.100	1373.8	1373.8	52.886	2.449	2.38		Unsaturated	29.8			43.10	1.24	53.51	98.89	0.97	0.377	1.046	n.a.	n.a.	n.a.	0.00	0.00
11.160	41.400	0.900	1395.0	1395.0	47.381	2.211	2.38		Unsaturated	26.7			39.13	1.24	48.51	92.31	0.97	0.377	1.042	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.60

Total Settlement:	0.76	(inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	Ic	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	QcN near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	$q_{c\,IN}$	$q_{c\,IN\text{-}CS}$	Strass Reduction Coeff, rd	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc\ =\ 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (inches)
11.320	37.500	0.800	1415.0	1415.0	42.529	2.174	2.41		Unsaturated	27.8			35.44	1.24	43.89	86.90	0.96	0.378	1.039	n.a.	n.a.	n.a.	0.00	0.00
11.480	38.100	1.100	1435.0	1435.0	42.908	2.943	2.50		Unsaturated	30.2			36.01	1.23	44.17	98.00	0.96	0.376	1.038	n.a.	n.a.	n.a.	0.00	0.00
11.650	48.400	1.500	1456.3	1456.3	52.038	3.284	2.47		Unsaturated	29.3			43.88	1.21	52.88	99.29	0.96	0.376	1.040	n.a.	n.a.	n.a.	0.00	0.00
11.810	50.400	1.800	1476.3	1476.3	56.197	3.625	2.47		Unsaturated	29.5			47.64	1.19	58.79	104.61	0.96	0.375	1.040	n.a.	n.a.	n.a.	0.00	0.00
11.980	51.600	1.900	1497.5	1497.5	57.133	3.736	2.48		Unsaturated	29.7			48.77	1.18	57.68	105.86	0.96	0.375	1.038	n.a.	n.a.	n.a.	0.00	0.00
12.140	56.700	2.000	1517.5	1517.5	62.437	3.575	2.44		Unsaturated	28.4			53.59	1.17	62.71	112.04	0.96	0.375	1.039	n.a.	n.a.	n.a.	0.00	0.00
12.300	64.800	2.000	1537.5	1537.5	71.000	3.123	2.38		Unsaturated	28.0			61.25	1.16	70.80	121.42	0.96	0.375	1.040	n.a.	n.a.	n.a.	0.00	0.00
12.470	72.700	1.900	1558.8	1558.8	79.202	2.642	2.27		Unsaturated	23.7			68.71	1.14	78.57	129.64	0.96	0.374	1.041	n.a.	n.a.	n.a.	0.00	0.00
12.630	87.000	1.500	1578.8	1578.8	94.336	1.740	2.09		Unsaturated	19.0			82.23	1.13	92.94	141.21	0.96	0.374	1.043	n.a.	n.a.	n.a.	0.00	0.00
12.800	125.600	1.000	1800.0	1800.0	135.852	0.801	1.75		Unsaturated	11.9			118.71	1.11	132.27	180.24	0.96	0.374	1.049	n.a.	n.a.	n.a.	0.00	0.00
12.960	192.300	1.200	1620.0	1620.0	206.852	0.627	1.54		Unsaturated	8.8			181.78	1.09	197.93	207.88	0.96	0.373	1.077	n.a.	n.a.	n.a.	0.00	0.00
13.120	236.300	1.200	1640.0	1640.0	252.816	0.510	1.41		Unsaturated	8.9			223.35	1.07	239.70	242.09	0.96	0.373	1.076	n.a.	n.a.	n.a.	0.00	0.00
13.290	269.800	0.800	1661.3	1661.3	288.704	0.223	1.16		Unsaturated	4.1			254.82	1.07	271.82	271.82	0.96	0.373	1.073	n.a.	n.a.	n.a.	0.00	0.00
13.450	271.300	2.400	1681.3	1681.3	286.788	0.887	1.55		Unsaturated	8.7			256.43	1.06	272.47	285.91	0.96	0.372	1.069	n.a.	n.a.	n.a.	0.00	0.00
13.620	283.800	2.800	1702.5	1702.5	298.151	0.990	1.57		Unsaturated	9.1			269.24	1.06	284.08	301.32	0.95	0.372	1.065	n.a.	n.a.	n.a.	0.00	0.00
13.790	188.400	2.200	1722.5	1722.5	194.369	1.196	1.75		Unsaturated	12.0			176.18	1.06	187.40	223.13	0.95	0.372	1.062	n.a.	n.a.	n.a.	0.00	0.00
13.940	153.800	1.800	1742.5	1742.5	159.285	1.177	1.81		Unsaturated	13.1			145.37	1.07	155.23	193.62	0.95	0.372	1.047	n.a.	n.a.	n.a.	0.00	0.00
14.110	191.300	1.700	1763.8	1763.8	197.134	0.893	1.88		Unsaturated	10.4			180.81	1.06	191.33	214.77	0.95	0.371	1.055	n.a.	n.a.	n.a.	0.00	0.00
14.270	206.100	1.300	1783.9	1783.9	211.251	0.634	1.53		Unsaturated	9.5			194.80	1.05	205.39	215.24	0.95	0.371	1.051	n.a.	n.a.	n.a.	0.00	0.00
14.440	220.000	1.500	1805.0	1805.0	224.218	0.685	1.54		Unsaturated	8.6			207.94	1.05	217.87	228.51	0.95	0.371	1.048	n.a.	n.a.	n.a.	0.00	0.00
14.600	237.500	1.800	1825.0	1825.0	240.787	0.761	1.55		Unsaturated	8.7			224.46	1.04	233.73	245.99	0.95	0.370	1.044	n.a.	n.a.	n.a.	0.00	0.00
14.760	255.000	1.900	1845.0	1845.0	257.182	0.748	1.52		Unsaturated	8.4			241.02	1.04	249.89	260.02	0.95	0.370	1.041	n.a.	n.a.	n.a.	0.00	0.00
14.930	277.500	1.600	1868.3	1868.3	278.348	0.579	1.42		Unsaturated	7.0			262.29	1.03	271.12	274.02	0.95	0.370	1.038	n.a.	n.a.	n.a.	0.00	0.00
15.090	290.600	2.000	1888.3	1888.3	299.872	0.690	1.46		Unsaturated	7.5			274.67	1.03	283.13	288.83	0.95	0.369	1.034	n.a.	n.a.	n.a.	0.00	0.00
15.280	248.100	1.600	1907.5	1907.5	246.033	0.647	1.49		Unsaturated	7.9			234.50	1.03	241.17	248.28	0.95	0.369	1.031	n.a.	n.a.	n.a.	0.00	0.00
