Unstable Area Demonstration

Byproduct Storage Area B

St. Johns River Power Park

Submitted to:

JEA
21 West Church Street
Jacksonville, FL 32202

Submitted by:

Golder Associates Inc.
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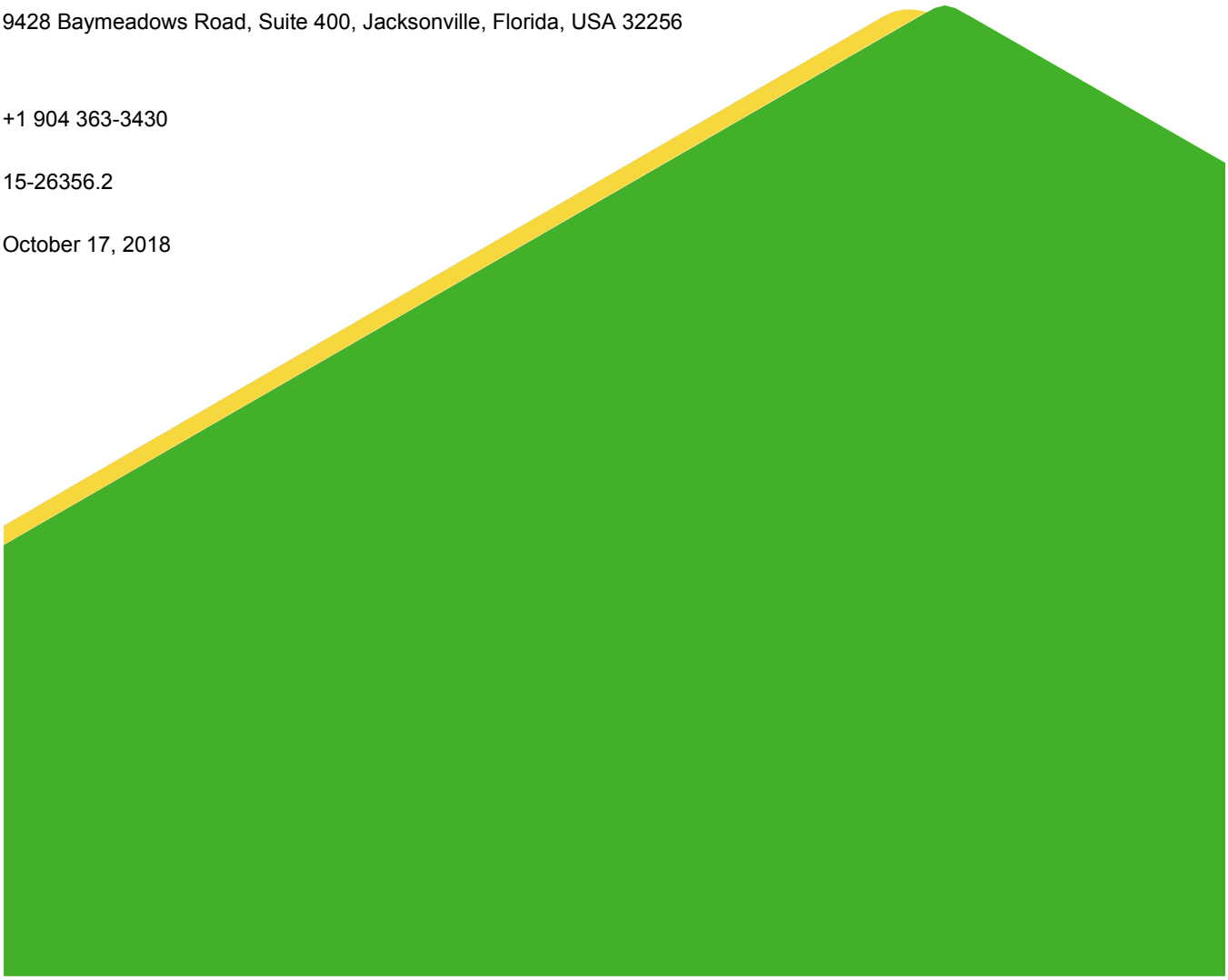
15-26356.2

October 17, 2018



Distribution List

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1 Copy - Golder Associates Inc.

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FIGURES

APPENDICES

1.0 CERTIFICATION

I, William Randall Sullivan, being a registered Professional Engineer in the state of Florida, do hereby certify that the information contained within this Unstable Areas Demonstration Report was prepared by me or under my direct supervision and meets the requirements of Section §257.64 of the Federal Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities; Final Rule (40 CFR 257; the *CCR rule*).

As used herein, the words "certification" and/or "certify" shall mean an expression of the Engineer's professional opinion to the best of his or her information, knowledge, and belief, and does not constitute a warranty or guarantee by the Engineer.

W.R. Sullivan

William Randall Sullivan
Florida Professional Engineer No. 31877
Certificate of Authorization No. 1670

Oct. 16, 2018
Date

2.0 INTRODUCTION

This Unstable Area Demonstration was prepared for the Byproduct Storage Area B (BSA-B or Area B) at the St. Johns River Power Park (SJRPP) in Jacksonville, Florida in accordance with the requirements of the Coal Combustion Residual (CCR) Rule[1]. This Unstable Area Demonstration report documents that the facility is not located in an unstable area as required in §257.64. The report is included in the facility's operating records in accordance with §257.105(e).

2.1 Site Background

The Phase I development of BSA-B consists of an approximate 35-acre storage/disposal facility footprint located approximately 1.5 miles northeast of the SJRPP main entrance, north of Island Drive, and southwest of Clapboard Creek. A Site Location Map is included in Figure 1.

BSA-B was designed as an above-grade, unlined byproduct storage area. Base grades for BSA-B were designed to provide separation between the base of the BSA and the seasonal high groundwater table, including the settlement of foundation soils.

The construction of Phase I commenced in June 2008 and was completed in January 2009. SJRPP began operations of BSA-B (originally designated as Area III/IV in the Site Certification Application (SCA)) in January 2009 in accordance with the Conditions of Certification of SJRPP Units 1 and 2.

SJRPP in the process of decommissioning and BSA-B will be closed with a peak height of less than 80 feet above grade.

[1] 40 Code of Federal Regulations (CRF) Part 257, Subtitle D

3.0 UNSTABLE AREA EVALUATION

3.1 Regulatory Requirement

The Coal Combustion Residual (CCR) rule requires that owners/operators of existing CCR landfills must make a demonstration that the existing CCR landfill is not located in an "unstable area" unless "recognized and generally accepted good engineering practices" have been implemented/incorporated to protect the structural integrity of the unit. The rule states, "unstable area means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity, including structural components of some or all of the CCR unit that are responsible for preventing releases from such unit. Unstable areas can include poor foundation conditions, areas susceptible to mass movements, and Karst terrains." The demonstration must consider soil conditions conducive to significant differential settlement, geologic or geomorphologic features, and on-site or local human made features (§257.64(b)).

The CCR rule defines Karst Terrain as "an area where Karst topography, with its characteristic erosional surface and subterranean dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in Karst terrain include, but are not limited to, dolines, collapse shafts (sinkholes), sinking streams, caves, seeps, large springs, and blind valleys." CCR landfills that demonstrate compliance may continue to receive CCR and remain open. Those that do not must close.

3.2 Demonstration

Assessment of unstable areas includes an evaluation of the soil conditions at the site, which may result in significant differential settling, a review of site geologic or geomorphologic features, and consideration of human-made features on site that may cause unstable conditions. A summary of the unstable area evaluation is presented in this document.

3.2.1 Soil Conditions

A geotechnical investigation was performed by Golder for the development of the SJRPP BSA-B site (Golder, 2007). The investigation included a comprehensive review of available literature concerning the geology and hydrogeology in the area of the site and field investigations which included soil borings with standard penetration testing (SPT) and cone penetrometer testing (CPT) to provide supplemental information relative to the strength characteristics of the soils. 16 SPT borings were conducted across the site to depths ranging from 50 to 120 feet below the ground surface (bgs). Samples collected from the SPT borings were subjected to laboratory testing including grain size distribution, carbonate content, and moisture content. 13 CPT soundings were completed across the site.

Based on the results of the geotechnical investigation and laboratory testing of soils encountered, the subsurface conditions at BSA-B are expected to adequately support the landfill without significant differential settlement or stability issues. Near surface soils consisted of loose to very dense fine sand with some clayey silt. The thickness of this layer ranged from 34 feet to 72 feet. Dense to very dense fine to coarse sand or very stiff clay was then encountered with a thickness ranging from 25 feet to 40 feet. Underlying the upper layers was the Hawthorn Formation, which consisted of dense medium to fine sand with varying amounts of silt and clay.

3.2.2 Differential Settlement

Significant differential settlement is not anticipated to occur at the BSA-B. Calculations prepared by Golder during the permitting process (Appendix A) predicted maximum subgrade settlement on the order of 17 inches for a maximum height of 100 feet. Assuming no settlement at the perimeter of BSA-B, the maximum differential settlement would be on the order of 17 inches. The actual final built-out height of BSA-B is approximately 80 feet.

Additionally, BSA-B is an unlined facility. Therefore, there are no geosynthetic components to undergo strain as a result of differential settlement. Additionally, settlements will occur quickly (within a few weeks) of placement of the load so further settlements after closure are expected to be minimal.

3.2.3 Stability

Stability analyses were also performed by Golder during the permitting process (refer to Appendix A). Both circular and block surface failures were analyzed at selected critical cross-sections of BSA-B. These analyses assumed a maximum height of stored byproducts of 100 feet and incorporated the soil stratigraphy and strength parameters based on the results of SPT borings, laboratory testing, and empirical correlations. The resulting factors of safety were determined to be 1.9 under static load conditions and 1.6 under seismic load conditions. A horizontal seismic coefficient of 0.045 g, representing 50 percent of the peak ground acceleration, was used in the seismic stability analyses.

3.2.4 Site Geology and Geomorphology

3.2.4.1 Liquefaction

BSA-B is located on layers of competent soils as described in Section 3.2.1. Near surface soils include a layer of loose fine sand. Golder performed an assessment to determine the factor of safety against seismic-induced liquefaction of the foundation soils. The liquefaction assessment, included in Appendix B, was based on CPT data from the 2007 geotechnical investigation and an estimated peak ground acceleration using the National Center for Earthquake Engineering Research (NCEER) simplified method. Based on available resources from the United States Geological Survey, the site is located in a zone of very low seismic activity. The results of the liquefaction assessment indicated a factor of safety greater than 1.2 at all points within the foundation stratigraphy.

3.2.4.2 Sinkhole Evaluation

The site is underlain by the Ocala Group, which is susceptible to sinks, cavities, and piping in some areas. However, the vicinity of the site is characterized by thick overburden soils extending about 90 feet bgs to the Hawthorn Formation (EBASCO, 1981). The Hawthorn Formation is calcareous but is not typically a source of sinkholes. The thickness of the overburden soils and the presence of clay in the subsurface significantly reduce the risk of sinkhole occurrence. Additionally, Golder reviewed the Florida Department of Environmental Protection (FDEP) subsidence incidence database. One incident was reported within a 5-mile radius of the site, which was reported in 1984, was 2 feet long by 8 feet wide. Based on the small size of this feature, it is likely that it was the result of failed underground infrastructure rather than karst solutioning. The results of the database search are included in Appendix C.

The issue of concern defined in the EPA CCR Rule is structural integrity of the landfill in an unstable area including Karst areas. The concerns are that, as has occurred elsewhere in Florida,

- a large sinkhole could suddenly develop beneath the landfill and allow a large mass of CCR to enter the subsurface and be transported away from the landfill toward potential receptors, or
- subsidence due to subsurface erosion causes damage to the cover system of the landfill.

Several conditions that would be necessary to allow development of these conditions generally do not occur at site, namely:

- Large, open solution cavities capable of accommodating large masses of material.

  - The thickness of the overburden is too large to allow sinkholes and major subsidence to develop without large cavities.
- Lowering of groundwater to increase vertical stresses, reduce buoyant support, and cause raveling of overburden into solution features.
  - Groundwater withdrawal is not anticipated near the landfill.
- Infiltration of water to drive raveling of overburden into solution features.
  - The thick clayey sand layer below the shallow sands limits vertical groundwater flow and has low potential to erode into underlying voids.
  - The landfill is managed with positive surface drainage and is comprised of compacted ash/CCR of relatively low permeability that substantially limits infiltration. Infiltration will be further limited by the final closure cover at closure.

The physiographic conditions listed in the CCR rule for Karst Terrains, including sinkholes (aka, dolines or collapse shafts), sinking streams, caves, seeps, large springs, and blind valleys have not been observed at or near the site. Based on this, the landfill is not in an unstable or Karst Area.

3.2.4.3 Other Geologic Features

As described in the original Site Certification Application (EBASCO, 1981), a pair of normal dip-slip shear faults are postulated at and next to the site based on irregularities in the surface of the Ocala Limestone. The fault traces trend in a general north-south direction with one crossing the site. They are blanketed by 250 feet to 600 feet of deposits and do not extend to the ground surface. No evidence of faulting has been observed during subsurface investigations conducted at the site.

3.2.5 Human-Made Features

Prior to the construction of BSA-B the site was comprised of undeveloped woodlands. The geotechnical investigation completed for development of BSA-B did not encounter fill soils or other adverse geotechnical conditions that would restrict the development of the BSA. No discussion of the presence of human-made features at the site was included in Section 2.4 – Geology and Soils of the original Site Certification Application (EBASCO, 1981).

4.0 REFERENCES

EBASCO 1981. Site Certification Application, Environmental Information Document for Jacksonville Electric Authority, St. Johns River Power Park, Units 1 &2. 1985-1987. By Envirosphere Company, a division of EBASO Services Incorporated. Dated February 1981.

FDEP. 2018. Florida Subsidence Incident Reports, Florida Department of Environmental Protection – Florida Geological Survey. (https://ca.dep.state.fl.us/mapdirect/?webmap=57f0721c3c5e4b16a3a92c0c12493978)

Golder 1997. Vertical Expansion Stability Evaluation, Landfill Area 1, St. Johns River Power Park – Jacksonville, Florida. Date November 26, 1997.

Golder. 2007. Hydrogeological and Geotechnical Site Evaluation, St. Johns River Power Park Area B Byproduct Storage Area, Duval County, Florida. Dated April 19, 2007.

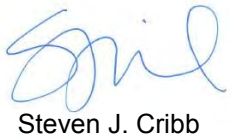
SJRPP. 2007. Technical Submittal, JEA SJRPP Byproduct Storage Area B. Dated April 19, 2007.

USGS. 1985. Sinkhole Type, Development and Distribution in Florida. Map Series 110. United States Geological Survey. (https://ca.dep.state.fl.us/mapdirect/?webmap=57f0721c3c5e4b16a3a92c0c12493978)

Signature Page

Golder Associates Inc.

Samuel F. Stafford, PE
Senior Project Engineer



Steven J. Cribb
Practice Leader and Principal

SFS/SJC/WRS

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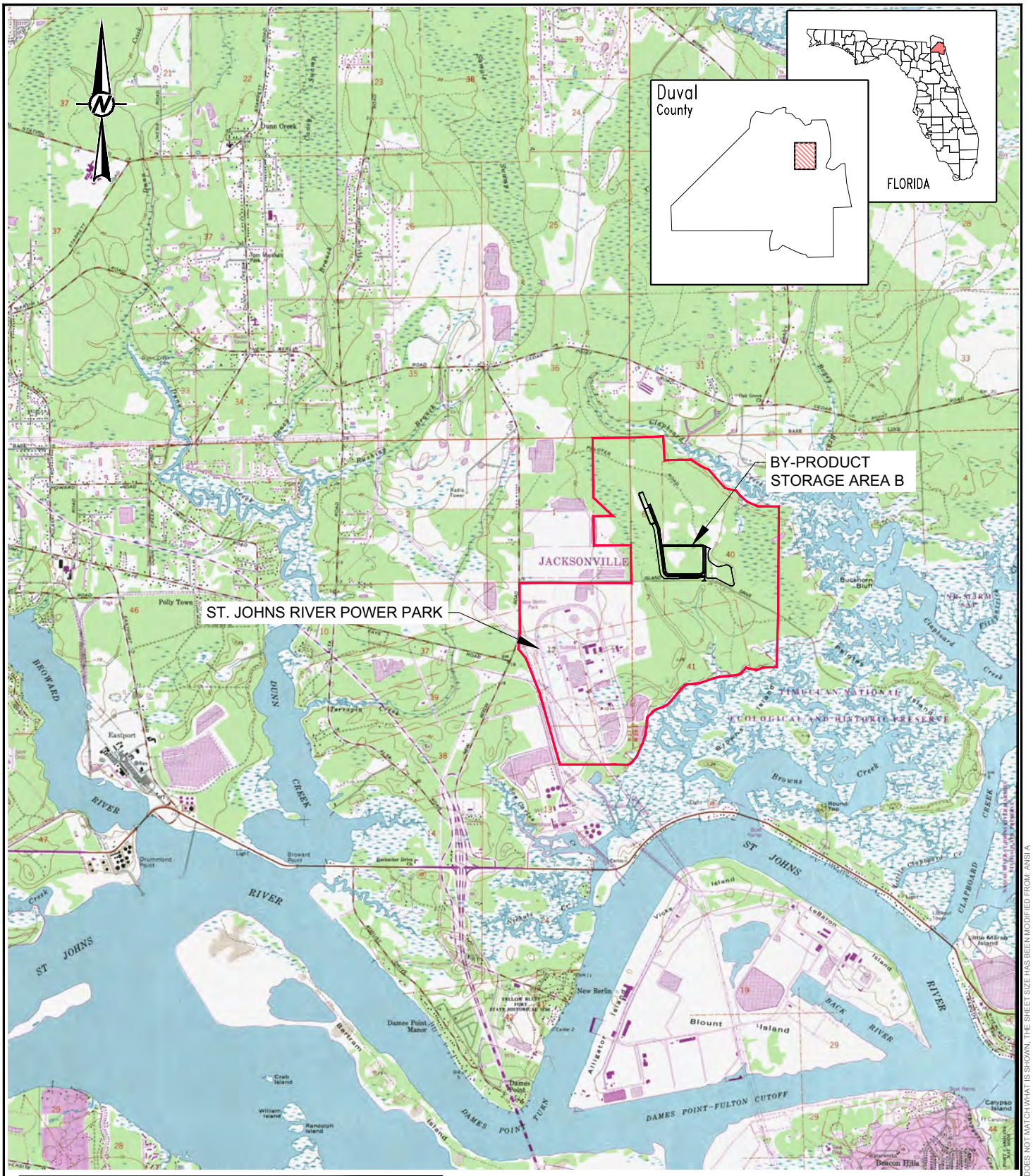
Figure



REFERENCE(S)

1.) USGS TOPOGRAPHIC MAP, 7.5 MIN. QUADRANGLE MAP SERIES: EASTPORT QUADRANGLE, DUVAL COUNTY, FLORIDA.

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SCALE FEET

CLIENT
HOPPING GREEN & SAMS

PROJECT
ST. JOHNS RIVER POWER PARK - CCR SUPPORT
JACKSONVILLE, DUVAL COUNTY, FLORIDA

CONSULTANT
GOLDER

YYYY-MM-DD	2018-01-11
DESIGNED	SFS
PREPARED	BCL
REVIEWED	SFS
APPROVED	JPO

TITLE
SITE LOCATION MAP

PROJECT NO.	Phase	REV.	FIGURE
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APPENDIX A

Geotechnical Calculations (Appendix J) from Golder's Hydrogeological and Geotechnical Site Evaluation; St. Johns River Power Park Area B By-Product Storage Area; Duval County, FL

APPENDIX J

Geotechnical Calculations

SETTLEMENT ANALYSIS FOR VERTICAL EXPANSION		
Job No. 043-2650.1	**Made by** BG	**Date** February 23, 2007
Ref.	**Chk'd** SJC	**Sheet** 1 of 5
SJRPP/Area B Hydrogeologic and Geotechnical Evaluation/FL	**Rev'd** SJC	

OBJECTIVE:

To estimate the landfill base settlement that will result from byproduct disposal.

ASSUMPTIONS:

The following assumptions were made during the calculation:

1. Disposal will occur within 5 feet of the existing ground surface (no significant cuts or fills).
2. Groundwater averages 3 feet below ground surface.
3. The facility is unlined.
4. The density of the by-products average 1.35 tons/cubic yard = 100 pcf.
5. The maximum height of the by-product disposal area will be 100 feet.
6. Top of the Hawthorn Formation is considered the base of the compressible units.
7. One-dimensional (1-D) elastic deformation analysis was used to estimate landfill base settlement.
8. Loading pressure is assumed to be equal to vertical effective stress increase in subgrade. No consideration for vertical stress distribution. This is conservative, since based on vertical stress distribution, the vertical stress increase shall be less than the loading pressure.

SITE INVESTIGATION:

16 SPT Boring logs and 13 CPT tests were conducted in the property. The CPT data refuses at about 60 to 65 feet below ground surface (bgs) whereas the SPT data goes down to 120 feet bgs. SPT Borehole locations and CPT locations are shown in Figure 1. Three cross sections were cut as shown in Figure 1 to Figure 4. Based on the cross sections, the soil profile is homogeneous relatively. Ground surface elevation is at about 15 feet above Mean Sea Level (ft-MSL). Estimated Hawthorn Formation is at about -90 ft-MSL.

Based on the site investigation, settlement calculation is assumed to start from the existing ground surface elevation (15 ft-MSL) to the top of estimated Hawthom Formation (-90 ft-MSL).

PROCEDURE:

One-dimensional (1-D) elastic deformation analysis was used to estimate landfill base settlement due to the byproduct disposal.

1. For each SPT borehole, constrained stiffness moduli of the foundation soils were calculated for discrete subsurface layers as,

$$E_{oed} = \frac{1-\upsilon}{(1-2\upsilon)(1+\upsilon)}E$$

where E_{oed} = constrained stiffness modulus (1D), E = deformation modulus (3D), and ν = Poisson's ratio. E was estimated from SPT N values using the average of two methods corresponding to clayey soils and sandy soils, respectively (Ref. 1),

For clayey soils:

$$\text{Method 1}: E = 2(1+\upsilon)(0.05)(120N^{0.77})p_a \quad \text{(Wroth, et al. 1979.)}$$

$$\text{Method 2}: E = 19.3N^{0.63}p_a \quad \text{(Ohya, et al. 1982)}$$

For sandy soils:

$$\text{Method 1}: E = 5Np_a \quad \text{(Callanan and Kulhawy, 1985.)}$$

$$\text{Method 2}: E = 9.08N^{0.66}p_a \quad \text{(Ohya et al. 1982)}$$

where p_a = atmospheric pressure (14.7 psi). ν = 0.333 was used in the calculations.

2. Statistical analysis was performed on deformation moduli from SPT borings (B-1 to B-16) to calculate a 'Average Modulus' line with elevations. The average modulus line was calculated using the deformation moduli within adjacent elevations to calculate an average deformation moduli corresponding to the elevation.

3. A model was developed from the results of the statistical analysis on the deformation modulus. Figure 5 depicts a conservative model of the deformation modulus values with elevations that is well below the average line. The conservative model was chosen to account for the uncertainty with empirical correlations.

4. Using the equation in Step 1, settlement was calculated based on the conservative Golder model using a spreadsheet (Table 1) for the proposed byproduct disposal. Strain was calculated for the discrete layers by dividing the stress imposed by the total height of byproduct by the estimated constrained stiffness modulus. The strains calculated for the discrete layers were then multiplied by the thickness of the layers to determine settlement. The sum of settlements for the discrete layers equaled the total estimated settlement. The thickness of the compressible zone was conservatively estimated to be from Elevation 15 ft-MSL to Elevation -90 ft-MSL based on a review of subsurface profiles discussed above.

5. To calibrate the confined stiffness moduli estimated from SPT data, 6 CPT borings were conducted adjacent to six SPT borings (CPT-1 vs B-1, CPT-2 vs B-2, CPT-3 vs B-3, CPT-5 vs B-7, CPT-11 vs B-11 and CPT-13 vs B-13). For each of the six CPT borings, constrained stiffness moduli of the foundation soils were calculated for discrete subsurface layers as (Ref 1),

For clayey soils:

$$E_{oed} = 8.25(q_T - \sigma_{v0}) \quad \text{(Mayne et al., 1990)}$$

Where q_T = corrected cone tip resistance, σ_{v0} = total overburden stress.
For sandy soils:

$$E_{oed} = q_T \cdot 10^{1.09-0.0075D_r} \quad \text{(Mayne and Kullhawy, 1990)}$$

Where q_T = corrected cone tip resistance, D_r = Relative density. D_r is estimated from q_T using the following correlations:

$$D_r = 100\sqrt{\frac{q_{T1}}{300 \cdot OCR^{0.2}}} \qquad \text{(NHI, 2001)}$$

Where OCR is the overconsolidation ratio (In this case, assume normal consolidation, so OCR = 1). $q_{T1}=(q_T/p_a)/(\sigma'_{v0}/p_a)^{0.5}$ is the normalized tip resistance with both the measured q_T, effective overburden stress σ'_{v0}, and reference stress p_a (= 1 bar or 1 kg/cm^2 or 1 tsf or 100 kPa).

Soil types are determined based on normalized pore water pressure parameter $B_q = (u_2 - u_0)/(q_T - \sigma_{v0})$, where u_2 = measured total pore water stress (usually behind the tip), u_0 = hydrostatic pore water stress, q_T = corrected cone tip resistance, and σ_{v0} = total overburden stress. When $B_q < 0.1$, it is sandy soil and $B_q > 0.1$, it is clayey soil (Senneset and Janbu, 1985).

6. A correlation was developed based on the six pairs of CPT and SPT data, as below (Shown in Figure 6):

   Confined stiffness modulus from CPT data = 0.8963 (Confined stiffness modulus from SPT data) + 243.01 tsf

   The red line in Figure 6 indicates where the confined stiffness modulus from CPT data equals the confined stiffness modulus from SPT data. The correlated line is well above the red line, which means the estimated confined stiffness modulus from CPT data is generally higher than that from SPT data.
7. Based on the correlation, settlement was calculated based on the correction of the conservative Golder model (the correlation above) using a spreadsheet (see Table 3) for the proposed byproduct disposal. Strain was calculated for the discrete layers by dividing the stress imposed by the total height of byproduct by the estimated constrained stiffness modulus from CPT data. The strains calculated for the discrete layers were then multiplied by the thickness of the layers to determine settlement. The sum of settlements for the discrete layers equaled the total estimated settlement. The thickness of the compressible zone was conservatively estimated to be from Elevation 15 ft-MSL to Elevation -90 ft-MSL based on a review of subsurface profiles discussed above.

SUMMARY OF RESULTS:

Results of the settlement analysis are presented below:

Confined Stiffness Modulus	100 ft Vertical Expansion
Golder Model based on SPT data only	55 inches
Golder Model based on both SPT and CPT data	17 inches

DISCUSSIONS:

The settlement estimated based on SPT data only is too conservative. Part of reason is due to the SPT N-values used in the empirical correlations. The SPT N-value depends not only on soil properties, but also on Energy Ratio of hammers (the ratio of the actual energy impacting the anvil to the theoretical energy (2.5 ft x 140 lbs = 350 ft-lbs. The actual energy ratio should be measured using ASTM D-4633.), borehole diameters, sampling method, and rod length (FHWA, 2002). The SPT N-Value used to develop the correlations may not have been corrected by these factors, which results in relatively more conservative empirical equations and more scattered distributions (the coefficients of correlations based on SPT N-Value are generally less than that based on CPT data). Due to these considerations, Golder believes the best estimates for the settlement should be based on both SPT and CPT data.

CONCLUSIONS:

The calculated landfill base settlement is about 17 inches for 100 ft maximum height.

REFERENCES:

1) Kullhawy, F.H. and P.W. Mayne (1990). Manual on Estimating Soil Properties for Foundation Design, EL-6800, Electric Power Research Institute.
2) FHWA GEC-5 (2002). Evaluation of Soil and Rock Properties.
3) National Highway Institute (NHI) (2001). Manual on Subsurface Investigations. Publication No. FHWA NHI-01-031

ATTACHMENTS:

Figure 1: Field Investigation & Cross Section Map
Figure 2: Cross Section A-A'
Figure 3: Cross Section B-B'
Figure 4: Cross Section C-C'
Figure 5: Profile of Deformation Modulus Based on SPT Data
Figure 6: Correlation of Confined Stiffness Modulus from SPT-Data and CPT-Data

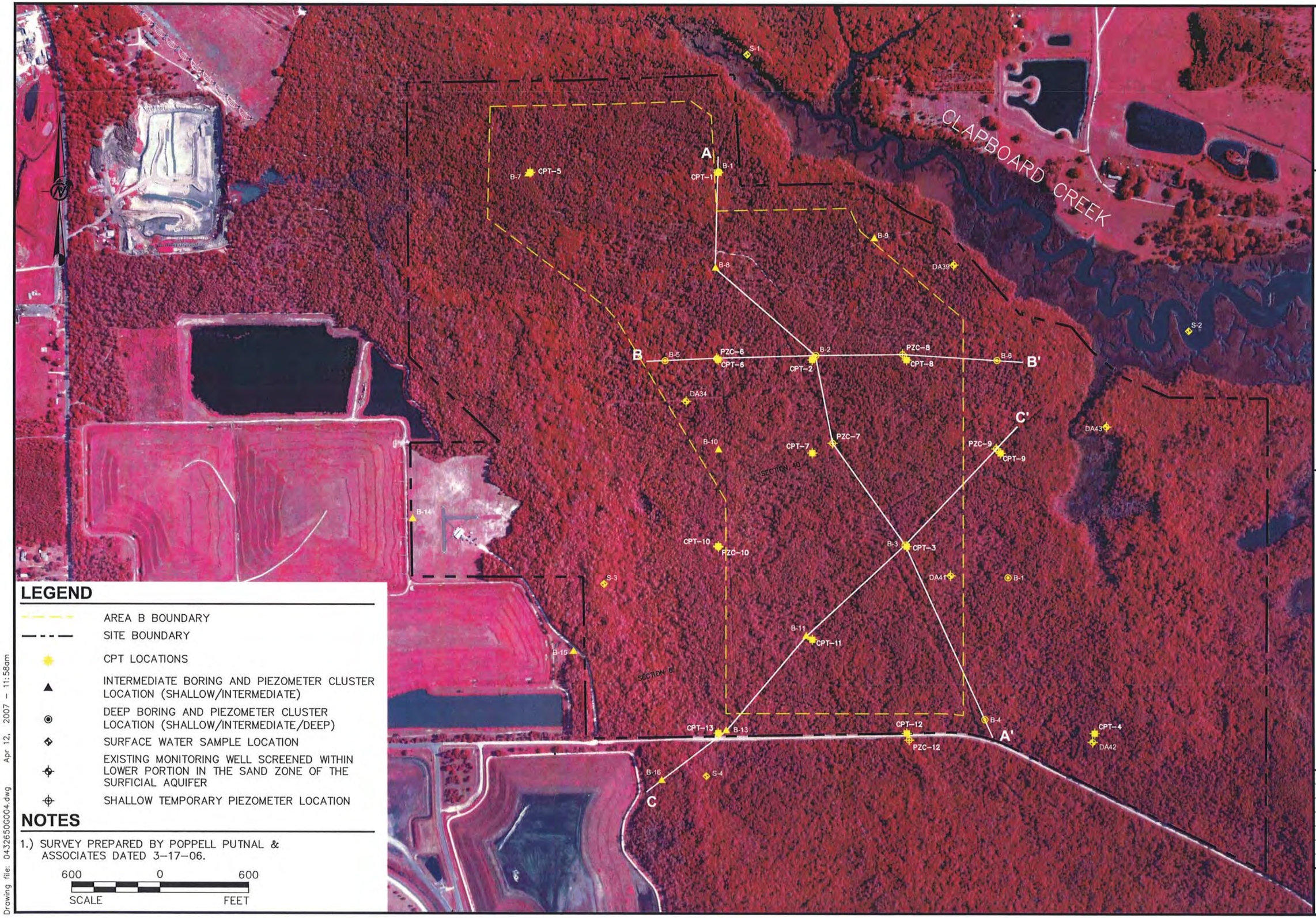
Table 1: Estimate of Landfill Base Settlement for Area B Byproduct Storage Area - 100 ft – SPT Data

Table 2: Estimate of Landfill Base Settlement for Area B Byproduct Storage Area - 100 ft – CPT Correction1

Attachment 1 Estimation of Deformation Modulus based on SPT Data

Attachment 2 Estimation of Confined Stiffness Modulus based on Selected CPT Data

Attachment 3 Correlation between Confined Stiffness Modulus based on SPT Data and that on CPT Data



LEGEND

- AREA B BOUNDARY
- SITE BOUNDARY
- CPT LOCATIONS
- INTERMEDIATE BORING AND PIEZOMETER CLUSTER LOCATION (SHALLOW/INTERMEDIATE)
- DEEP BORING AND PIEZOMETER CLUSTER LOCATION (SHALLOW/INTERMEDIATE/DEEP)
- SURFACE WATER SAMPLE LOCATION
- EXISTING MONITORING WELL SCREENED WITHIN LOWER PORTION IN THE SAND ZONE OF THE SURFICIAL AQUIFER
- SHALLOW TEMPORARY PIEZOMETER LOCATION

NOTES

1.) SURVEY PREPARED BY POPPELL PUTNAL & ASSOCIATES DATED 3–17–06.