15.420	197.600	1.400	1927.5	1927.5	194.733	0.712	1.59		Unsaturated	9.4			186.77	1.03	192.41	208.01	0.95	0.369	1.027	n.a.	n.a.	n.a.	0.00	0.00
15.580	221.100	1.200	1947.5	1947.5	218.873	0.545	1.48		Unsaturated	7.8			208.98	1.03	214.31	220.18	0.94	0.368	1.025	n.a.	n.a.	n.a.	0.00	0.00
15.750	259.000	1.000	1968.8	1968.8	252.827	0.388	1.34		Unsaturated	6.0			244.80	1.02	249.58	250.14	0.94	0.368	1.022	n.a.	n.a.	n.a.	0.00	0.00
15.910	249.400	1.500	1988.8	1988.8	242.183	0.804	1.48		Unsaturated	7.7			235.73	1.02	239.76	245.83	0.94	0.368	1.019	n.a.	n.a.	n.a.	0.00	0.00
16.080	203.900	2.300	2010.0	2010.0	198.764	1.134	1.73		Unsaturated	11.7			192.72	1.02	195.63	229.90	0.94	0.368	1.015	n.a.	n.a.	n.a.	0.00	0.00
16.240	173.100	1.900	2030.0	2030.0	166.061	1.104	1.78		Unsaturated	12.5			163.61	1.01	165.85	201.86	0.94	0.367	1.011	n.a.	n.a.	n.a.	0.00	0.00
16.400	197.800	2.800	2050.0	2050.0	188.959	1.423	1.82		Unsaturated	13.3			186.96	1.01	188.67	233.72	0.94	0.367	1.010	n.a.	n.a.	n.a.	0.00	0.00
16.570	242.400	2.500	2071.3	2071.3	230.584	1.036	1.86		Unsaturated	10.4			229.11	1.01	230.41	257.15	0.94	0.367	1.006	n.a.	n.a.	n.a.	0.00	0.00
16.730	267.600	2.100	2091.3	2091.3	253.428	0.788	1.54		Unsaturated	8.7			252.93	1.00	253.72	286.21	0.94	0.366	1.004	n.a.	n.a.	n.a.	0.00	0.00
16.900	245.800	2.200	2112.5	2112.5	231.329	0.900	1.91		Unsaturated	9.7			232.14	1.00	232.24	252.47	0.94	0.366	1.000	n.a.	n.a.	n.a.	0.00	0.00
17.060	209.600	1.700	2132.5	2132.5	198.338	0.815	1.83		Unsaturated	10.0			198.11	1.00	197.84	218.15	0.94	0.366	0.998	n.a.	n.a.	n.a.	0.00	0.00
17.230	187.800	1.700	2153.8	2153.8	174.933	0.910	1.70		Unsaturated	11.2			177.50	0.99	176.49	204.19	0.94	0.365	0.995	n.a.	n.a.	n.a.	0.00	0.00
17.390	185.400	1.800	2173.8	2173.8	171.879	0.868	1.89		Unsaturated	11.0			175.24	0.99	173.69	199.97	0.94	0.365	0.993	n.a.	n.a.	n.a.	0.00	0.00
17.550	229.400	1.900	2193.8	2193.8	211.929	0.832	1.82		Unsaturated	9.7			218.82	0.99	214.59	233.99	0.93	0.365	0.989	n.a.	n.a.	n.a.	0.00	0.00
17.720	261.500	2.900	2215.0	2215.0	240.555	1.114	1.67		Unsaturated	10.6			247.18	0.99	244.20	273.93	0.93	0.364	0.986	n.a.	n.a.	n.a.	0.00	0.00
17.880	264.900	2.500	2235.0	2235.0	242.594	0.948	1.62		Unsaturated	9.7			250.38	0.99	246.79	268.32	0.93	0.364	0.984	n.a.	n.a.	n.a.	0.00	0.00
18.050	312.100	2.300	2256.3	2256.3	284.642	0.740	1.49		Unsaturated	7.9			294.99	0.98	290.04	297.90	0.93	0.364	0.981	n.a.	n.a.	n.a.	0.00	0.00
18.210	292.800	3.500	2276.3	2276.3	265.792	1.200	1.87		Unsaturated	10.8			278.75	0.98	271.47	303.18	0.93	0.363	0.978	n.a.	n.a.	n.a.	0.00	0.00
18.370	241.400	3.000	2296.3	2296.3	217.988	1.249	1.74		Unsaturated	11.7			228.17	0.98	223.30	261.20	0.93	0.363	0.975	n.a.	n.a.	n.a.	0.00	0.00
18.540	220.000	4.300	2317.5	2317.5	197.848	1.985	1.92		Unsaturated	15.2			207.94	0.98	203.01	283.03	0.93	0.363	0.973	n.a.	n.a.	n.a.	0.00	0.00
18.700	217.200	2.400	2337.5	2337.5	194.273	1.111	1.73		Unsaturated	11.7			205.29	0.97	199.51	233.86	0.93	0.362	0.970	n.a.	n.a.	n.a.	0.00	0.00
18.870	275.100	2.200	2358.8	2358.8	245.220	0.803	1.56		Unsaturated	8.0			260.02	0.97	252.67	267.02	0.93	0.362	0.967	n.a.	n.a.	n.a.	0.00	0.00
19.030	338.600	1.800	2378.8	2378.8	300.785	0.533	1.37		Unsaturated	6.4			320.04	0.97	310.31	311.65	0.93	0.362	0.965	n.a.	n.a.	n.a.	0.00	0.00
19.190	330.000	2.500	2398.8	2398.8	291.865	0.760	1.49		Unsaturated	7.9			311.91	0.97	301.76	310.00	0.93	0.361	0.962	n.a.	n.a.	n.a.	0.00	0.00
19.360	282.100	1.700	2420.0	2420.0	248.257	0.605	1.47		Unsaturated	7.6			266.64	0.97	257.38	283.02	0.93	0.361	0.960	n.a.	n.a.	n.a.	0.00	0.00
19.520	244.400	2.100	2440.0	2440.0	214.045	0.964	1.62		Unsaturated	9.9			231.00	0.96	222.09	243.11	0.92	0.361	0.957	n.a.	n.a.	n.a.	0.00	0.00
19.690	299.800	1.700	2461.3	2481.3	281.488	0.570	1.44		Unsaturated	7.2			283.16	0.96	272.11	275.79	0.92	0.360	0.955	n.a.	n.a.	n.a.	0.00	0.00
19.850	374.100	3.900	2481.3	2481.3	325.448	1.048	1.57		Unsaturated	9.0			353.59	0.96	339.04	358.07	0.92	0.360	0.952	n.a.	n.a.	n.a.	0.00	0.00
20.010	394.900	3.000	2501.3	2501.3	342.218	0.782	1.45		Sand	7.3			373.25	0.96	357.14	362.43	0.92	0.360	0.950	2.000	2.284	6.35	0.00	0.00