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SCALE FEET

Golder Associates
Jacksonville, Florida

PROJECT
SJRPP / AREA B HYDROGEOLOGY / FL

TITLE
SOIL BORING, CPT, PIEZOMETER AND SITE-SPECIFIC GEOLOGIC CROSS SECTION MAP

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CADD	ADK	03/13/07
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FIGURE 1

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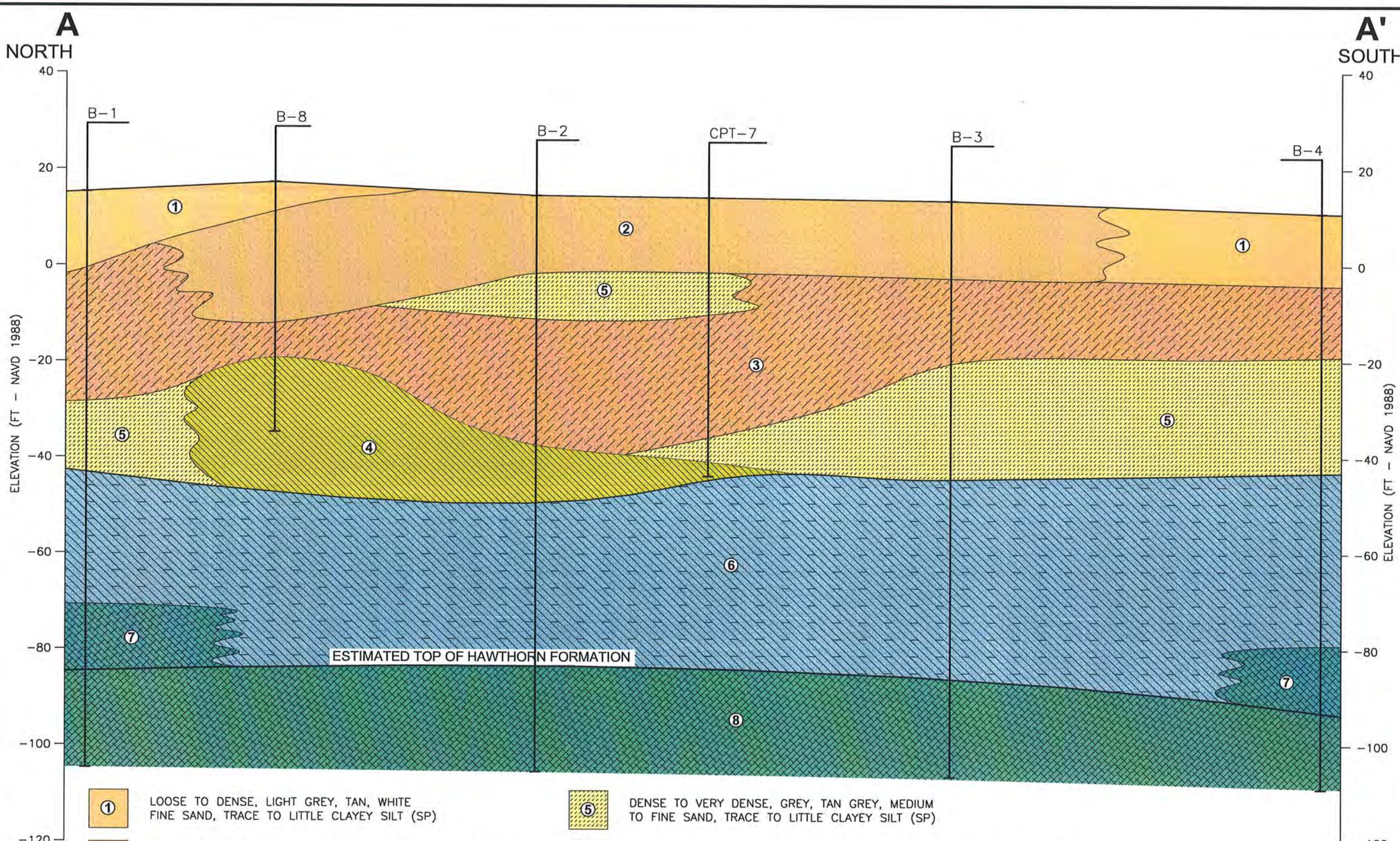

Golder Associates
Jacksonville, Florida

PROJECT
SJRPP / AREA B HYDROGEOLOGY / FL

TITLE
SITE-SPECIFIC
CROSS SECTION A-A'

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CHECK	SFS	4/17/07
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FIGURE 2

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B

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B'

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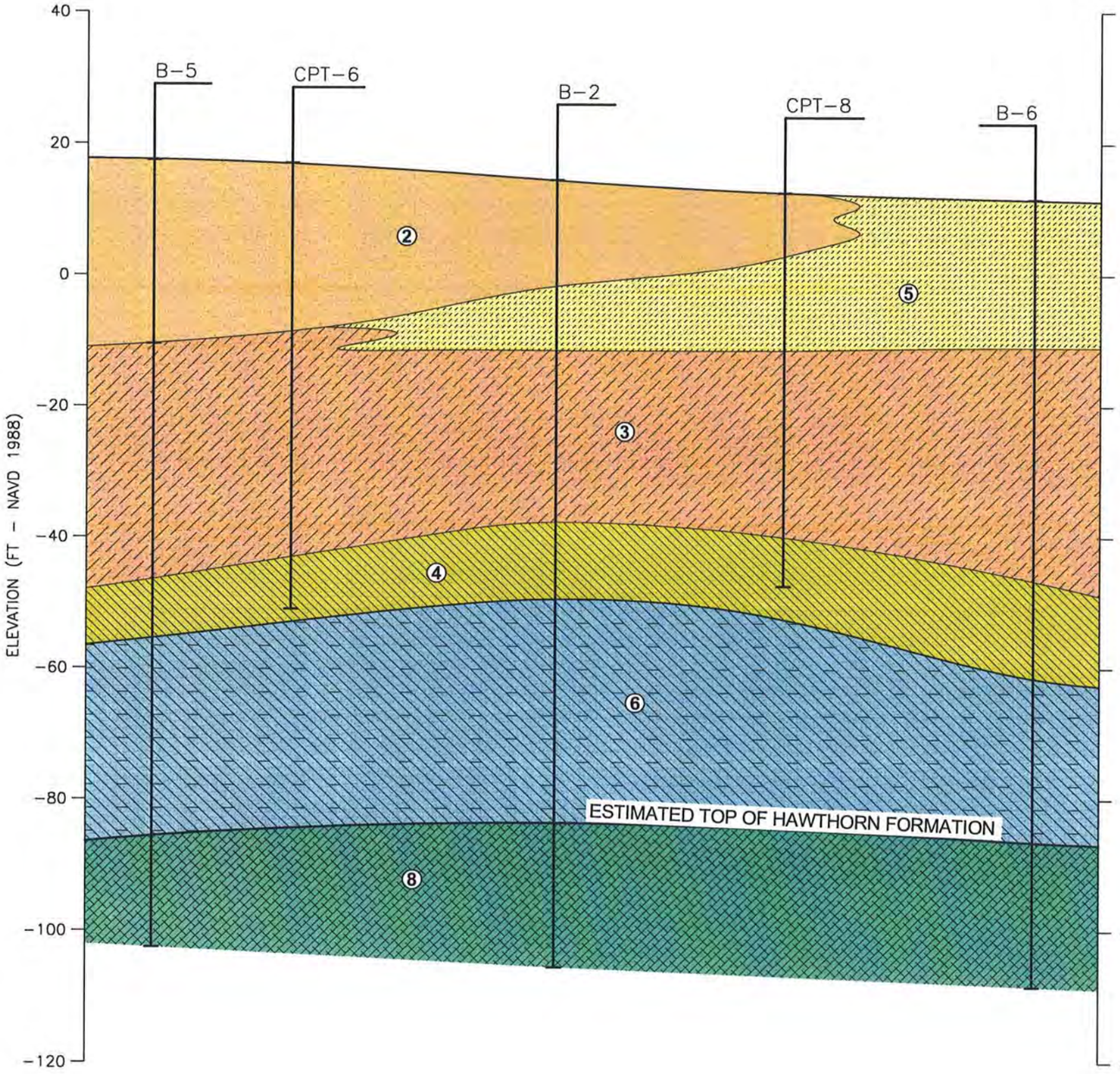

①	LOOSE TO DENSE, LIGHT GREY, TAN, WHITE FINE SAND, TRACE TO LITTLE CLAYEY SILT (SP)
②	LOOSE TO DENSE, DARK BROWN, BROWN, TAN, ORANGE BROWN, MEDIUM TO FINE SAND, TRACE TO LITTLE CLAYEY SILT (SP)
③	LOOSE TO DENSE, GREY, DARK GREY, TAN, MEDIUM TO FINE SAND, LITTLE TO SOME CLAYEY SILT/SILTY CLAY (SP)
④	LOOSE TO DENSE, GREY, BROWN, MEDIUM TO FINE SAND, LITTLE TO SOME CLAYEY SILT/SILTY CLAY (SP)
⑤	DENSE TO VERY DENSE, GREY, TAN GREY, MEDIUM TO FINE SAND, TRACE TO LITTLE CLAYEY SILT (SP)
⑥	VERY DENSE TO STIFF, LIGHT GREY, TAN, COARSE TO FINE SAND (SHELL), SILTY CLAY, AND CLAYEY SILT (CL, ML, SW, SW-SC, SW-SP, SC-CL, SP-SM)
⑦	DENSE TO HARD, LIGHT GREEN GREY, CLAYEY SILT AND FINE SAND, TRACE SHELL AND PHOSPHATE (ML, SW-SC)
⑧	DENSE TO STIFF, GREEN GREY, CLAYEY SILT, SILTY CLAY, AND SAND, WITH ABUNDANT PHOSPHATE (CL, ML, SC, SM, SC-CL, CL-ML)

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VERTICAL SCALE FEET

Golder Associates
Jacksonville, Florida

PROJECT
SJRPP / AREA B HYDROGEOLOGY / FL

TITLE
SITE-SPECIFIC
CROSS SECTION B-B'

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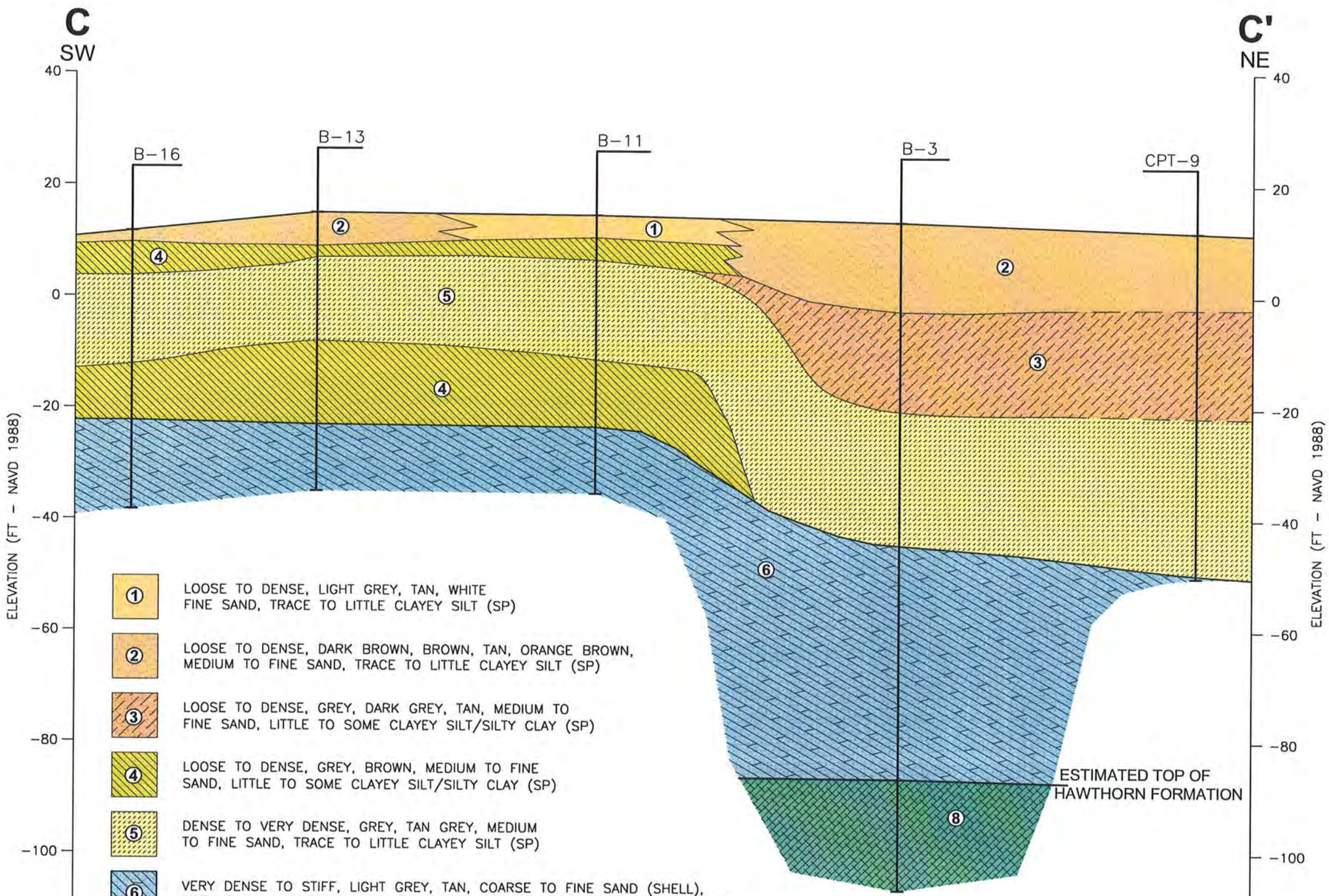

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Golder Associates Jacksonville, Florida

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CHECK	SFS	4/17/07
REVIEW	KBL	4/17/07

FIGURE 4

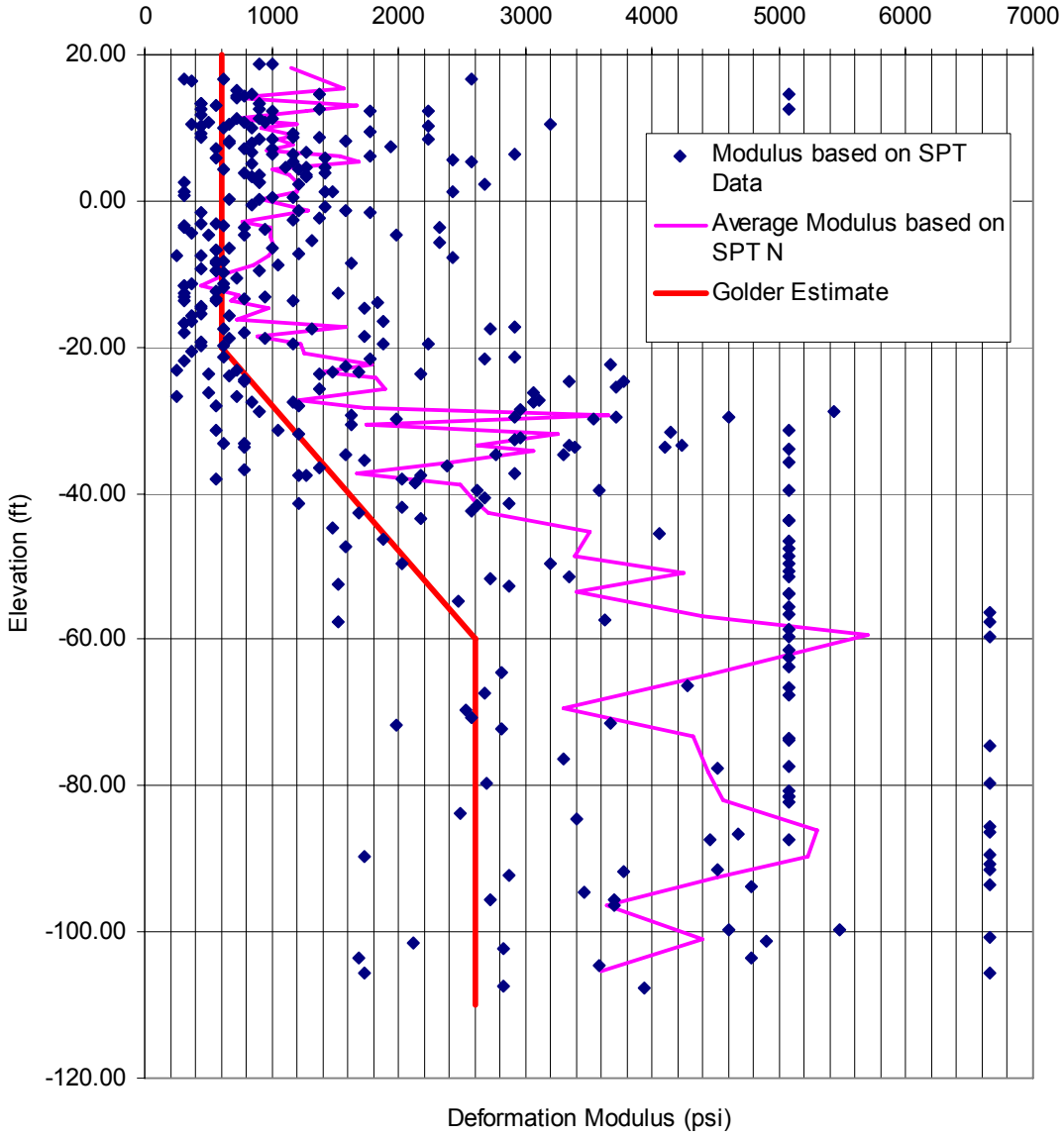

Figure 5 Profile of Deformation Modulus Based on SPT Data

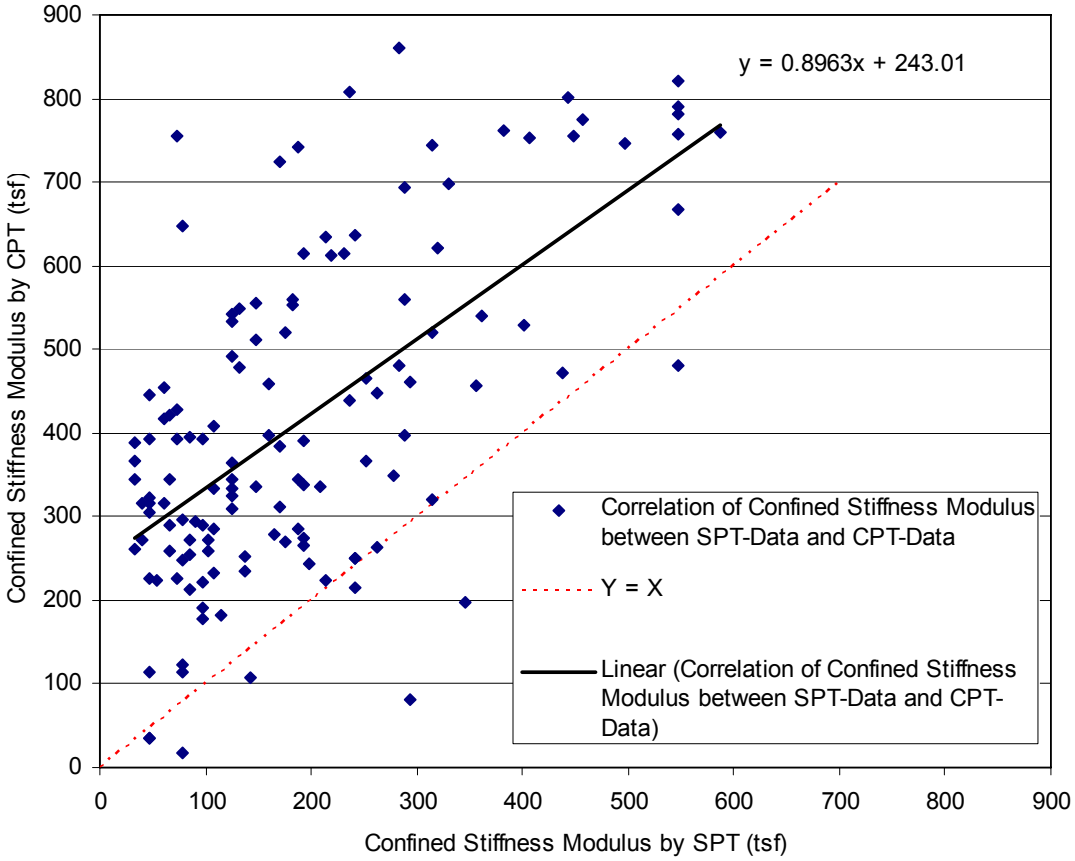

Figure 6 Correlation of Confined Stiffness Modulus from SPT-Data and CPT-Data

Table 1. Estimate of Landfill Base Settlement for Area B Byproduct Storage Area - Case # 1, 100 ft - SPT Data

Loading pressure (assumed to be equal to vertical effective stress increase in subgrade)

Of Waste Fill = 10000 psf total unit weight (pcf) = 100 Height (ft) = 100

Of Liner Zone = 0 psf total unit weight (pcf) = 120 Height (ft) = 0

Total = 10000 psf

Constrained Stiffness Modulus = 1.5 Deformation Stiffness Modulus if Poisson's ratio = 1/3

Calculation Layer	Depth (feet) From	Depth (feet) To	Depth of Mid-Point	Elevation	Thickness of Layer	Deformation Modulus (psi)	Constrained Modulus (psi)	Vertical Strain	Settlement (in)
1	0.00	2.00	1.00	14.00	2.00	600	900	0.0772	1.852
2	2.00	4.00	3.00	12.00	2.00	600	900	0.0772	1.852
3	4.00	6.00	5.00	10.00	2.00	600	900	0.0772	1.852
4	6.00	8.00	7.00	8.00	2.00	600	900	0.0772	1.852
5	8.00	10.00	9.00	6.00	2.00	600	900	0.0772	1.852
6	10.00	12.00	11.00	4.00	2.00	600	900	0.0772	1.852
7	12.00	14.00	13.00	2.00	2.00	600	900	0.0772	1.852
8	14.00	16.00	15.00	0.00	2.00	600	900	0.0772	1.852
9	16.00	18.00	17.00	-2.00	2.00	600	900	0.0772	1.852
10	18.00	20.00	19.00	-4.00	2.00	600	900	0.0772	1.852
11	20.00	22.00	21.00	-6.00	2.00	600	900	0.0772	1.852
12	22.00	24.00	23.00	-8.00	2.00	600	900	0.0772	1.852
13	24.00	26.00	25.00	-10.00	2.00	600	900	0.0772	1.852
14	26.00	28.00	27.00	-12.00	2.00	600	900	0.0772	1.852
15	28.00	30.00	29.00	-14.00	2.00	600	900	0.0772	1.852
16	30.00	32.00	31.00	-16.00	2.00	600	900	0.0772	1.852
17	32.00	34.00	33.00	-18.00	2.00	600	900	0.0772	1.852
18	34.00	36.00	35.00	-20.00	2.00	600	900	0.0772	1.852
19	36.00	38.00	37.00	-22.00	2.00	700	1050	0.0661	1.587
20	38.00	40.00	39.00	-24.00	2.00	800	1200	0.0579	1.389
21	40.00	42.00	41.00	-26.00	2.00	900	1350	0.0514	1.235
22	42.00	44.00	43.00	-28.00	2.00	1000	1500	0.0463	1.111
23	44.00	46.00	45.00	-30.00	2.00	1100	1650	0.0421	1.010
24	46.00	48.00	47.00	-32.00	2.00	1200	1800	0.0386	0.926
25	48.00	50.00	49.00	-34.00	2.00	1300	1950	0.0356	0.855
26	50.00	52.00	51.00	-36.00	2.00	1400	2100	0.0331	0.794
27	52.00	54.00	53.00	-38.00	2.00	1500	2250	0.0309	0.741
28	54.00	56.00	55.00	-40.00	2.00	1600	2400	0.0289	0.694
29	56.00	58.00	57.00	-42.00	2.00	1700	2550	0.0272	0.654
30	58.00	60.00	59.00	-44.00	2.00	1800	2700	0.0257	0.617
31	60.00	62.00	61.00	-46.00	2.00	1900	2850	0.0244	0.585
32	62.00	64.00	63.00	-48.00	2.00	2000	3000	0.0231	0.556
33	64.00	66.00	65.00	-50.00	2.00	2100	3150	0.0220	0.529
34	66.00	68.00	67.00	-52.00	2.00	2200	3300	0.0210	0.505
35	68.00	70.00	69.00	-54.00	2.00	2300	3450	0.0201	0.483
36	70.00	72.00	71.00	-56.00	2.00	2400	3600	0.0193	0.463
37	72.00	74.00	73.00	-58.00	2.00	2500	3750	0.0185	0.444
38	74.00	76.00	75.00	-60.00	2.00	2600	3900	0.0178	0.427
39	76.00	78.00	77.00	-62.00	2.00	2600	3900	0.0178	0.427
40	78.00	80.00	79.00	-64.00	2.00	2600	3900	0.0178	0.427
41	80.00	82.00	81.00	-66.00	2.00	2600	3900	0.0178	0.427
42	82.00	84.00	83.00	-68.00	2.00	2600	3900	0.0178	0.427
43	84.00	86.00	85.00	-70.00	2.00	2600	3900	0.0178	0.427
44	86.00	88.00	87.00	-72.00	2.00	2600	3900	0.0178	0.427
45	88.00	90.00	89.00	-74.00	2.00	2600	3900	0.0178	0.427
46	90.00	92.00	91.00	-76.00	2.00	2600	3900	0.0178	0.427
47	92.00	94.00	93.00	-78.00	2.00	2600	3900	0.0178	0.427
48	94.00	96.00	95.00	-80.00	2.00	2600	3900	0.0178	0.427
49	96.00	98.00	97.00	-82.00	2.00	2600	3900	0.0178	0.427
50	98.00	100.00	99.00	-84.00	2.00	2600	3900	0.0178	0.427
51	100.00	102.00	101.00	-86.00	2.00	2600	3900	0.0178	0.427
52	102.00	104.00	103.00	-88.00	2.00	2600	3900	0.0178	0.427
53	104.00	106.00	105.00	-90.00	2.00	2600	3900	0.0178	0.427
								Total =	**55** **inches**

Table 2. Estimate of Landfill Base Settlement for Area B Byproduct Storage Area - Case # 1, 100 ft - CPT Correction

Loading pressure (assumed to be equal to vertical effective stress increase in subgrade)

Of Waste Fill = 10000 psf total unit weight (pcf) = 100 Height (ft) = 100

Of Liner Zone = 0 psf total unit weight (pcf) = 120 Height (ft) = 0

Total = 10000 psf

Constrained Stiffness Modulus = 1.5 Deformation Stiffness Modulus if Poisson's ratio = 1/3

Calculation Layer	Depth (feet) From	Depth (feet) To	Depth of Mid-Point	Elevation	Thickness of Layer	Deformation Modulus - SPT (psi)	Constrained Modulus - SPT (psi)	Constrained Modulus - CPT (psi)	Vertical Strain	Settlement (in)
1	0.00	2.00	1.00	14.00	2.00	600	900	4182	0.0166	0.399
2	2.00	4.00	3.00	12.00	2.00	600	900	4182	0.0166	0.399
3	4.00	6.00	5.00	10.00	2.00	600	900	4182	0.0166	0.399
4	6.00	8.00	7.00	8.00	2.00	600	900	4182	0.0166	0.399
5	8.00	10.00	9.00	6.00	2.00	600	900	4182	0.0166	0.399
6	10.00	12.00	11.00	4.00	2.00	600	900	4182	0.0166	0.399
7	12.00	14.00	13.00	2.00	2.00	600	900	4182	0.0166	0.399
8	14.00	16.00	15.00	0.00	2.00	600	900	4182	0.0166	0.399
9	16.00	18.00	17.00	-2.00	2.00	600	900	4182	0.0166	0.399
10	18.00	20.00	19.00	-4.00	2.00	600	900	4182	0.0166	0.399
11	20.00	22.00	21.00	-6.00	2.00	600	900	4182	0.0166	0.399
12	22.00	24.00	23.00	-8.00	2.00	600	900	4182	0.0166	0.399
13	24.00	26.00	25.00	-10.00	2.00	600	900	4182	0.0166	0.399
14	26.00	28.00	27.00	-12.00	2.00	600	900	4182	0.0166	0.399
15	28.00	30.00	29.00	-14.00	2.00	600	900	4182	0.0166	0.399
16	30.00	32.00	31.00	-16.00	2.00	600	900	4182	0.0166	0.399
17	32.00	34.00	33.00	-18.00	2.00	600	900	4182	0.0166	0.399
18	34.00	36.00	35.00	-20.00	2.00	600	900	4182	0.0166	0.399
19	36.00	38.00	37.00	-22.00	2.00	700	1050	4316	0.0161	0.386
20	38.00	40.00	39.00	-24.00	2.00	800	1200	4451	0.0156	0.374
21	40.00	42.00	41.00	-26.00	2.00	900	1350	4585	0.0151	0.363
22	42.00	44.00	43.00	-28.00	2.00	1000	1500	4720	0.0147	0.353
23	44.00	46.00	45.00	-30.00	2.00	1100	1650	4854	0.0143	0.343
24	46.00	48.00	47.00	-32.00	2.00	1200	1800	4989	0.0139	0.334
25	48.00	50.00	49.00	-34.00	2.00	1300	1950	5123	0.0136	0.325
26	50.00	52.00	51.00	-36.00	2.00	1400	2100	5257	0.0132	0.317
27	52.00	54.00	53.00	-38.00	2.00	1500	2250	5392	0.0129	0.309
28	54.00	56.00	55.00	-40.00	2.00	1600	2400	5526	0.0126	0.302
29	56.00	58.00	57.00	-42.00	2.00	1700	2550	5661	0.0123	0.294
30	58.00	60.00	59.00	-44.00	2.00	1800	2700	5795	0.0120	0.288
31	60.00	62.00	61.00	-46.00	2.00	1900	2850	5930	0.0117	0.281
32	62.00	64.00	63.00	-48.00	2.00	2000	3000	6064	0.0115	0.275
33	64.00	66.00	65.00	-50.00	2.00	2100	3150	6199	0.0112	0.269
34	66.00	68.00	67.00	-52.00	2.00	2200	3300	6333	0.0110	0.263
35	68.00	70.00	69.00	-54.00	2.00	2300	3450	6467	0.0107	0.258
36	70.00	72.00	71.00	-56.00	2.00	2400	3600	6602	0.0105	0.252
37	72.00	74.00	73.00	-58.00	2.00	2500	3750	6736	0.0103	0.247
38	74.00	76.00	75.00	-60.00	2.00	2600	3900	6871	0.0101	0.243
39	76.00	78.00	77.00	-62.00	2.00	2600	3900	6871	0.0101	0.243
40	78.00	80.00	79.00	-64.00	2.00	2600	3900	6871	0.0101	0.243
41	80.00	82.00	81.00	-66.00	2.00	2600	3900	6871	0.0101	0.243
42	82.00	84.00	83.00	-68.00	2.00	2600	3900	6871	0.0101	0.243
43	84.00	86.00	85.00	-70.00	2.00	2600	3900	6871	0.0101	0.243
44	86.00	88.00	87.00	-72.00	2.00	2600	3900	6871	0.0101	0.243
45	88.00	90.00	89.00	-74.00	2.00	2600	3900	6871	0.0101	0.243
46	90.00	92.00	91.00	-76.00	2.00	2600	3900	6871	0.0101	0.243
47	92.00	94.00	93.00	-78.00	2.00	2600	3900	6871	0.0101	0.243
48	94.00	96.00	95.00	-80.00	2.00	2600	3900	6871	0.0101	0.243
49	96.00	98.00	97.00	-82.00	2.00	2600	3900	6871	0.0101	0.243
50	98.00	100.00	99.00	-84.00	2.00	2600	3900	6871	0.0101	0.243
51	100.00	102.00	101.00	-86.00	2.00	2600	3900	6871	0.0101	0.243
52	102.00	104.00	103.00	-88.00	2.00	2600	3900	6871	0.0101	0.243
53	104.00	106.00	105.00	-90.00	2.00	2600	3900	6871	0.0101	0.243
									Total=	**17** **inches**