20.180	410.000	4.000	2522.5	2522.5	353.836	0.979	1.52		Sand	8.3			387.52	0.95	369.97	383.47	0.92	0.361	0.947	2.000	2.278	6.31	0.00	0.00
20.340	394.800	2.200	2542.5	2542.5	339.327	0.559	1.35		Sand	6.1			373.16	0.95	355.51	356.43	0.92	0.362	0.945	2.000	2.273	6.28	0.00	0.00
20.510	353.600	5.700	2563.8	2563.8	302.531	1.818	1.74		Sand	11.8			334.22	0.95	317.71	367.57	0.92	0.363	0.942	2.000	2.267	6.24	0.00	0.00
20.670	324.600	4.200	2583.8	2583.8	276.544	1.299	1.86		Sand	10.9			306.81	0.95	291.06	327.50	0.92	0.364	0.940	2.000	2.261	6.21	0.00	0.00
20.830	228.400	4.000	2603.8	2603.8	191.798	1.777	1.89		Sand	14.6			213.99	0.95	202.59	259.27	0.92	0.365	0.938	2.000	2.255	6.18	0.00	0.00
21.000	204.800	2.200	2825.0	2825.0	172.861	1.081	1.78		Sand	12.1			193.57	0.94	181.15	218.91	0.92	0.366	0.935	2.000	2.250	6.14	0.00	0.00
21.180	222.700	2.200	2645.0	2845.0	187.151	0.994	1.71		Sand	11.3			210.49	0.94	197.12	227.82	0.92	0.367	0.933	2.000	2.244	6.11	0.00	0.00
21.330	282.200	2.500	2666.3	2666.3	219.855	0.958	1.85		Sand	10.3			247.83	0.94	233.16	258.55	0.92	0.368	0.931	2.000	2.238	6.08	0.00	0.00
21.490	269.800	2.800	2686.3	2686.3	225.203	1.043	1.87		Sand	10.8			255.01	0.94	239.45	268.37	0.91	0.369	0.929	2.000	2.233	6.05	0.00	0.00
21.650	267.300	2.400	2706.3	2706.3	222.271	0.902	1.83		Sand	9.9			252.85	0.94	236.77	259.12	0.91	0.370	0.926	2.000	2.228	6.01	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.60

Total Settlement:	0.76	(Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	CRR$_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
21.820	263.200	2.400	2727.5	2727.5	217.981	0.917	1.64		Sand	10.1			248.77	0.94	232.66	256.27	0.91	0.371	0.924	2.000	2.222	5.98	0.00	0.00
21.990	278.400	2.300	2747.5	2747.5	228.127	0.938	1.59		Sand	9.4			261.25	0.93	243.95	262.22	0.91	0.372	0.922	2.000	2.217	5.95	0.00	0.00
22.150	279.400	2.400	2768.8	2768.8	229.720	0.863	1.60		Sand	9.5			264.08	0.93	248.00	265.56	0.91	0.373	0.919	2.000	2.211	5.92	0.00	0.00
22.310	266.500	2.300	2788.8	2788.8	218.266	0.868	1.62		Sand	9.8			251.89	0.93	234.20	255.40	0.91	0.374	0.917	2.000	2.206	5.89	0.00	0.00
22.470	249.900	2.200	2809.8	2808.8	203.861	0.885	1.65		Sand	10.2			236.20	0.92	218.37	242.26	0.91	0.375	0.915	2.000	2.201	5.87	0.00	0.00
22.840	236.800	2.200	2830.0	2830.0	192.379	0.935	1.68		Sand	10.8			223.82	0.92	205.86	233.59	0.91	0.378	0.913	2.000	2.195	5.84	0.00	0.00
22.800	255.100	2.900	2850.0	2850.0	206.599	1.143	1.72		Sand	11.5			241.12	0.92	222.90	258.88	0.91	0.377	0.911	2.000	2.190	5.81	0.00	0.00
22.970	263.700	2.800	2871.3	2871.3	212.802	1.068	1.69		Sand	11.0			249.24	0.92	229.96	261.74	0.91	0.378	0.908	2.000	2.185	5.78	0.00	0.00
23.130	281.000	4.100	2891.3	2891.3	226.045	1.467	1.78		Sand	12.5			265.60	0.92	244.60	292.34	0.91	0.379	0.906	2.000	2.180	5.75	0.00	0.00
23.300	312.900	3.900	2912.5	2912.5	250.910	1.252	1.70		Sand	11.1			295.75	0.92	271.84	308.84	0.90	0.380	0.904	2.000	2.175	5.73	0.00	0.00
23.480	281.500	2.800	2932.5	2932.5	224.835	1.000	1.65		Sand	10.4			266.07	0.92	244.12	271.40	0.90	0.381	0.902	2.000	2.170	5.70	0.00	0.00
23.820	200.000	1.900	2952.5	2952.5	159.851	0.957	1.75		Sand	11.9			189.04	0.90	189.56	202.33	0.90	0.381	0.910	1.270	1.390	3.64	0.00	0.00
23.790	153.900	2.000	2973.8	2973.8	121.518	1.312	1.93		Sand	15.4			145.46	0.88	128.43	173.94	0.90	0.382	0.932	0.451	0.505	1.32	0.00	0.00
23.950	127.800	2.500	2993.9	2993.8	100.364	1.979	2.11		Sand	19.5			120.79	0.87	105.51	158.25	0.90	0.383	0.940	0.315	0.356	0.93	0.01	0.02
24.120	119.000	3.000	3015.0	3015.0	93.033	2.553	2.21		Sand	22.1			112.46	0.87	97.88	152.67	0.90	0.384	0.942	0.284	0.322	0.84	0.01	0.02
24.280	130.900	3.100	3035.0	3035.0	102.110	2.396	2.17		Sand	20.9			123.72	0.87	107.83	193.89	0.90	0.385	0.935	0.354	0.398	1.03	0.01	0.01
24.440	179.100	3.500	3055.0	3055.0	139.693	1.971	2.01		Sand	17.2			189.28	0.89	150.81	208.59	0.90	0.385	0.893	1.753	1.883	4.88	0.00	0.00
24.610	196.300	3.300	3078.3	3079.3	152.874	1.894	1.94		Sand	15.8			185.54	0.89	165.62	220.19	0.90	0.386	0.889	2.000	2.135	5.53	0.00	0.00
24.770	291.700	3.100	3096.3	3096.3	203.274	1.192	1.74		Sand	11.8			247.35	0.90	223.72	262.41	0.90	0.387	0.886	2.000	2.130	5.51	0.00	0.00
24.940	364.700	4.300	3117.5	3117.5	282.777	1.184	1.85		Sand	10.2			344.71	0.90	311.21	342.43	0.90	0.388	0.884	2.000	2.125	5.48	0.00	0.00
25.100	345.900	4.800	3137.5	3137.5	267.274	1.394	1.72		Sand	11.4			326.94	0.90	294.87	337.74	0.89	0.388	0.882	2.000	2.121	5.46	0.00	0.00
25.260	406.100	5.500	3157.5	3157.5	312.998	1.360	1.67		Sand	10.8			383.84	0.90	345.37	383.85	0.89	0.389	0.880	2.000	2.116	5.44	0.00	0.00
25.430	397.900	4.700	3178.8	3178.8	305.619	1.186	1.83		Sand	9.9			378.09	0.90	337.80	367.22	0.89	0.390	0.878	2.000	2.111	5.41	0.00	0.00
25.590	358.500	3.900	3198.8	3198.8	274.385	1.093	1.83		Sand	9.9			338.85	0.90	303.85	331.12	0.89	0.391	0.876	2.000	2.107	5.39	0.00	0.00
25.760	357.100	3.400	3220.0	3220.0	272.378	0.956	1.59		Sand	9.3			337.52	0.90	302.13	322.32	0.89	0.391	0.874	2.000	2.102	5.37	0.00	0.00
25.920	354.000	2.800	3240.0	3240.0	269.160	0.795	1.53		Sand	8.4			334.59	0.89	299.02	311.28	0.89	0.392	0.872	2.000	2.098	5.35	0.00	0.00
26.080	329.500	3.000	3260.0	3260.0	249.869	0.915	1.60		Sand	9.4			311.44	0.89	277.88	298.37	0.89	0.393	0.870	2.000	2.093	5.33	0.00	0.00
26.250	287.900	2.200	3281.3	3281.3	217.278	0.769	1.58		Sand	9.2			272.12	0.89	242.38	259.20	0.89	0.393	0.868	2.000	2.089	5.31	0.00	0.00
26.410	272.700	3.000	3301.3	3301.3	205.107	1.107	1.71		Sand	11.4			257.75	0.89	229.21	264.42	0.89	0.394	0.867	2.000	2.084	5.29	0.00	0.00
26.580	351.300	2.900	3322.5	3322.5	263.730	0.744	1.51		Sand	8.2			332.04	0.89	294.78	305.21	0.89	0.395	0.865	2.000	2.079	5.27	0.00	0.00
26.740	381.500	5.500	3342.5	3342.5	270.803	1.529	1.75		Sand	11.9			341.88	0.89	302.86	352.47	0.88	0.395	0.863	2.000	2.075	5.25	0.00	0.00
26.900	362.400	5.300	3362.5	3362.5	270.464	1.489	1.73		Sand	11.7			342.53	0.88	303.13	350.12	0.88	0.396	0.861	2.000	2.071	5.23	0.00	0.00
27.070	389.000	4.200	3383.8	3383.8	289.487	1.084	1.81		Sand	9.7			367.67	0.88	324.84	350.47	0.88	0.397	0.859	2.000	2.068	5.21	0.00	0.00
27.230	403.000	3.300	3403.8	3403.8	299.061	0.822	1.51		Sand	8.2			380.91	0.88	336.01	347.01	0.88	0.397	0.857	2.000	2.062	5.19	0.00	0.00
27.400	380.400	2.600	3425.0	3425.0	281.334	0.687	1.47		Sand	7.8			359.55	0.88	318.85	323.25	0.88	0.398	0.856	2.000	2.058	5.17	0.00	0.00
27.560	362.500	3.400	3445.0	3445.0	267.250	0.942	1.59		Sand	9.3			342.63	0.88	301.29	321.51	0.88	0.399	0.854	2.000	2.053	5.15	0.00	0.00
27.720	380.500	3.800	3465.0	3465.0	279.765	0.950	1.58		Sand	9.1			359.84	0.88	315.76	335.14	0.88	0.399	0.852	2.000	2.049	5.14	0.00	0.00
27.890	389.500	2.400	3486.3	3486.3	285.530	0.619	1.43		Sand	7.1			368.15	0.88	322.71	326.74	0.88	0.400	0.850	2.000	2.045	5.12	0.00	0.00
28.050	389.200	5.800	3506.3	3506.3	269.802	1.578	1.78		Sand	12.1			348.98	0.88	305.43	357.73	0.88	0.400	0.848	2.000	2.041	5.10	0.00	0.00
28.220	397.800	5.800	3527.5	3527.5	289.917	1.414	1.70		Sand	11.1			375.99	0.87	328.57	372.12	0.88	0.401	0.847	2.000	2.036	5.08	0.00	0.00
28.380	369.500	4.800	3547.5	3547.5	268.433	1.305	1.69		Sand	11.0			349.24	0.87	304.74	344.34	0.88	0.401	0.845	2.000	2.032	5.06	0.00	0.00
28.540	360.800	3.300	3567.5	3567.5	261.193	0.920	1.58		Sand	9.3			340.83	0.87	296.96	316.75	0.87	0.402	0.843	2.000	2.028	5.05	0.00	0.00
28.710	318.000	2.900	3588.8	3588.8	229.493	0.917	1.62		Sand	9.9			300.57	0.87	261.48	284.83	0.87	0.402	0.842	2.000	2.024	5.03	0.00	0.00
28.870	270.300	2.400	3608.8	3608.8	194.326	0.894	1.66		Sand	10.5			255.48	0.87	221.09	247.75	0.87	0.403	0.840	2.000	2.020	5.01	0.00	0.00
29.040	222.600	3.800	3630.0	3630.0	159.327	1.721	1.93		Sand	15.5			210.40	0.88	180.85	237.70	0.87	0.403	0.838	2.000	2.018	5.00	0.00	0.00
29.200	183.900	4.800	3650.0	3650.0	118.638	2.992	2.20		Sand	21.7			154.91	0.83	128.71	192.28	0.87	0.404	0.869	0.819	0.956	2.12	0.00	0.00
29.360	110.500	4.800	3670.0	3670.0	77.988	4.417	2.44		Sand	28.8			104.44	0.79	82.78	136.81	0.87	0.404	0.920	0.228	0.253	0.63	0.02	0.05
29.530	90.800	3.800	3691.3	3691.3	93.658	4.272	2.49		Sand	30.0			85.82	0.77	68.39	117.61	0.87	0.405	0.932	0.175	0.196	0.48	0.03	0.05
29.690	83.700	3.500	3711.3	3711.3	58.412	4.276	2.52		Sand	30.8			79.11	0.77	60.53	110.08	0.87	0.405	0.935	0.160	0.180	0.44	0.03	0.06
29.860	85.400	3.400	3732.5	3732.5	59.448	4.070	2.49		Sand	30.2			80.72	0.78	61.88	111.38	0.87	0.406	0.934	0.182	0.182	0.45	0.03	0.06