ATTACHMENT 1

ESTIMATION OF DEFORMATION MODULUS BASED ON SPT DATA

Boring No: B-1
Surface Elevation (ft): 15.37

Depth (feet)		Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi)		
From	To						Method 1	Method 2	Average
0.00	2.00	SAND	1.00	14.37	2.00	11	809	650	729
2.00	4.00	SAND	3.00	12.37	2.00	31	2279	1287	1783
4.00	6.00	SAND	5.00	10.37	2.00	60	4410	1991	3200
6.00	8.00	SAND	7.00	8.37	2.00	40	2940	1523	2232
8.00	10.00	SAND	9.00	6.37	2.00	54	3969	1857	2913
10.00	12.00	SAND	11.00	4.37	2.00	9	662	569	615
12.00	14.00	SAND	13.00	2.37	2.00	49	3602	1742	2672
14.00	16.00	SAND	15.00	0.37	2.00	16	1176	832	1004
16.00	18.00	SAND	17.00	-1.63	2.00	31	2279	1287	1783
18.00	20.00	SAND	19.00	-3.63	2.00	42	3087	1573	2330
20.00	22.00	SAND	21.00	-5.63	2.00	42	3087	1573	2330
22.00	24.00	SAND	23.00	-7.63	2.00	44	3234	1622	2428
24.00	26.00	SAND	25.00	-9.63	2.00	8	588	527	557
26.00	28.00	SAND	27.00	-11.63	2.00	4	294	333	314
28.00	30.00	SAND	29.00	-13.63	2.00	19	1397	932	1164
30.00	32.00	SAND	31.00	-15.63	2.00	10	735	610	673
32.00	34.00	SAND	33.00	-17.63	2.00	50	3675	1765	2720
34.00	36.00	SAND	35.00	-19.63	2.00	19	1397	932	1164
36.00	38.00	SAND	37.00	-21.63	2.00	49	3602	1742	2672
38.00	40.00	SAND	39.00	-23.63	2.00	23	1691	1057	1374
40.00	42.00	SAND	41.00	-25.63	2.00	23	1691	1057	1374
42.00	44.00	SAND	43.00	-27.63	2.00	57	4190	1924	3057
44.00	46.00	SAND	45.00	-29.63	2.00	54	3969	1857	2913
46.00	48.00	SAND	47.00	-31.63	2.00	80	5880	2407	4143
48.00	50.00	SAND	49.00	-33.63	2.00	79	5807	2387	4097
50.00	52.00	SAND	51.00	-35.63	2.00	100	7350	2789	5069
52.00	54.00	SAND	53.00	-37.63	2.00	39	2867	1498	2182
54.00	56.00	SAND	55.00	-39.63	2.00	100	7350	2789	5069
56.00	58.00	SAND	57.00	-41.63	2.00	48	3528	1718	2623
58.00	60.00	SAND	59.00	-43.63	2.00	100	7350	2789	5069
64.00	66.00	SAND	65.00	-49.63	2.00	36	2646	1421	2033
66.00	68.00	SAND	67.00	-51.63	2.00	50	3675	1765	2720
68.00	70.00	SAND	69.00	-53.63	2.00	100	7350	2789	5069
70.00	72.00	SAND	71.00	-55.63	2.00	100	7350	2789	5069
72.00	74.00	CLAYEY SILT	73.00	-57.63	2.00	100	8153	5163	6658
74.00	76.00	CLAYEY SILT	75.00	-59.63	2.00	100	8153	5163	6658
82.00	84.00	SAND	83.00	-67.63	2.00	100	7350	2789	5069
86.00	88.00	SAND	87.00	-71.63	2.00	35	2573	1395	1984
88.00	90.00	SAND	89.00	-73.63	2.00	100	7350	2789	5069
92.00	94.00	CLAYEY SILT	93.00	-77.63	2.00	58	5360	3663	4512
94.00	96.00	CLAYEY SILT	95.00	-79.63	2.00	100	8153	5163	6658
100.00	102.00	CLAYEY SILT	101.00	-85.63	2.00	100	8153	5163	6658
106.00	108.00	SAND	107.00	-91.63	2.00	72	5292	2245	3769
110.00	112.00	SAND	111.00	-95.63	2.00	50	3675	1765	2720
114.00	116.00	SAND	115.00	-99.63	2.00	90	6615	2601	4608
118.00	120.00	SAND	119.00	-103.63	2.00	29	2132	1232	1682

Boring No: B-2
Surface Elevation (ft): 14.37

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*13.37*	*2.00*	6	441	435	438
2	2.00	4.00	SAND	*3.00*	*11.37*	*2.00*	16	1176	832	1004
3	4.00	6.00	SAND	*5.00*	*9.37*	*2.00*	31	2279	1287	1783
4	6.00	8.00	SAND	*7.00*	*7.37*	*2.00*	34	2499	1368	1934
5	8.00	10.00	SAND	*9.00*	*5.37*	*2.00*	47	3455	1694	2574
6	10.00	12.00	SAND	*11.00*	*3.37*	*2.00*	21	1544	996	1270
7	12.00	14.00	SAND	*13.00*	*1.37*	*2.00*	44	3234	1622	2428
8	14.00	16.00	SAND	*15.00*	*-0.63*	*2.00*	13	956	725	840
9	16.00	18.00	SAND	*17.00*	*-2.63*	*2.00*	19	1397	932	1164
10	18.00	20.00	SAND	*19.00*	*-4.63*	*2.00*	35	2573	1395	1984
11	20.00	22.00	SAND	*21.00*	*-6.63*	*2.00*	8	588	527	557
12	22.00	24.00	SAND	*23.00*	*-8.63*	*2.00*	28	2058	1204	1631
13	24.00	26.00	SAND	*25.00*	*-10.63*	*2.00*	11	809	650	729
14	26.00	28.00	SAND	*27.00*	*-12.63*	*2.00*	26	1911	1146	1529
15	28.00	30.00	SAND	*29.00*	*-14.63*	*2.00*	30	2205	1260	1732
16	30.00	32.00	SAND	*31.00*	*-16.63*	*2.00*	4	294	333	314
17	32.00	34.00	SAND	*33.00*	*-18.63*	*2.00*	30	2205	1260	1732
18	34.00	36.00	SAND	*35.00*	*-20.63*	*2.00*	5	368	386	377
19	36.00	38.00	SAND	*37.00*	*-22.63*	*2.00*	27	1985	1175	1580
20	38.00	40.00	SAND	*39.00*	*-24.63*	*2.00*	63	4631	2056	3343
21	40.00	42.00	SAND	*41.00*	*-26.63*	*2.00*	11	809	650	729
22	42.00	44.00	SAND	*43.00*	*-28.63*	*2.00*	55	4043	1880	2961
23	44.00	46.00	SAND	*45.00*	*-30.63*	*2.00*	28	2058	1204	1631
24	46.00	48.00	SAND	*47.00*	*-32.63*	*2.00*	54	3969	1857	2913
25	48.00	50.00	SAND	*49.00*	*-34.63*	*2.00*	62	4557	2034	3296
26	50.00	52.00	SAND	*51.00*	*-36.63*	*2.00*	23	1691	1057	1374
27	52.00	54.00	SAND	*53.00*	*-38.63*	*2.00*	38	2793	1473	2133
28	54.00	56.00	SAND	*55.00*	*-40.63*	*2.00*	49	3602	1742	2672
29	56.00	58.00	SAND	*57.00*	*-42.63*	*2.00*	29	2132	1232	1682
30	58.00	60.00	SAND	*59.00*	*-44.63*	*2.00*	25	1838	1117	1477
31	60.00	62.00	SAND	*61.00*	*-46.63*	*2.00*	100	7350	2789	5069
32	62.00	64.00	SAND	*63.00*	*-48.63*	*2.00*	100	7350	2789	5069
33	64.00	66.00	SAND	*65.00*	*-50.63*	*2.00*	100	7350	2789	5069
34	66.00	68.00	SAND	*67.00*	*-52.63*	*2.00*	53	3896	1834	2865
35	68.00	70.00	SAND	*69.00*	*-54.63*	*2.00*	45	3308	1646	2477
36	70.00	72.00	SAND	*71.00*	*-56.63*	*2.00*	100	7350	2789	5069
37	72.00	74.00	SAND	*73.00*	*-58.63*	*2.00*	100	7350	2789	5069
40	78.00	80.00	SAND	*79.00*	*-64.63*	*2.00*	52	3822	1811	2817
41	80.00	82.00	SAND	*81.00*	*-66.63*	*2.00*	100	7350	2789	5069
43	84.00	86.00	SAND	*85.00*	*-70.63*	*2.00*	47	3455	1694	2574
45	88.00	90.00	CLAY	*89.00*	*-74.63*	*2.00*	100	8153	5163	6658
48	94.00	96.00	SAND	*95.00*	*-80.63*	*2.00*	100	7350	2789	5069
50	98.00	100.00	CLAY	*99.00*	*-84.63*	*2.00*	39	3949	2853	3401
51	100.00	102.00	CLAY	*101.00*	*-86.63*	*2.00*	61	5572	3781	4677
53	104.00	106.00	CLAY	*105.00*	*-90.63*	*2.00*	100	8153	5163	6658
55	108.00	110.00	CLAY	*109.00*	*-94.63*	*2.00*	40	4026	2898	3462
58	114.00	116.00	CLAY	*115.00*	*-100.63*	*2.00*	100	8153	5163	6658
60	118.00	120.00	CLAY	*119.00*	*-104.63*	*2.00*	42	4181	2989	3585

Boring No: B-3
Surface Elevation (ft): 13.5

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*12.50*	*2.00*	6	441	435	438
2	2.00	4.00	SAND	*3.00*	*10.50*	*2.00*	10	735	610	673
3	4.00	6.00	SAND	*5.00*	*8.50*	*2.00*	16	1176	832	1004
4	6.00	8.00	SAND	*7.00*	*6.50*	*2.00*	19	1397	932	1164
5	8.00	10.00	SAND	*9.00*	*4.50*	*2.00*	21	1544	996	1270
6	10.00	12.00	SAND	*11.00*	*2.50*	*2.00*	14	1029	762	895
7	12.00	14.00	SAND	*13.00*	*0.50*	*2.00*	19	1397	932	1164
8	14.00	16.00	SAND	*15.00*	*-1.50*	*2.00*	6	441	435	438
9	16.00	18.00	SAND	*17.00*	*-3.50*	*2.00*	9	662	569	615
10	18.00	20.00	SAND	*19.00*	*-5.50*	*2.00*	22	1617	1027	1322
11	20.00	22.00	SAND	*21.00*	*-7.50*	*2.00*	6	441	435	438
12	22.00	24.00	SAND	*23.00*	*-9.50*	*2.00*	14	1029	762	895
13	24.00	26.00	SAND	*25.00*	*-11.50*	*2.00*	4	294	333	314
14	26.00	28.00	SAND	*27.00*	*-13.50*	*2.00*	12	882	688	785
15	28.00	30.00	SAND	*29.00*	*-15.50*	*2.00*	6	441	435	438
16	30.00	32.00	SAND	*31.00*	*-17.50*	*2.00*	9	662	569	615
17	32.00	34.00	SAND	*33.00*	*-19.50*	*2.00*	40	2940	1523	2232
18	34.00	36.00	SAND	*35.00*	*-21.50*	*2.00*	31	2279	1287	1783
19	36.00	38.00	SAND	*37.00*	*-23.50*	*2.00*	29	2132	1232	1682
20	38.00	40.00	SAND	*39.00*	*-25.50*	*2.00*	71	5219	2225	3722
21	40.00	42.00	SAND	*41.00*	*-27.50*	*2.00*	19	1397	932	1164
22	42.00	44.00	SAND	*43.00*	*-29.50*	*2.00*	90	6615	2601	4608
23	44.00	46.00	SAND	*45.00*	*-31.50*	*2.00*	100	7350	2789	5069
24	46.00	48.00	SAND	*47.00*	*-33.50*	*2.00*	82	6027	2446	4237
25	48.00	50.00	SAND	*49.00*	*-35.50*	*2.00*	30	2205	1260	1732
26	50.00	52.00	SAND	*51.00*	*-37.50*	*2.00*	20	1470	964	1217
27	52.00	54.00	SAND	*53.00*	*-39.50*	*2.00*	48	3528	1718	2623
28	54.00	56.00	SAND	*55.00*	*-41.50*	*2.00*	20	1470	964	1217
29	56.00	58.00	SAND	*57.00*	*-43.50*	*2.00*	39	2867	1498	2182
30	58.00	60.00	CLAYEY SILT	*59.00*	*-45.50*	*2.00*	50	4781	3336	4059
31	60.00	62.00	SAND	*61.00*	*-47.50*	*2.00*	100	7350	2789	5069
32	62.00	64.00	SAND	*63.00*	*-49.50*	*2.00*	60	4410	1991	3200
33	64.00	66.00	SAND	*65.00*	*-51.50*	*2.00*	63	4631	2056	3343
36	70.00	72.00	SAND	*71.00*	*-57.50*	*2.00*	26	1911	1146	1529
38	74.00	76.00	SAND	*75.00*	*-61.50*	*2.00*	100	7350	2789	5069
48	94.00	96.00	SAND	*95.00*	*-81.50*	*2.00*	100	7350	2789	5069
51	100.00	102.00	CLAYEY SILT	*101.00*	*-87.50*	*2.00*	57	5289	3623	4456
52	102.00	104.00	CLAYEY SILT	*103.00*	*-89.50*	*2.00*	100	8153	5163	6658
53	104.00	106.00	CLAYEY SILT	*105.00*	*-91.50*	*2.00*	58	5360	3663	4512
54	106.00	108.00	CLAYEY SILT	*107.00*	*-93.50*	*2.00*	100	8153	5163	6658
55	108.00	110.00	CLAYEY SILT	*109.00*	*-95.50*	*2.00*	44	4333	3078	3705
58	114.00	116.00	CLAYEY SILT	*115.00*	*-101.50*	*2.00*	20	2361	1873	2117
59	116.00	118.00	CLAYEY SILT	*117.00*	*-103.50*	*2.00*	63	5712	3859	4786
60	118.00	120.00	CLAYEY SILT	*119.00*	*-105.50*	*2.00*	100	8153	5163	6658

Boring No: B-4
Surface Elevation (ft): 11.32

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*10.32*	*2.00*	6	441	435	438
2	2.00	4.00	SAND	*3.00*	*8.32*	*2.00*	14	1029	762	895
3	4.00	6.00	SAND	*5.00*	*6.32*	*2.00*	16	1176	832	1004
4	6.00	8.00	SAND	*7.00*	*4.32*	*2.00*	20	1470	964	1217
5	8.00	10.00	SAND	*9.00*	*2.32*	*2.00*	20	1470	964	1217
8	14.00	16.00	SAND	*15.00*	*-3.68*	*2.00*	12	882	688	785
11	20.00	22.00	SAND	*21.00*	*-9.68*	*2.00*	9	662	569	615
13	24.00	26.00	SAND	*25.00*	*-13.68*	*2.00*	4	294	333	314
16	30.00	32.00	SAND	*31.00*	*-19.68*	*2.00*	33	2426	1342	1884
18	34.00	36.00	SAND	*35.00*	*-23.68*	*2.00*	39	2867	1498	2182
21	40.00	42.00	SAND	*41.00*	*-29.68*	*2.00*	71	5219	2225	3722
23	44.00	46.00	SAND	*45.00*	*-33.68*	*2.00*	64	4704	2077	3391
26	50.00	52.00	SAND	*51.00*	*-39.68*	*2.00*	68	4998	2162	3580
28	54.00	56.00	SAND	*55.00*	*-43.68*	*2.00*	100	7350	2789	5069
31	60.00	62.00	SAND	*61.00*	*-49.68*	*2.00*	100	7350	2789	5069
33	64.00	66.00	SAND	*65.00*	*-53.68*	*2.00*	100	7350	2789	5069
36	70.00	72.00	SAND	*71.00*	*-59.68*	*2.00*	100	7350	2789	5069
38	74.00	76.00	SAND	*75.00*	*-63.68*	*2.00*	100	7350	2789	5069
41	80.00	82.00	SAND	*81.00*	*-69.68*	*2.00*	46	3381	1670	2526
43	84.00	86.00	SAND	*85.00*	*-73.68*	*2.00*	100	7350	2789	5069
46	90.00	92.00	CLAYEY SILT	*91.00*	*-79.68*	*2.00*	28	3059	2315	2687
48	94.00	96.00	CLAYEY SILT	*95.00*	*-83.68*	*2.00*	25	2804	2156	2480
51	100.00	102.00	CLAYEY SILT	*101.00*	*-89.68*	*2.00*	15	1892	1562	1727
53	104.00	106.00	SILTY CLAY	*105.00*	*-93.68*	*2.00*	63	5712	3859	4786
56	110.00	112.00	SILTY CLAY	*111.00*	*-99.68*	*2.00*	76	6600	4343	5472
59	116.00	118.00	SILTY CLAY	*117.00*	*-105.68*	*2.00*	15	1892	1562	1727
60	118.00	120.00	SILTY CLAY	*119.00*	*-107.68*	*2.00*	48	4633	3251	3942

Boring No: B-5
Surface Elevation (ft): 17.64

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*16.64*	*2.00*	4	294	333	314
2	2.00	4.00	SAND	*3.00*	*14.64*	*2.00*	13	956	725	840
3	4.00	6.00	SAND	*5.00*	*12.64*	*2.00*	14	1029	762	895
4	6.00	8.00	SAND	*7.00*	*10.64*	*2.00*	15	1103	797	950
5	8.00	10.00	SAND	*9.00*	*8.64*	*2.00*	19	1397	932	1164
6	13.00	15.00	SAND	*14.00*	*3.64*	*2.00*	14	1029	762	895
7	18.00	20.00	SAND	*19.00*	*-1.36*	*2.00*	27	1985	1175	1580
8	23.00	25.00	SAND	*24.00*	*-6.36*	*2.00*	16	1176	832	1004
9	28.00	30.00	SAND	*29.00*	*-11.36*	*2.00*	9	662	569	615
10	33.00	35.00	SAND	*34.00*	*-16.36*	*2.00*	33	2426	1342	1884
11	38.00	40.00	SAND	*39.00*	*-21.36*	*2.00*	54	3969	1857	2913
12	43.00	45.00	SAND	*44.00*	*-26.36*	*2.00*	57	4190	1924	3057
13	48.00	50.00	SAND	*49.00*	*-31.36*	*2.00*	17	1250	866	1058
14	53.00	55.00	SAND	*54.00*	*-36.36*	*2.00*	43	3161	1598	2379
15	58.00	60.00	SAND	*59.00*	*-41.36*	*2.00*	53	3896	1834	2865
16	63.00	65.00	SAND	*64.00*	*-46.36*	*2.00*	33	2426	1342	1884
17	68.00	70.00	SAND	*69.00*	*-51.36*	*2.00*	100	7350	2789	5069
18	73.00	75.00	CLAYEY SILT	*74.00*	*-56.36*	*2.00*	100	8153	5163	6658
19	83.00	85.00	SAND	*84.00*	*-66.36*	*2.00*	83	6101	2466	4283
20	88.00	90.00	SAND	*89.00*	*-71.36*	*2.00*	70	5145	2204	3674
21	93.00	95.00	SAND	*94.00*	*-76.36*	*2.00*	62	4557	2034	3296
22	98.00	100.00	SAND	*99.00*	*-81.36*	*2.00*	100	7350	2789	5069
23	103.00	105.00	CLAYEY SILT	*104.00*	*-86.36*	*2.00*	100	8153	5163	6658
24	108.00	110.00	SILTY CLAY	*109.00*	*-91.36*	*2.00*	100	8153	5163	6658
25	113.00	115.00	SILTY CLAY	*114.00*	*-96.36*	*2.00*	44	4333	3078	3705
26	118.00	120.00	SILTY CLAY	*119.00*	*-101.36*	*2.00*	65	5852	3936	4894