30.020	84.900	3.500	3752.4	3751.2	58.938	4.218	2.51		Sand	30.8			80.25	0.78	61.13	110.80	0.87	0.406	0.934	0.181	0.181	0.45	0.03	0.06
30.190	86.100	3.400	3772.8	3760.9	59.704	4.037	2.49		Sand	30.0			81.38	0.78	61.99	111.74	0.88	0.407	0.933	0.183	0.183	0.45	0.03	0.05
30.350	88.100	3.400	3792.0	3770.2	61.041	3.944	2.48		Sand	29.8			83.27	0.78	63.49	113.58	0.88	0.407	0.932	0.187	0.187	0.46	0.03	0.05
30.510	90.800	3.200	3811.2	3779.4	62.728	3.608	2.44		Sand	28.5			85.83	0.78	65.38	115.61	0.88	0.408	0.930	0.171	0.191	0.47	0.03	0.06
30.680	96.300	2.800	3831.8	3789.2	66.865	2.987	2.38		Sand	26.1			91.02	0.77	69.78	120.09	0.88	0.408	0.927	0.180	0.200	0.49	0.03	0.05
30.840	128.000	2.500	3850.8	3798.4	89.646	1.987	2.14		Sand	20.3			121.93	0.79	96.10	147.78	0.88	0.409	0.908	0.262	0.286	0.70	0.02	0.04
31.010	212.700	2.800	3871.2	3808.2	148.495	1.234	1.85		Sand	13.8			201.04	0.83	187.15	211.79	0.88	0.409	0.824	2.000	1.981	4.84	0.00	0.00
31.170	286.400	2.100	3890.4	3817.4	200.171	0.738	1.80		Sand	9.5			270.70	0.85	230.89	246.89	0.88	0.409	0.823	2.000	1.979	4.83	0.00	0.00
31.330	318.900	2.700	3909.6	3826.8	222.786	0.852	1.81		Sand	9.8			301.42	0.86	257.80	278.80	0.88	0.410	0.822	2.000	1.978	4.83	0.00	0.00
31.500	319.600	3.100	3930.0	3838.4	223.106	0.975	1.85		Sand	10.3			302.27	0.85	258.36	285.89	0.88	0.410	0.821	2.000	1.976	4.82	0.00	0.00
31.660	296.000	3.200	3949.2	3845.8	206.146	1.088	1.71		Sand	11.3			279.77	0.85	238.98	274.19	0.88	0.411	0.821	2.000	1.974	4.91	0.00	0.00
31.830	380.800	3.100	3969.8	3855.4	251.111	0.864	1.58		Sand	9.1			340.83	0.85	290.94	309.18	0.88	0.411	0.820	2.000	1.972	4.80	0.00	0.00
31.990	366.000	4.500	3988.8	3864.8	254.591	1.236	1.89		Sand	10.9			345.94	0.85	295.11	332.95	0.85	0.411	0.919	2.000	1.970	4.79	0.00	0.00
32.150	331.100	2.900	4008.0	3873.8	229.892	0.881	1.81		Sand	9.6			312.95	0.85	266.90	286.52	0.85	0.412	0.819	2.000	1.969	4.78	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.60

Total Settlement:	0.76	(Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, rd	CSR	K_σ for Sand	CRRM=7.5, $\sigma'vc$ = 1 atm *	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
32.320	271.300	3.200	4028.4	3883.8	187.974	1.188	1.78		Sand	12.2			256.43	0.85	218.47	259.89	0.85	0.412	0.818	2.000	1.967	4.77	0.00	0.00
32.460	278.900	2.900	4047.6	3892.9	191.477	1.055	1.72		Sand	11.5			261.63	0.95	222.78	259.07	0.95	0.412	0.817	2.000	1.985	4.77	0.00	0.00
32.850	358.900	3.700	4068.0	3902.8	246.789	1.044	1.84		Sand	10.2			337.05	0.85	286.79	315.31	0.85	0.413	0.818	2.000	1.983	4.78	0.00	0.00
32.810	426.100	4.300	4087.2	3911.9	294.784	1.014	1.58		Sand	9.2			402.74	0.85	342.47	364.31	0.85	0.413	0.816	2.000	1.962	4.75	0.00	0.00
32.970	432.300	2.900	4106.4	3921.1	298.736	0.674	1.45		Sand	7.3			408.60	0.85	347.24	352.39	0.85	0.413	0.815	2.000	1.960	4.74	0.00	0.00
33.140	366.000	2.900	4126.8	3930.9	266.249	0.755	1.52		Sand	8.3			364.84	0.85	309.84	320.92	0.85	0.414	0.814	2.000	1.958	4.73	0.00	0.00
33.300	341.000	3.500	4146.0	3940.1	234.761	1.033	1.85		Sand	10.3			322.31	0.85	273.55	302.89	0.85	0.414	0.813	2.000	1.956	4.73	0.00	0.00
33.470	320.400	4.800	4166.4	3949.9	220.212	1.445	1.78		Sand	12.8			302.84	0.85	256.86	306.73	0.85	0.414	0.813	2.000	1.955	4.72	0.00	0.00
33.830	371.000	4.400	4185.8	3959.1	254.913	1.193	1.68		Sand	10.7			350.86	0.85	297.24	332.97	0.84	0.415	0.812	2.000	1.953	4.71	0.00	0.00
33.790	332.200	4.100	4204.8	3968.3	227.831	1.242	1.72		Sand	11.5			313.99	0.85	265.99	306.81	0.84	0.415	0.811	2.000	1.951	4.70	0.00	0.00
33.960	311.100	2.700	4225.2	3978.1	212.998	0.874	1.63		Sand	10.0			294.05	0.85	248.93	272.55	0.84	0.415	0.811	2.000	1.950	4.69	0.00	0.00
34.120	295.700	3.000	4244.4	3987.3	202.141	1.022	1.99		Sand	11.0			279.49	0.85	236.47	269.11	0.84	0.416	0.810	2.000	1.948	4.69	0.00	0.00
34.290	324.200	3.700	4264.8	3997.1	221.486	1.149	1.70		Sand	11.2			306.43	0.85	259.09	295.87	0.84	0.418	0.809	2.000	1.946	4.68	0.00	0.00
34.450	352.400	5.000	4284.0	4006.3	240.595	1.428	1.75		Sand	12.1			333.08	0.85	281.46	329.72	0.84	0.416	0.808	2.000	1.944	4.67	0.00	0.00
34.810	364.300	4.800	4303.2	4015.5	249.477	1.325	1.72		Sand	11.5			344.33	0.84	290.78	333.85	0.84	0.418	0.808	2.000	1.943	4.67	0.00	0.00
34.780	335.800	3.700	4323.6	4025.3	229.500	1.110	1.88		Sand	10.9			317.20	0.84	267.70	301.86	0.84	0.417	0.807	2.000	1.941	4.66	0.00	0.00
34.940	301.900	2.100	4342.8	4034.5	205.185	0.701	1.57		Sand	9.1			285.35	0.84	240.88	258.20	0.84	0.417	0.808	2.000	1.939	4.65	0.00	0.00
35.110	247.900	1.800	4363.2	4044.3	187.991	0.733	1.85		Sand	10.3			234.31	0.82	191.51	213.96	0.84	0.417	0.806	2.000	1.938	4.65	0.00	0.00
35.270	200.100	1.300	4382.4	4053.8	135.151	0.857	1.99		Sand	11.0			189.13	0.79	149.92	172.80	0.83	0.417	0.872	0.437	0.459	1.10	0.01	0.01
35.430	183.400	1.800	4401.8	4062.8	108.957	0.993	1.88		Sand	14.4			154.44	0.78	119.87	159.18	0.83	0.418	0.887	0.321	0.342	0.82	0.01	0.03
35.600	148.200	1.200	4422.0	4072.6	99.462	0.822	1.86		Sand	14.0			140.08	0.78	106.61	141.82	0.83	0.418	0.902	0.239	0.259	0.62	0.02	0.04
35.760	153.100	1.900	4441.2	4081.8	102.678	1.259	1.97		Sand	16.3			144.71	0.77	111.87	157.12	0.83	0.418	0.886	0.308	0.329	0.79	0.01	0.03
35.930	189.100	2.800	4461.6	4091.6	127.018	1.391	1.93		Sand	15.5			178.73	0.80	142.77	191.70	0.83	0.418	0.842	0.801	0.811	1.94	0.00	0.00
36.090	225.700	2.800	4480.8	4100.8	151.718	1.253	1.84		Sand	13.7			213.33	0.82	174.51	220.24	0.83	0.418	0.802	2.000	1.928	4.61	0.00	0.00
36.260	233.100	2.400	4501.2	4110.8	156.549	1.040	1.78		Sand	12.5			220.32	0.82	179.73	217.72	0.83	0.419	0.801	2.000	1.926	4.60	0.00	0.00
36.420	244.300	1.900	4520.4	4119.8	163.954	0.785	1.66		Sand	10.8			230.91	0.81	187.54	213.31	0.83	0.419	0.800	2.000	1.924	4.59	0.00	0.00
36.580	213.900	2.300	4539.6	4129.0	143.195	1.087	1.82		Sand	13.2			202.17	0.80	162.87	203.28	0.83	0.419	0.817	1.330	1.308	3.12	0.00	0.00
36.750	219.100	2.100	4560.0	4138.8	146.533	0.969	1.78		Sand	12.5			207.09	0.80	166.37	202.42	0.83	0.419	0.819	1.278	1.256	3.00	0.00	0.00
36.910	197.500	2.200	4579.2	4148.0	131.782	1.127	1.85		Sand	14.0			186.97	0.79	148.27	190.64	0.82	0.419	0.841	0.789	0.779	1.85	0.00	0.00
37.080	199.800	4.600	4599.9	4157.9	133.170	2.329	2.08		Sand	19.8			186.85	0.81	153.47	217.37	0.82	0.420	0.797	2.000	1.918	4.57	0.00	0.00
37.240	199.100	5.000	4618.8	4167.0	132.545	2.541	2.11		Sand	19.5			189.19	0.81	153.02	218.83	0.82	0.420	0.797	2.000	1.916	4.56	0.00	0.00
37.400	137.000	8.000	4638.0	4176.2	90.812	4.455	2.40		Sand	27.4			129.49	0.77	99.57	160.44	0.82	0.420	0.861	0.329	0.348	0.93	0.01	0.02
37.570	181.000	8.900	4658.4	4186.0	106.627	4.349	2.35		Sand	25.9			152.17	0.79	119.99	186.29	0.82	0.420	0.846	0.857	0.668	1.59	0.00	0.00
37.730	107.200	5.600	4677.6	4195.2	49.990	5.340	2.83		Clay	34.7			101.32	0.83	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.900	89.800	4.500	4699.0	4205.0	40.071	5.341	2.70		Clay	37.0			91.85	0.83	n.a.	n.a.	0.82	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	101.400	4.700	4717.2	4214.3	47.003	4.745	2.91		Clay	34.0			95.84	0.83	n.a.	n.a.	0.82	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	82.700	4.700	4736.4	4223.5	38.041	5.851	2.74		Clay	38.8			78.17	0.83	n.a.	n.a.	0.82	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	84.900	4.500	4756.8	4233.3	38.987	5.453	2.71		Clay	37.5			80.25	0.83	n.a.	n.a.	0.82	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	131.600	4.900	4778.0	4242.5	66.251	3.792	2.38		Sand	26.2			124.39	0.78	94.23	152.53	0.82	0.421	0.866	0.283	0.302	0.72	0.02	0.04
38.720	99.500	5.400	4796.4	4252.3	45.671	5.561	2.67		Clay	36.1			94.05	0.83	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	118.700	5.400	4815.6	4261.5	77.454	4.843	2.48	Plastic	Clay	29.1			112.19	0.83	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	97.800	4.800	4834.8	4270.7	44.575	4.833	2.83		Clay	34.8			92.25	0.83	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	97.000	2.900	4855.2	4280.5	30.171	4.491	2.73		Clay	38.2			83.33	0.83	n.a.	n.a.	0.81	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	51.900	2.400	4874.4	4289.7	23.061	4.652	2.84		Clay	42.3			49.05	0.83	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.540	56.800	2.300	4894.8	4299.5	25.190	4.247	2.77		Clay	39.7			53.50	0.83	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	90.900	1.900	4914.0	4308.7	27.128	