Boring No: B-6
Surface Elevation (ft): 11.66

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*10.66*	*2.00*	7	515	482	498
2	2.00	4.00	SAND	*3.00*	*8.66*	*2.00*	23	1691	1057	1374
3	4.00	6.00	SAND	*5.00*	*6.66*	*2.00*	21	1544	996	1270
4	6.00	8.00	SAND	*7.00*	*4.66*	*2.00*	24	1764	1087	1426
5	8.00	10.00	SAND	*9.00*	*2.66*	*2.00*	14	1029	762	895
6	13.00	15.00	SAND	*14.00*	*-2.34*	*2.00*	23	1691	1057	1374
7	18.00	20.00	SAND	*19.00*	*-7.34*	*2.00*	20	1470	964	1217
8	23.00	25.00	SAND	*24.00*	*-12.34*	*2.00*	8	588	527	557
9	28.00	30.00	SAND	*29.00*	*-17.34*	*2.00*	54	3969	1857	2913
10	33.00	35.00	SAND	*34.00*	*-22.34*	*2.00*	70	5145	2204	3674
11	38.00	40.00	SAND	*39.00*	*-27.34*	*2.00*	58	4263	1947	3105
12	43.00	45.00	SAND	*44.00*	*-32.34*	*2.00*	55	4043	1880	2961
13	48.00	50.00	SAND	*49.00*	*-37.34*	*2.00*	54	3969	1857	2913
14	53.00	55.00	SAND	*54.00*	*-42.34*	*2.00*	47	3455	1694	2574
15	58.00	60.00	SAND	*59.00*	*-47.34*	*2.00*	27	1985	1175	1580
16	63.00	65.00	SAND	*64.00*	*-52.34*	*2.00*	26	1911	1146	1529
17	68.00	70.00	SAND	*69.00*	*-57.34*	*2.00*	69	5072	2183	3627
18	73.00	75.00	SAND	*74.00*	*-62.34*	*2.00*	100	7350	2789	5069
19	78.00	80.00	SAND	*79.00*	*-67.34*	*2.00*	49	3602	1742	2672
20	83.00	85.00	SAND	*84.00*	*-72.34*	*2.00*	52	3822	1811	2817
21	88.00	90.00	SAND	*89.00*	*-77.34*	*2.00*	100	7350	2789	5069
22	93.00	95.00	SAND	*94.00*	*-82.34*	*2.00*	100	7350	2789	5069
23	98.00	100.00	SAND	*99.00*	*-87.34*	*2.00*	100	7350	2789	5069
24	103.00	105.00	SAND	*104.00*	*-92.34*	*2.00*	53	3896	1834	2865
25	113.00	115.00	SILTY CLAY	*114.00*	*-102.34*	*2.00*	30	3226	2418	2822
26	118.00	120.00	SILTY CLAY	*119.00*	*-107.34*	*2.00*	30	3226	2418	2822

Boring No: B-7
Surface Elevation (ft): 16.22

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*15.22*	*2.00*	11	809	650	729
2	2.00	4.00	SAND	*3.00*	*13.22*	*2.00*	14	1029	762	895
3	4.00	6.00	SAND	*5.00*	*11.22*	*2.00*	14	1029	762	895
4	6.00	8.00	SAND	*7.00*	*9.22*	*2.00*	19	1397	932	1164
5	8.00	10.00	SAND	*9.00*	*7.22*	*2.00*	16	1176	832	1004
6	15.00	17.00	SAND	*16.00*	*0.22*	*2.00*	14	1029	762	895
7	20.00	22.00	SAND	*21.00*	*-4.78*	*2.00*	12	882	688	785
8	24.75	26.75	SAND	*25.75*	*-9.53*	*2.00*	8	588	527	557
9	30.00	32.00	SAND	*31.00*	*-14.78*	*2.00*	6	441	435	438
10	35.00	37.00	SAND	*36.00*	*-19.78*	*2.00*	9	662	569	615
11	40.00	42.00	SAND	*41.00*	*-24.78*	*2.00*	12	882	688	785
12	45.00	47.00	SAND	*46.00*	*-29.78*	*2.00*	35	2573	1395	1984
13	50.00	52.00	SAND	*51.00*	*-34.78*	*2.00*	27	1985	1175	1580

Boring No: B-8
Surface Elevation (ft): 17.29

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*16.29*	*2.00*	5	368	386	377
2	2.00	4.00	SAND	*3.00*	*14.29*	*2.00*	12	882	688	785
3	4.00	6.00	SAND	*5.00*	*12.29*	*2.00*	16	1176	832	1004
4	6.00	8.00	SAND	*7.00*	*10.29*	*2.00*	6	441	435	438
5	8.00	10.00	SAND	*9.00*	*8.29*	*2.00*	10	735	610	673
6	15.00	17.00	SAND	*16.00*	*1.29*	*2.00*	4	294	333	314
7	20.00	22.00	SAND	*21.00*	*-3.71*	*2.00*	4	294	333	314
8	24.75	26.75	SAND	*25.75*	*-8.46*	*2.00*	8	588	527	557
9	30.00	32.00	SAND	*31.00*	*-13.71*	*2.00*	8	588	527	557
10	35.00	37.00	SAND	*36.00*	*-18.71*	*2.00*	10	735	610	673
11	40.00	42.00	SAND	*41.00*	*-23.71*	*2.00*	7	515	482	498
12	45.00	47.00	SAND	*46.00*	*-28.71*	*2.00*	14	1029	762	895
13	50.00	52.00	SAND	*51.00*	*-33.71*	*2.00*	12	882	688	785

Boring No: B-9
Surface Elevation (ft): 12.86

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*11.86*	*2.00*	6	441	435	438
2	2.00	4.00	SAND	*3.00*	*9.86*	*2.00*	9	662	569	615
3	4.00	6.00	SAND	*5.00*	*7.86*	*2.00*	10	735	610	673
4	6.00	8.00	SAND	*7.00*	*5.86*	*2.00*	8	588	527	557
5	8.00	10.00	SAND	*9.00*	*3.86*	*2.00*	12	882	688	785
6	15.00	17.00	SAND	*16.00*	*-3.14*	*2.00*	6	441	435	438
7	20.00	22.00	SAND	*21.00*	*-8.14*	*2.00*	8	588	527	557
8	25.00	27.00	SAND	*26.00*	*-13.14*	*2.00*	15	1103	797	950
9	30.00	32.00	SAND	*31.00*	*-18.14*	*2.00*	12	882	688	785
10	35.00	37.00	SAND	*36.00*	*-23.14*	*2.00*	11	809	650	729
11	40.00	42.00	SAND	*41.00*	*-28.14*	*2.00*	8	588	527	557
12	45.00	47.00	SAND	*46.00*	*-33.14*	*2.00*	9	662	569	615
13	50.00	52.00	SAND	*51.00*	*-38.14*	*2.00*	8	588	527	557

Boring No: B-10
Surface Elevation (ft): 13.97

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*12.97*	*2.00*	8	588	527	557
2	2.00	4.00	SAND	*3.00*	*9.86*	*2.00*	13	956	725	840
3	4.00	6.00	SAND	*5.00*	*7.86*	*2.00*	13	956	725	840
4	6.00	8.00	SAND	*7.00*	*5.86*	*2.00*	24	1764	1087	1426
5	8.00	10.00	SAND	*9.00*	*3.86*	*2.00*	24	1764	1087	1426
6	15.00	17.00	SAND	*16.00*	*-3.14*	*2.00*	8	588	527	557
7	20.00	22.00	SAND	*21.00*	*-8.14*	*2.00*	9	662	569	615
8	25.00	27.00	SAND	*26.00*	*-13.14*	*2.00*	4	294	333	314
9	30.00	32.00	SAND	*31.00*	*-18.14*	*2.00*	4	294	333	314
10	35.00	37.00	SAND	*36.00*	*-23.14*	*2.00*	3	221	276	248
11	40.00	42.00	SAND	*41.00*	*-28.14*	*2.00*	20	1470	964	1217
12	45.00	47.00	SAND	*46.00*	*-33.14*	*2.00*	12	882	688	785
13	50.00	52.00	SAND	*51.00*	*-38.14*	*2.00*	36	2646	1421	2033

Boring No: B-11
Surface Elevation (ft): 14.27

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*13.27*	*2.00*	6	441	435	438
2	2.00	4.00	SAND	*3.00*	*11.27*	*2.00*	11	809	650	729
3	4.00	6.00	SAND	*5.00*	*9.27*	*2.00*	6	441	435	438
4	6.00	8.00	SAND	*7.00*	*7.27*	*2.00*	12	882	688	785
5	8.00	10.00	SAND	*9.00*	*5.27*	*2.00*	19	1397	932	1164
6	13.00	15.00	SAND	*14.00*	*0.27*	*2.00*	10	735	610	673
7	18.00	20.00	SAND	*19.00*	*-4.73*	*2.00*	7	515	482	498
8	26.00	28.00	SAND	*27.00*	*-12.73*	*2.00*	4	294	333	314
9	29.00	31.00	SAND	*30.00*	*-15.73*	*2.00*	5	368	386	377
10	33.00	35.00	SAND	*34.00*	*-19.73*	*2.00*	6	441	435	438
11	38.00	40.00	SAND	*39.00*	*-24.73*	*2.00*	72	5292	2245	3769
12	43.00	45.00	SAND	*44.00*	*-29.73*	*2.00*	67	4925	2141	3533
13	48.00	50.00	SAND	*49.00*	*-34.73*	*2.00*	51	3749	1788	2768

Boring No: B-12
Surface Elevation (ft): 8.18

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*7.18*	*2.00*	8	588	527	557
2	2.00	4.00	SAND	*3.00*	*5.18*	*2.00*	13	956	725	840
3	4.00	6.00	SAND	*5.00*	*3.18*	*2.00*	13	956	725	840
4	6.00	8.00	SAND	*7.00*	*1.18*	*2.00*	24	1764	1087	1426
5	8.00	10.00	SAND	*9.00*	*-0.82*	*2.00*	24	1764	1087	1426
6	14.00	16.00	SAND	*15.00*	*-6.82*	*2.00*	8	588	527	557
7	19.00	21.00	SAND	*20.00*	*-11.82*	*2.00*	9	662	569	615
8	24.00	26.00	SAND	*25.00*	*-16.82*	*2.00*	4	294	333	314
9	29.00	31.00	SAND	*30.00*	*-21.82*	*2.00*	4	294	333	314
10	34.00	36.00	SAND	*35.00*	*-26.82*	*2.00*	3	221	276	248
11	39.00	41.00	SAND	*40.00*	*-31.82*	*2.00*	20	1470	964	1217
12	44.00	46.00	SAND	*45.00*	*-36.82*	*2.00*	12	882	688	785
13	49.00	51.00	SAND	*50.00*	*-41.82*	*2.00*	36	2646	1421	2033

Boring No: B-13
Surface Elevation (ft): 15.17

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*14.17*	*2.00*	11	809	650	729
2	2.00	4.00	SAND	*3.00*	*12.17*	*2.00*	40	2940	1523	2232
3	4.00	6.00	SAND	*5.00*	*10.17*	*2.00*	40	2940	1523	2232
4	6.00	8.00	SAND	*7.00*	*8.17*	*2.00*	27	1985	1175	1580
5	8.00	10.00	SAND	*9.00*	*6.17*	*2.00*	31	2279	1287	1783
6	13.00	15.00	SAND	*14.00*	*1.17*	*2.00*	25	1838	1117	1477
7	18.00	20.00	SAND	*19.00*	*-3.83*	*2.00*	15	1103	797	950
8	23.00	25.00	SAND	*24.00*	*-8.83*	*2.00*	17	1250	866	1058
9	28.00	30.00	SAND	*29.00*	*-13.83*	*2.00*	32	2352	1315	1833
10	33.00	35.00	SAND	*34.00*	*-18.83*	*2.00*	15	1103	797	950
11	38.00	40.00	SAND	*39.00*	*-23.83*	*2.00*	10	735	610	673
12	43.00	45.00	SAND	*44.00*	*-28.83*	*2.00*	108	7938	2934	5436
13	48.00	50.00	SAND	*49.00*	*-33.83*	*2.00*	100	7350	2789	5069

Boring No: B-14
Surface Elevation (ft): 21.67

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*20.67*	*2.00*	10	735	610	673
2	2.00	4.00	SAND	*3.00*	*18.67*	*2.00*	16	1176	832	1004
3	4.00	6.00	SAND	*5.00*	*16.67*	*2.00*	47	3455	1694	2574
4	6.00	8.00	SAND	*7.00*	*14.67*	*2.00*	100	7350	2789	5069
5	8.00	10.00	SAND	*9.00*	*12.67*	*2.00*	100	7350	2789	5069
6	15.00	17.00	SAND	*16.00*	*5.67*	*2.00*	44	3234	1622	2428
7	20.00	22.00	SAND	*21.00*	*0.67*	*2.00*	4	294	333	314
8	25.00	27.00	SAND	*26.00*	*-4.33*	*2.00*	5	368	386	377
9	30.00	32.00	SAND	*31.00*	*-9.33*	*2.00*	6	441	435	438
10	35.00	37.00	SAND	*36.00*	*-14.33*	*2.00*	6	441	435	438
11	40.00	42.00	SAND	*41.00*	*-19.33*	*2.00*	6	441	435	438
12	45.00	47.00	SAND	*46.00*	*-24.33*	*2.00*	12	882	688	785
13	50.00	52.00	SAND	*51.00*	*-29.33*	*2.00*	28	2058	1204	1631

Boring No: B-15
Surface Elevation (ft): 19.65

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*18.65*	*2.00*	14	1029	762	895
2	2.00	4.00	SAND	*3.00*	*16.65*	*2.00*	9	662	569	615
3	4.00	6.00	SAND	*5.00*	*14.65*	*2.00*	23	1691	1057	1374
4	6.00	8.00	SAND	*7.00*	*12.65*	*2.00*	23	1691	1057	1374
5	8.00	10.00	SAND	*9.00*	*10.65*	*2.00*	12	882	688	785
6	15.00	17.00	SAND	*16.00*	*3.65*	*2.00*	21	1544	996	1270
7	20.00	22.00	SAND	*21.00*	*-1.35*	*2.00*	20	1470	964	1217
8	25.00	27.00	SAND	*26.00*	*-6.35*	*2.00*	10	735	610	673
9	30.00	32.00	SAND	*31.00*	*-11.35*	*2.00*	5	368	386	377
10	35.00	37.00	SAND	*36.00*	*-16.35*	*2.00*	5	368	386	377
11	40.00	42.00	SAND	*41.00*	*-21.35*	*2.00*	9	662	569	615
12	45.00	47.00	SAND	*46.00*	*-26.35*	*2.00*	7	515	482	498
13	50.00	52.00	SAND	*51.00*	*-31.35*	*2.00*	8	588	527	557

Boring No: B-16
Surface Elevation (ft): 11.58

Calculation Layer	Depth (feet) From	Depth (feet) To	Soil Type	Depth of Mid-Point	Elevation	Thickness of Layer	SPT N	Deformation Modulus (psi) Method 1	Method 2	Average
1	0.00	2.00	SAND	*1.00*	*10.58*	*2.00*	5	368	386	377
2	2.00	4.00	SAND	*3.00*	*8.58*	*2.00*	6	441	435	438
3	4.00	6.00	SAND	*5.00*	*6.58*	*2.00*	13	956	725	840
4	6.00	8.00	SAND	*7.00*	*4.58*	*2.00*	18	1323	899	1111
5	8.00	10.00	SAND	*9.00*	*2.58*	*2.00*	4	294	333	314
6	14.00	16.00	SAND	*15.00*	*-3.42*	*2.00*	4	294	333	314
7	18.00	20.00	SAND	*19.00*	*-7.42*	*2.00*	3	221	276	248
8	24.00	26.00	SAND	*25.00*	*-13.42*	*2.00*	8	588	527	557
9	28.00	30.00	SAND	*29.00*	*-17.42*	*2.00*	22	1617	1027	1322
10	34.00	36.00	SAND	*35.00*	*-23.42*	*2.00*	25	1838	1117	1477
11	38.00	40.00	SAND	*39.00*	*-27.42*	*2.00*	13	956	725	840
12	44.00	46.00	SAND	*45.00*	*-33.42*	*2.00*	63	4631	2056	3343
13	48.00	50.00	SAND	*49.00*	*-37.42*	*2.00*	21	1544	996	1270