3.251	2.87		Clay	36.1			57.56	0.83	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	56.800	1.700	4933.2	4317.9	25.074	3.140	2.89		Clay	38.7			53.50	0.83	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	85.600	2.000	4953.6	4327.7	28.172	3.168	2.64		Clay	35.0			82.00	0.83	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	73.000	2.400	4972.8	4336.9	32.518	3.404	2.63		Clay	34.5			99.00	0.83	n.a.	n.a.	0.81	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.360	83.200	2.800	4993.2	4346.7	27.931	4.613	2.77		Clay	39.4			59.74	0.83	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.520	53.300	2.800	5012.4	4356.0	23.322	5.512	2.88		Clay	43.6			50.38	0.83	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.680	49.500	2.900	5031.9	4365.2	21.527	5.534	2.90		Clay	44.7			46.79	0.83	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.850	47.000	2.200	5052.0	4375.0	20.331	4.947	2.89		Clay	44.1			44.42	0.83	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.010	39.000	1.600	5071.2	4384.2	19.635	4.388	2.92		Clay	45.4			36.86	0.83	n.a.	n.a.	0.80	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.180	35.600	1.200	5091.6	4394.0	15.045	3.630	2.90		Clay	44.7			33.65	0.82	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.340	38.500	1.200	5110.8	4403.2	18.327	3.338	2.85		Clay	42.7			36.39	0.82	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	40.500	1.400	5130.0	4412.4	17.195	3.891	2.86		Clay	43.1			38.28	0.82	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.970	42.000	1.500	5150.4	4422.2	17.830	3.805	2.86		Clay	42.9			39.70	0.82	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	41.500	1.600	5169.6	4431.4	17.563	4.112	2.88		Clay	44.0			39.22	0.82	n.a.	n.a.	0.80	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.000	40.300	1.500	5190.0	4441.2	19.980	3.978	2.89		Clay	44.0			38.09	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	36.100	1.400	5209.2	4450.4	15.951	3.944	2.90		Clay	44.8			38.01	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	37.400	1.500	5228.4	4459.9	15.800	4.312	2.94		Clay	46.1			35.35	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	38.300	1.800	5248.8	4469.4	15.964	4.485	2.94		Clay	46.2			36.20	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.850	37.900	1.700	5269.0	4478.9	15.749	4.821	2.96		Clay	47.2			35.82	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No.	3

PGA (A_{max})	0.60

Total Settlement:	0.76	(Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	CRR$_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
42.920	38.700	1.800	5288.4	4488.4	15.175	4.998	2.97		Clay	47.4			34.69	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	34.400	1.700	5307.6	4497.8	14.117	5.355	3.03		Clay	50.0			32.51	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.150	33.900	1.700	5329.0	4507.4	13.890	5.442	3.04		Clay	50.5			32.04	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	33.300	1.600	5347.2	4516.7	13.562	5.224	3.04		Clay	50.3			31.47	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.470	32.900	1.300	5368.4	4525.9	13.353	4.302	2.99		Clay	48.2			31.10	0.82	n.a.	n.a.	0.79	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	31.900	1.200	5386.8	4535.7	12.879	4.109	2.99		Clay	48.2			30.15	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	32.600	1.300	5406.0	4544.9	13.156	4.348	3.00		Clay	48.6			30.61	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.970	34.000	1.800	5426.4	4554.7	13.738	5.114	3.03		Clay	49.8			32.14	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.130	37.500	1.900	5445.6	4563.9	15.240	5.463	3.01		Clay	49.2			35.44	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	38.700	1.300	5464.9	4573.1	14.855	3.827	2.92		Clay	45.4			34.89	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	27.100	1.100	5485.2	4582.9	10.830	4.518	3.08		Clay	52.2			25.81	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.820	25.500	1.000	5504.4	4592.1	9.907	4.396	3.10		Clay	52.9			24.10	0.82	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.790	25.200	1.000	5524.8	4601.9	9.751	4.457	3.11		Clay	53.3			23.82	0.81	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	28.200	1.000	5544.0	4611.1	11.029	3.933	3.03		Clay	50.0			26.65	0.81	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	28.500	1.100	5563.2	4620.3	11.133	4.277	3.05		Clay	50.8			26.94	0.81	n.a.	n.a.	0.78	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	24.800	0.700	5583.6	4630.1	9.420	3.210	3.03		Clay	50.2			23.25	0.81	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	22.700	0.800	5602.8	4639.3	8.578	3.015	3.05		Clay	51.0			21.46	0.81	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.910	26.700	0.900	5623.2	4649.1	10.278	3.798	3.04		Clay	50.6			25.24	0.81	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	34.300	1.000	5642.4	4658.4	13.515	3.177	2.90		Clay	44.8			32.42	0.81	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	28.400	0.800	5661.6	4667.8	10.956	3.129	2.97		Clay	47.7			26.64	0.81	n.a.	n.a.	0.77	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	23.700	0.700	5682.0	4677.4	8.919	3.356	3.07		Clay	51.5			22.40	0.81	n.a.	n.a.	0.77	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	25.400	0.800	5701.2	4686.6	9.623	2.861	2.98		Clay	47.9			24.01	0.81	n.a.	n.a.	0.77	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.430	28.000	0.800	5721.6	4696.4	10.706	3.182	2.99		Clay	48.2			26.47	0.81	n.a.	n.a.	0.77	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	40.100	2.100	5740.8	4705.6	15.824	5.641	3.01		Clay	49.0			37.90	0.81	n.a.	n.a.	0.77	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	78.700	5.000	5760.0	4714.8	31.314	6.773	2.85		Clay	42.5			72.50	0.81	n.a.	n.a.	0.77	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	199.800	7.900	5780.4	4724.6	124.427	4.016	2.28		Sand	24.0			188.86	0.78	147.94	220.92	0.77	0.422	0.759	2.000	1.825	4.32	0.00	0.00
47.080	240.000	5.900	5799.8	4733.8	149.830	2.488	2.07		Sand	18.6			229.84	0.81	183.43	254.46	0.78	0.422	0.758	2.000	1.824	4.32	0.00	0.00
47.250	263.800	9.000	5820.0	4743.8	184.893	3.450	2.18		Sand	20.7			249.34	0.81	201.51	284.11	0.78	0.422	0.758	2.000	1.823	4.32	0.00	0.00
47.410	171.300	9.700	5839.2	4752.8	106.191	5.781	2.45		Sand	28.8			181.91	0.78	123.00	192.51	0.78	0.422	0.805	0.827	0.800	1.90	0.00	0.00
47.570	251.500	9.300	5859.4	4762.0	156.612	3.741	2.20		Sand	21.8			237.71	0.81	191.92	274.31	0.78	0.422	0.757	2.000	1.820	4.31	0.00	0.00
47.740	207.200	8.200	5878.8	4771.8	129.563	4.014	2.28		Sand	23.7			195.84	0.79	154.34	228.98	0.78	0.422	0.758	2.000	1.818	4.31	0.00	0.00
47.900	222.500	8.000	5899.0	4781.0	138.053	3.644	2.22		Sand	22.4			210.30	0.80	168.16	244.70	0.76	0.422	0.755	2.000	1.817	4.31	0.00	0.00
48.070	252.000	9.100	5919.4	4790.8	156.436	3.654	2.19		Sand	21.5			238.19	0.81	191.99	273.94	0.76	0.422	0.755	2.000	1.815	4.31	0.00	0.00
48.230	244.900	9.500	5937.9	4800.0	151.824	3.927	2.23		Sand	22.4			231.47	0.81	186.49	268.64	0.76	0.422	0.754	2.000	1.814	4.30	0.00	0.00
48.390	278.000	8.400	5956.8	4809.3	171.171	3.077	2.11		Sand	19.5			260.97	0.81	210.06	291.37	0.76	0.421	0.754	2.000	1.813	4.30	0.00	0.00
48.580	311.700	8.300	5977.2	4819.1	193.350	2.669	2.03		Sand	17.7			294.81	0.80	237.11	319.21	0.76	0.421	0.753	2.000	1.811	4.30	0.00	0.00
48.720	280.600	6.800	5996.4	4828.3	173.700	2.450	2.03		Sand	17.5			265.22	0.80	213.34	288.01	0.75	0.421	0.753	2.000	1.810	4.30	0.00	0.00
48.890	287.400	7.800	6016.8	4838.1	177.768	2.872	2.05		Sand	18.1			271.64	0.80	218.40	296.71	0.75	0.421	0.752	2.000	1.808	4.29	0.00	0.00
49.050	342.300	7.700	6036.0	4847.3	211.877	2.269	1.95		Sand	15.8			323.53	0.80	259.99	336.36	0.75	0.421	0.751	2.000	1.807	4.29	0.00	0.00
49.220	324.800	9.000	6056.4	4857.1	200.740	2.797	2.03		Sand	17.8			306.99	0.80	246.56	330.53	0.75	0.421	0.751	2.000	1.806	4.29	0.00	0.00
49.380	363.400	8.500	6075.6	4868.3	224.601	2.359	1.95		Sand	15.8			343.48	0.80	275.73	355.41	0.75	0.421	0.750	2.000	1.804	4.29	0.00	0.00
49.540	399.100	8.700	6094.8	4875.5	246.613	2.197	1.90		Sand	14.8			377.22	0.80	302.86	380.40	0.75	0.421	0.750	2.000	1.803	4.28	0.00	0.00
49.710	390.800	7.400	6115.2	4885.3	241.196	1.908	1.85		Sand	13.9			369.38	0.80	296.21	365.03	0.75	0.421	0.749	2.000	1.801	4.28	0.00	0.00
49.870	406.400	6.900	6134.4	4894.5	250.858	1.711	1.81		Sand	13.0			384.12	0.80	307.88	389.72	0.75	0.421	0.748	2.000	1.800	4.28	0.00	0.00