ATTACHMENT 2

ESTIMATION OF CONFINED STIFFNESS MODULUS BASED ON SELECTED CPT DATA

CPT - 1
GWL (ft) = 4.5

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
0.246	2.00	0.02	0.20	120.0	0.000	0.015	0.015	Sandy	0.01	23.43	16.42
0.738	2.00	0.02	0.28	120.0	0.000	0.044	0.044	Sandy	0.01	17.80	18.09
1.230	2.00	0.07	0.16	120.0	0.000	0.074	0.074	Sandy	0.01	15.67	18.77
1.722	36.42	0.20	4.96	120.0	0.000	0.103	0.103	Sandy	0.01	61.46	155.03
2.215	71.30	0.36	3.05	120.0	0.000	0.133	0.133	Sandy	0.00	80.74	217.53
2.707	97.55	0.52	2.35	120.0	0.000	0.162	0.162	Sandy	0.00	89.82	254.42
3.199	103.47	0.53	1.93	120.0	0.000	0.192	0.192	Sandy	0.00	88.73	275.02
3.691	100.69	0.54	1.52	120.0	0.000	0.221	0.221	Sandy	0.00	84.45	288.14
4.183	77.73	0.38	1.42	120.0	0.000	0.251	0.251	Sandy	0.00	71.92	276.20
4.675	48.90	0.25	1.62	120.0	0.005	0.281	0.275	Sandy	0.00	55.75	229.71
5.167	27.27	0.21	1.27	120.0	0.021	0.310	0.289	Sandy	0.00	41.11	164.94
5.659	20.20	0.15	2.69	120.0	0.036	0.340	0.303	Sandy	0.01	34.96	135.87
6.152	39.64	0.12	0.69	120.0	0.052	0.369	0.318	Sandy	0.00	48.42	211.33
6.644	49.84	0.28	0.90	120.0	0.067	0.399	0.332	Sandy	0.00	53.71	242.54
7.136	55.22	0.42	0.97	120.0	0.082	0.428	0.346	Sandy	0.00	55.94	258.54
7.628	63.14	0.34	1.72	120.0	0.098	0.458	0.360	Sandy	0.00	59.22	279.34
8.120	77.56	0.49	1.30	120.0	0.113	0.487	0.374	Sandy	0.00	65.01	310.51
8.612	76.30	0.48	0.49	120.0	0.128	0.517	0.388	Sandy	0.00	63.88	311.47
9.104	84.96	0.61	0.76	120.0	0.144	0.546	0.403	Sandy	0.00	66.81	329.73
9.596	98.60	0.63	1.00	120.0	0.159	0.576	0.417	Sandy	0.00	71.35	353.78
10.088	119.10	0.70	1.84	120.0	0.174	0.605	0.431	Sandy	0.00	77.77	382.53
10.581	148.40	0.84	2.12	120.0	0.190	0.635	0.445	Sandy	0.00	86.11	412.70
11.073	152.58	0.77	2.68	120.0	0.205	0.664	0.459	Sandy	0.00	86.63	420.51
11.565	170.64	1.00	2.62	120.0	0.220	0.694	0.473	Sandy	0.00	90.92	436.70
12.057	136.27	0.74	2.94	120.0	0.236	0.723	0.488	Sandy	0.00	80.65	416.40
12.549	146.22	0.69	3.39	120.0	0.251	0.753	0.502	Sandy	0.00	82.95	429.43
13.041	112.68	0.59	3.55	120.0	0.266	0.782	0.516	Sandy	0.00	72.31	397.66
13.533	100.79	0.57	3.81	120.0	0.282	0.812	0.530	Sandy	0.00	67.93	383.67
14.025	90.98	0.47	3.99	120.0	0.297	0.842	0.544	Sandy	0.00	64.11	369.91
14.518	75.09	0.53	4.10	120.0	0.313	0.871	0.559	Sandy	0.00	57.87	340.05
15.010	71.37	0.54	4.14	120.0	0.328	0.901	0.573	Sandy	0.00	56.07	333.43
15.502	66.23	0.46	4.32	120.0	0.343	0.930	0.587	Sandy	0.00	53.68	322.43
15.994	64.03	0.32	4.61	120.0	0.359	0.960	0.601	Sandy	0.00	52.47	318.32
16.486	64.59	0.37	5.16	120.0	0.374	0.989	0.615	Sandy	0.00	52.39	321.53
16.978	70.45	0.35	5.85	120.0	0.389	1.019	0.629	Sandy	0.00	54.41	338.71
17.470	87.30	0.39	6.80	120.0	0.405	1.048	0.644	Sandy	0.00	60.23	379.58
17.962	105.54	0.42	7.53	120.0	0.420	1.078	0.658	Sandy	0.00	65.86	416.34
18.454	123.30	0.47	7.59	120.0	0.435	1.107	0.672	Sandy	0.00	70.81	446.56
18.947	135.92	0.60	7.38	120.0	0.451	1.137	0.686	Sandy	0.00	73.96	466.22
19.439	134.17	0.62	7.25	120.0	0.466	1.166	0.700	Sandy	0.00	73.11	467.04
19.931	122.13	0.57	7.47	120.0	0.481	1.196	0.714	Sandy	0.00	69.40	453.23
20.423	107.16	0.51	7.56	120.0	0.497	1.225	0.729	Sandy	0.00	64.69	431.38
20.915	76.08	0.43	7.81	120.0	0.512	1.255	0.743	Sandy	0.00	54.25	366.80
21.407	59.94	0.32	9.12	120.0	0.527	1.284	0.757	Sandy	0.00	47.92	322.33
21.899	61.40	0.33	10.71	120.0	0.543	1.314	0.771	Sandy	0.00	48.28	328.16
22.391	82.19	0.32	11.26	120.0	0.558	1.343	0.785	Sandy	0.00	55.60	387.08
22.884	98.22	0.53	10.78	120.0	0.574	1.373	0.799	Sandy	0.00	60.51	424.97
23.376	123.04	0.46	10.88	120.0	0.589	1.403	0.814	Sandy	0.00	67.43	472.41
23.868	135.71	0.65	10.30	120.0	0.604	1.432	0.828	Sandy	0.00	70.51	494.05
24.360	154.51	0.80	10.50	120.0	0.620	1.462	0.842	Sandy	0.00	74.92	521.27
24.852	131.73	0.73	10.33	120.0	0.635	1.491	0.856	Sandy	0.00	68.89	493.20
25.344	90.33	0.50	10.71	120.0	0.650	1.521	0.870	Sandy	0.00	56.81	416.62
25.836	63.76	0.32	11.83	120.0	0.666	1.550	0.884	Sandy	0.00	47.54	345.15
26.328	70.65	0.33	13.19	120.0	0.681	1.580	0.899	Sandy	0.00	49.84	367.53
26.821	66.36	0.32	14.00	120.0	0.696	1.609	0.913	Sandy	0.00	48.12	355.66
27.313	58.78	0.43	15.15	120.0	0.712	1.639	0.927	Sandy	0.01	45.11	331.82
27.805	101.78	0.51	14.30	120.0	0.727	1.668	0.941	Sandy	0.00	59.14	450.96
28.297	121.78	0.61	11.85	120.0	0.742	1.698	0.955	Sandy	0.00	64.44	492.31
28.789	143.90	0.66	12.01	120.0	0.758	1.727	0.970	Sandy	0.00	69.80	530.38
29.281	160.95	0.82	12.09	120.0	0.773	1.757	0.984	Sandy	0.00	73.55	556.01
29.773	151.66	0.77	12.16	120.0	0.789	1.786	0.998	Sandy	0.00	71.14	546.17
30.265	153.77	0.88	11.44	120.0	0.804	1.816	1.012	Sandy	0.00	71.38	551.47
30.758	98.85	0.73	11.68	120.0	0.819	1.845	1.026	Sandy	0.00	57.03	454.19
31.250	77.99	0.76	11.83	120.0	0.835	1.875	1.040	Sandy	0.00	50.48	401.24
31.742	42.00	0.84	13.84	120.0	0.850	1.905	1.055	Sandy	0.00	36.92	273.10
32.234	73.08	0.64	13.54	120.0	0.865	1.934	1.069	Sandy	0.00	48.54	388.80
32.726	76.93	0.89	13.83	120.0	0.881	1.964	1.083	Sandy	0.00	49.64	401.60
33.218	127.50	0.84	12.98	120.0	0.896	1.993	1.097	Sandy	0.00	63.70	522.11
33.710	86.01	0.97	13.36	120.0	0.911	2.023	1.111	Sandy	0.00	52.15	429.95
34.202	58.83	1.02	13.87	120.0	0.927	2.052	1.125	Sandy	0.00	42.99	344.46
34.694	135.01	0.67	14.60	120.0	0.942	2.082	1.140	Sandy	0.00	64.93	541.26
35.187	88.46	0.85	13.45	120.0	0.957	2.111	1.154	Sandy	0.00	52.39	440.34
35.679	87.46	0.87	14.42	120.0	0.973	2.141	1.168	Sandy	0.00	51.94	438.81
36.171	133.00	0.82	14.64	120.0	0.988	2.170	1.182	Sandy	0.00	63.86	543.17

CPT - 1
GWL (ft) = 4.5

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
36.663	151.53	0.84	14.84	120.0	1.003	2.200	1.196	Sandy	0.00	67.96	576.54
37.155	131.30	0.98	14.61	120.0	1.019	2.229	1.210	Sandy	0.00	63.07	543.54
37.647	126.05	0.97	14.82	120.0	1.034	2.259	1.225	Sandy	0.00	61.62	535.06
38.139	120.17	0.95	14.83	120.0	1.050	2.288	1.239	Sandy	0.00	59.99	524.64
38.631	92.91	0.83	14.85	120.0	1.065	2.318	1.253	Sandy	0.00	52.60	460.85
39.124	136.72	0.79	15.01	120.0	1.080	2.347	1.267	Sandy	0.00	63.63	560.56
39.616	158.96	0.84	15.62	120.0	1.096	2.377	1.281	Sandy	0.00	68.42	600.01
40.108	153.98	0.84	15.55	120.0	1.111	2.406	1.296	Sandy	0.00	67.15	594.05
40.600	137.83	0.76	15.20	120.0	1.126	2.436	1.310	Sandy	0.00	63.36	567.73
41.092	130.85	0.64	15.52	120.0	1.142	2.466	1.324	Sandy	0.00	61.57	555.91
41.584	65.69	0.66	15.46	120.0	1.157	2.495	1.338	Sandy	0.00	43.51	381.23
42.076	61.79	0.67	17.25	120.0	1.172	2.525	1.352	Sandy	0.00	42.09	367.51
42.568	156.26	0.70	17.45	120.0	1.188	2.554	1.366	Sandy	0.00	66.75	607.01
43.061	226.29	1.26	18.53	120.0	1.203	2.584	1.381	Sandy	0.00	80.12	697.82
43.553	261.96	1.28	18.65	120.0	1.218	2.613	1.395	Sandy	0.00	85.99	730.01
44.045	230.31	1.29	17.93	120.0	1.234	2.643	1.409	Sandy	0.00	80.42	706.56
44.537	257.09	1.65	19.28	120.0	1.249	2.672	1.423	Sandy	0.00	84.76	731.83
45.029	269.08	2.15	19.69	120.0	1.265	2.702	1.437	Sandy	0.00	86.50	743.29
45.521	250.79	2.15	18.76	120.0	1.280	2.731	1.451	Sandy	0.00	83.30	732.08
46.013	295.55	2.76	19.74	120.0	1.295	2.761	1.466	Sandy	0.00	90.21	765.70
46.505	304.72	3.18	19.97	120.0	1.311	2.790	1.480	Sandy	0.00	91.38	773.68
46.997	269.77	0.29	18.33	120.0	1.326	2.820	1.494	Sandy	0.00	85.77	754.55
47.490	360.00	0.25	18.33	120.0	1.341	2.849	1.508	Sandy	0.00	98.85	803.37
47.982	308.73	0.30	17.92	120.0	1.357	2.879	1.522	Sandy	0.00	91.33	784.54
48.474	304.94	0.60	16.66	120.0	1.372	2.908	1.536	Sandy	0.00	90.56	785.32
48.966	332.42	0.13	18.24	120.0	1.387	2.938	1.551	Sandy	0.00	94.33	802.05
49.458	339.82	0.02	19.39	120.0	1.403	2.967	1.565	Sandy	0.00	95.16	808.27
49.950	354.99	0.25	16.47	120.0	1.418	2.997	1.579	Sandy	0.00	97.04	817.35
50.442	341.22	0.34	19.26	120.0	1.433	3.027	1.593	Sandy	0.00	94.93	814.85
50.934	349.42	0.49	21.35	120.0	1.449	3.056	1.607	Sandy	0.00	95.85	821.25
51.427	318.45	1.35	21.44	120.0	1.464	3.086	1.621	Sandy	0.00	91.30	809.61
51.919	325.05	0.02	21.92	120.0	1.479	3.115	1.636	Sandy	0.00	92.04	815.88
52.411	325.73	1.04	21.03	120.0	1.495	3.145	1.650	Sandy	0.00	91.94	819.03
52.903	299.96	1.24	21.97	120.0	1.510	3.174	1.664	Sandy	0.00	88.04	806.79
53.395	237.53	1.39	21.93	120.0	1.526	3.204	1.678	Sandy	0.00	78.18	757.49
53.887	240.32	1.18	22.09	120.0	1.541	3.233	1.692	Sandy	0.00	78.47	762.52
54.379	258.13	1.29	22.21	120.0	1.556	3.263	1.707	Sandy	0.00	81.16	781.90
54.871	255.69	1.35	22.66	120.0	1.572	3.292	1.721	Sandy	0.00	80.61	781.92
55.364	252.89	0.02	21.98	120.0	1.587	3.322	1.735	Sandy	0.00	80.00	781.51
55.856	251.77	0.06	20.94	120.0	1.602	3.351	1.749	Sandy	0.00	79.66	782.62
56.348	313.32	0.09	23.04	120.0	1.618	3.381	1.763	Sandy	0.00	88.69	833.38
56.840	351.26	0.02	21.44	120.0	1.633	3.410	1.777	Sandy	0.00	93.71	856.58
57.332	363.98	0.02	22.67	120.0	1.648	3.440	1.792	Sandy	0.00	95.21	865.01
57.824	344.15	0.03	22.02	120.0	1.664	3.469	1.806	Sandy	0.00	92.40	858.58
58.316	203.67	0.12	21.79	120.0	1.679	3.499	1.820	Sandy	0.00	70.94	736.00
58.808	196.44	1.38	23.65	120.0	1.694	3.528	1.834	Sandy	0.00	69.53	727.31
59.300	131.52	0.33	37.60	120.0	1.710	3.558	1.848	Sandy	0.01	56.79	606.87
59.793	124.61	0.80	24.87	120.0	1.725	3.588	1.862	Sandy	0.00	55.17	591.27
60.285	273.19	1.62	33.08	120.0	1.740	3.617	1.877	Sandy	0.00	81.53	822.19
60.777	145.70	0.47	29.11	120.0	1.756	3.647	1.891	Sandy	0.00	59.43	642.29
61.269	140.56	1.56	28.28	120.0	1.771	3.676	1.905	Sandy	0.00	58.26	632.24
61.761	142.95	1.50	30.69	120.0	1.787	3.706	1.919	Sandy	0.00	58.65	638.74
62.253	116.06	0.44	23.41	120.0	1.802	3.735	1.933	Sandy	0.00	52.75	574.21
62.745	88.81	0.52	20.96	120.0	1.817	3.765	1.947	Sandy	0.00	46.06	493.21
63.237	94.51	0.73	17.90	120.0	1.833	3.794	1.962	Sandy	-0.01	47.43	512.60
63.730	210.74	0.62	15.83	120.0	1.848	3.824	1.976	Sandy	0.00	70.69	764.80
64.222	141.91	0.38	12.39	120.0	1.863	3.853	1.990	Sandy	-0.01	57.91	642.26
64.714	137.20	0.32	11.60	120.0	1.879	3.883	2.004	Sandy	-0.01	56.84	632.52
65.206	121.22	0.62	12.08	120.0	1.894	3.912	2.018	Sandy	-0.01	53.33	593.74
65.698	96.61	2.22	17.03	120.0	1.909	3.942	2.033	Sandy	-0.01	47.53	523.08
66.190	47.21	1.03	22.58	120.0	1.925	3.971	2.047	Sandy	-0.01	33.17	327.56
66.682	5.70	0.17	23.00	120.0	1.940	4.001	2.061	Sandy	-0.17	11.50	57.49
67.174	11.16	0.28	25.05	120.0	1.955	4.030	2.075	Sandy	-0.02	16.07	104.03
67.666	56.97	0.66	25.00	120.0	1.971	4.060	2.089	Sandy	0.00	36.25	374.80
68.159	104.56	1.47	27.05	120.0	1.986	4.090	2.103	Sandy	0.00	49.02	551.70
68.651	94.47	0.73	28.02	120.0	2.002	4.119	2.118	Sandy	0.00	46.52	520.48
69.143	72.75	1.19	27.83	120.0	2.017	4.149	2.132	Sandy	0.00	40.75	442.77

CPT - 2
GWL (ft) = 4

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
0.246	8.31	0.02	7.29	120.0	0.000	0.015	0.015	Sandy	0.06	47.75	44.82
0.738	6.21	0.03	1.32	120.0	0.000	0.044	0.044	Sandy	0.02	31.36	44.45
1.230	2.98	0.08	2.01	120.0	0.000	0.074	0.074	Sandy	0.05	19.12	26.35
1.722	11.53	0.09	3.06	120.0	0.000	0.103	0.103	Sandy	0.02	34.58	78.07
2.215	46.42	0.31	-0.92	120.0	0.000	0.133	0.133	Sandy	0.00	65.15	185.39
2.707	63.51	0.47	-1.94	120.0	0.000	0.162	0.162	Sandy	0.00	72.48	223.49
3.199	68.21	0.49	0.55	120.0	0.000	0.192	0.192	Sandy	0.00	72.04	241.85
3.691	68.95	0.57	2.13	120.0	0.000	0.221	0.221	Sandy	0.00	69.88	253.75
4.183	72.85	0.58	1.79	120.0	0.006	0.251	0.245	Sandy	0.00	70.02	267.46
4.675	76.10	0.55	-0.08	120.0	0.021	0.281	0.259	Sandy	0.00	70.57	276.76
5.167	70.05	0.59	-0.61	120.0	0.036	0.310	0.274	Sandy	0.00	66.81	271.84
5.659	47.80	0.42	2.78	120.0	0.052	0.340	0.288	Sandy	0.00	54.50	229.45
6.152	44.23	0.36	3.72	120.0	0.067	0.369	0.302	Sandy	0.00	51.80	222.45
6.644	91.78	0.60	3.98	120.0	0.082	0.399	0.316	Sandy	0.00	73.76	315.88
7.136	127.74	1.08	4.22	120.0	0.098	0.428	0.330	Sandy	0.00	86.07	355.45
7.628	106.18	1.00	4.34	120.0	0.113	0.458	0.344	Sandy	0.00	77.65	341.69
8.120	96.75	0.80	4.75	120.0	0.129	0.487	0.359	Sandy	0.00	73.38	335.18
8.612	104.17	0.60	5.10	120.0	0.144	0.517	0.373	Sandy	0.00	75.41	348.47
9.104	101.80	0.89	5.35	120.0	0.159	0.546	0.387	Sandy	0.00	73.86	349.81
9.596	88.54	0.82	5.48	120.0	0.175	0.576	0.401	Sandy	0.00	68.26	335.10
10.088	64.84	0.65	5.61	120.0	0.190	0.605	0.415	Sandy	0.00	57.91	293.43
10.581	48.57	0.43	5.87	120.0	0.205	0.635	0.430	Sandy	0.00	49.70	253.28
11.073	42.31	0.35	6.21	120.0	0.221	0.664	0.444	Sandy	0.01	46.01	235.15
11.565	43.76	0.38	6.46	120.0	0.236	0.694	0.458	Sandy	0.01	46.43	241.47
12.057	47.14	0.45	6.57	120.0	0.251	0.723	0.472	Sandy	0.00	47.82	253.93
12.549	47.23	0.40	6.69	120.0	0.267	0.753	0.486	Sandy	0.00	47.52	255.77
13.041	49.34	0.37	7.05	120.0	0.282	0.782	0.500	Sandy	0.00	48.22	263.97
13.533	50.36	0.46	7.11	120.0	0.297	0.812	0.515	Sandy	0.00	48.38	268.70
14.025	48.28	0.32	7.46	120.0	0.313	0.842	0.529	Sandy	0.00	47.05	263.59
14.518	52.20	0.29	7.62	120.0	0.328	0.871	0.543	Sandy	0.00	48.59	277.47
15.010	56.92	0.41	7.88	120.0	0.344	0.901	0.557	Sandy	0.00	50.42	293.17
15.502	58.90	0.53	8.12	120.0	0.359	0.930	0.571	Sandy	0.00	50.97	300.51
15.994	61.22	0.51	8.40	120.0	0.374	0.960	0.585	Sandy	0.00	51.64	308.72
16.486	66.53	0.43	8.53	120.0	0.390	0.989	0.600	Sandy	0.00	53.52	324.82
16.978	60.08	0.43	9.59	120.0	0.405	1.019	0.614	Sandy	0.00	50.56	308.70
17.470	60.46	0.36	10.77	120.0	0.420	1.048	0.628	Sandy	0.01	50.43	311.34
17.962	40.10	0.21	9.14	120.0	0.436	1.078	0.642	Sandy	0.01	40.84	243.68
18.454	31.42	0.23	13.59	120.0	0.451	1.107	0.656	Sandy	0.02	35.96	207.75
18.947	34.65	0.23	11.49	120.0	0.466	1.137	0.670	Sandy	0.01	37.56	222.86
19.439	38.47	0.26	11.29	120.0	0.482	1.166	0.685	Sandy	0.01	39.37	239.81
19.931	50.78	0.31	11.06	120.0	0.497	1.196	0.699	Sandy	0.01	45.00	287.21
20.423	57.11	0.42	10.52	120.0	0.512	1.225	0.713	Sandy	0.00	47.48	309.46
20.915	58.87	0.34	10.65	120.0	0.528	1.255	0.727	Sandy	0.00	47.97	316.31
21.407	56.64	0.38	10.82	120.0	0.543	1.284	0.741	Sandy	0.00	46.83	310.40
21.899	47.90	0.36	11.41	120.0	0.558	1.314	0.755	Sandy	0.01	42.86	281.12
22.391	33.59	0.28	16.40	120.0	0.574	1.343	0.770	Sandy	0.02	35.72	222.98
22.884	39.28	0.24	17.40	120.0	0.589	1.373	0.784	Sandy	0.02	38.46	248.74
23.376	50.26	0.27	14.56	120.0	0.605	1.403	0.798	Sandy	0.01	43.31	292.70
23.868	40.56	0.26	15.57	120.0	0.620	1.432	0.812	Sandy	0.01	38.73	255.63
24.360	42.38	0.21	16.49	120.0	0.635	1.462	0.826	Sandy	0.01	39.42	263.94
24.852	49.47	0.25	15.40	120.0	0.651	1.491	0.841	Sandy	0.01	42.41	292.59
25.344	51.00	0.28	15.37	120.0	0.666	1.521	0.855	Sandy	0.01	42.88	299.20
25.836	47.98	0.28	15.93	120.0	0.681	1.550	0.869	Sandy	0.01	41.42	288.67
26.328	51.93	0.27	15.04	120.0	0.697	1.580	0.883	Sandy	0.01	42.92	304.46
26.821	48.40	0.25	16.20	120.0	0.712	1.609	0.897	Sandy	0.01	41.27	291.96
27.313	42.24	0.19	16.82	120.0	0.727	1.639	0.911	Sandy	0.01	38.40	267.73
27.805	31.20	0.21	19.23	120.0	0.743	1.668	0.926	Sandy	0.02	32.88	217.55
28.297	34.39	0.18	21.22	120.0	0.758	1.698	0.940	Sandy	0.02	34.39	233.63
28.789	46.38	0.25	15.01	120.0	0.773	1.727	0.954	Sandy	0.01	39.79	287.04
29.281	45.71	0.28	16.03	120.0	0.789	1.757	0.968	Sandy	0.01	39.35	285.02
29.773	42.74	0.35	17.34	120.0	0.804	1.786	0.982	Sandy	0.01	37.91	273.20
30.265	68.55	0.32	14.39	120.0	0.819	1.816	0.996	Sandy	0.00	47.84	369.13
30.758	65.40	0.38	14.87	120.0	0.835	1.845	1.011	Sandy	0.00	46.57	360.02
31.250	69.65	0.45	14.99	120.0	0.850	1.875	1.025	Sandy	0.00	47.89	374.76
31.742	65.19	0.47	15.08	120.0	0.866	1.905	1.039	Sandy	0.00	46.17	361.32
32.234	64.38	0.42	15.32	120.0	0.881	1.934	1.053	Sandy	0.00	45.73	359.57
32.726	60.06	0.36	15.63	120.0	0.896	1.964	1.067	Sandy	0.00	44.02	345.48

CPT - 2
GWL (ft) = 4

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
33.218	59.04	0.40	15.79	120.0	0.912	1.993	1.081	Sandy	0.00	43.50	342.67
33.710	62.95	0.41	15.97	120.0	0.927	2.023	1.096	Sandy	0.00	44.77	357.43
34.202	53.40	0.36	16.25	120.0	0.942	2.052	1.110	Sandy	0.00	41.11	323.04
34.694	45.06	0.32	16.49	120.0	0.958	2.082	1.124	Sandy	0.01	37.64	289.40
35.187	37.84	0.22	16.75	120.0	0.973	2.111	1.138	Sandy	0.01	34.38	257.08
35.679	47.64	0.14	16.95	120.0	0.988	2.141	1.152	Sandy	0.01	38.46	301.65
36.171	46.30	0.19	17.07	120.0	1.004	2.170	1.167	Sandy	0.01	37.80	296.53
36.663	55.41	0.22	17.58	120.0	1.019	2.200	1.181	Sandy	0.00	41.23	334.48
37.155	85.60	0.29	17.57	120.0	1.034	2.229	1.195	Sandy	0.00	51.09	435.80
37.647	105.79	0.44	18.15	120.0	1.050	2.259	1.209	Sandy	0.00	56.63	489.46
38.139	103.73	0.62	18.02	120.0	1.065	2.288	1.223	Sandy	0.00	55.91	485.91
38.631	106.46	0.60	18.48	120.0	1.080	2.318	1.237	Sandy	0.00	56.48	493.83
39.124	153.03	0.81	19.22	120.0	1.096	2.347	1.252	Sandy	0.00	67.52	586.60
39.616	227.22	1.35	19.43	120.0	1.111	2.377	1.266	Sandy	0.00	82.05	677.76
40.108	205.73	1.48	19.20	120.0	1.127	2.406	1.280	Sandy	0.00	77.86	659.74
40.600	157.34	1.38	19.39	120.0	1.142	2.436	1.294	Sandy	0.00	67.90	599.23
41.092	190.39	1.40	20.21	120.0	1.157	2.466	1.308	Sandy	0.00	74.49	647.11
41.584	321.22	2.75	21.00	120.0	1.173	2.495	1.322	Sandy	0.00	96.49	746.62
42.076	324.28	3.13	21.93	120.0	1.188	2.525	1.337	Sandy	0.00	96.69	751.13
42.568	276.26	2.72	21.54	120.0	1.203	2.554	1.351	Sandy	0.00	89.01	730.67
43.061	164.99	1.77	20.58	120.0	1.219	2.584	1.365	Sandy	0.00	68.61	620.70
43.553	112.18	1.04	20.49	120.0	1.234	2.613	1.379	Sandy	0.00	56.43	520.84
44.045	109.29	0.97	20.60	120.0	1.249	2.643	1.393	Sandy	0.00	55.55	515.14
44.537	95.47	0.88	20.36	120.0	1.265	2.672	1.407	Sandy	0.00	51.79	480.20
45.029	110.21	0.85	20.94	120.0	1.280	2.702	1.422	Sandy	0.00	55.51	519.89
45.521	164.04	0.94	20.62	120.0	1.295	2.731	1.436	Sandy	0.00	67.55	628.50
46.013	155.64	1.02	20.42	120.0	1.311	2.761	1.450	Sandy	0.00	65.64	616.36
46.505	147.42	1.02	21.38	120.0	1.326	2.790	1.464	Sandy	0.00	63.73	603.40
46.997	108.73	0.85	21.31	120.0	1.342	2.820	1.478	Sandy	0.00	54.60	521.04
47.490	94.39	0.82	21.40	120.0	1.357	2.849	1.493	Sandy	0.00	50.75	483.41
47.982	125.32	0.85	21.39	120.0	1.372	2.879	1.507	Sandy	0.00	58.34	562.98
48.474	105.75	0.92	21.99	120.0	1.388	2.908	1.521	Sandy	0.00	53.46	516.78
48.966	84.26	0.80	22.51	120.0	1.403	2.938	1.535	Sandy	0.00	47.61	455.54
49.458	54.08	0.81	22.89	120.0	1.418	2.967	1.549	Sandy	0.00	38.06	344.83
49.950	81.98	0.52	23.04	120.0	1.434	2.997	1.563	Sandy	0.00	46.75	449.87
50.442	72.29	0.69	22.03	120.0	1.449	3.027	1.578	Sandy	0.00	43.80	417.42
50.934	51.63	0.72	23.77	120.0	1.464	3.056	1.592	Sandy	0.01	36.93	335.66
51.427	142.87	0.73	23.37	120.0	1.480	3.086	1.606	Sandy	0.00	61.30	609.78
51.919	140.50	1.13	23.46	120.0	1.495	3.115	1.620	Sandy	0.00	60.66	606.37
52.411	121.17	1.28	24.02	120.0	1.510	3.145	1.634	Sandy	0.00	56.21	564.71
52.903	143.48	1.02	25.61	120.0	1.526	3.174	1.648	Sandy	0.00	61.03	615.23
53.395	225.78	1.12	24.76	120.0	1.541	3.204	1.663	Sandy	0.00	76.40	742.50
53.887	212.89	1.50	25.16	120.0	1.556	3.233	1.677	Sandy	0.00	74.03	729.36
54.379	192.04	1.47	25.67	120.0	1.572	3.263	1.691	Sandy	0.00	70.16	703.35
54.871	181.97	1.32	25.30	120.0	1.587	3.292	1.705	Sandy	0.00	68.16	689.97
55.364	184.64	0.97	26.11	120.0	1.603	3.322	1.719	Sandy	0.00	68.51	695.80
55.856	151.95	1.02	25.63	120.0	1.618	3.351	1.733	Sandy	0.00	62.02	640.50
56.348	128.11	0.85	25.67	120.0	1.633	3.381	1.748	Sandy	0.00	56.84	590.63
56.840	115.08	0.65	25.11	120.0	1.649	3.410	1.762	Sandy	0.00	53.76	559.51
57.332	109.14	0.66	25.58	120.0	1.664	3.440	1.776	Sandy	0.00	52.25	544.65
57.824	89.48	0.69	26.34	120.0	1.679	3.469	1.790	Sandy	0.00	47.22	487.09
58.316	120.10	0.55	26.47	120.0	1.695	3.499	1.804	Sandy	0.00	54.59	575.57
58.808	70.63	0.38	25.92	120.0	1.710	3.528	1.818	Sandy	0.00	41.78	422.29
59.300	58.19	0.31	26.48	120.0	1.725	3.558	1.833	Sandy	0.00	37.85	372.35
59.793	44.75	0.25	26.73	120.0	1.741	3.588	1.847	Sandy	0.00	33.13	310.68
60.285	24.05	0.66	27.62	120.0	1.756	3.617	1.861	Sandy	0.01	24.24	194.67
60.777	189.31	1.23	27.09	120.0	1.771	3.647	1.875	Sandy	0.00	67.88	721.18
61.269	319.36	1.97	29.84	120.0	1.787	3.676	1.889	Sandy	0.00	88.00	859.51
61.761	334.08	1.14	29.05	120.0	1.802	3.706	1.904	Sandy	0.00	89.84	871.05
62.253	229.98	1.43	28.99	120.0	1.817	3.735	1.918	Sandy	0.00	74.40	782.83

CPT - 3
GWL (ft) = 4

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
0.246	15.78	0.02	4.74	120.0	0.000	0.015	0.015	Sandy	0.02	65.80	62.32
0.738	6.30	0.03	0.40	120.0	0.000	0.044	0.044	Sandy	0.00	31.59	44.92
1.230	2.78	0.02	-0.07	120.0	0.000	0.074	0.074	Sandy	0.00	18.47	24.86
1.722	2.00	0.02	0.03	120.0	0.000	0.103	0.103	Sandy	0.00	14.40	19.19
2.215	15.36	0.07	0.51	120.0	0.000	0.133	0.133	Sandy	0.00	37.48	98.93
2.707	50.21	0.24	0.29	120.0	0.000	0.162	0.162	Sandy	0.00	64.44	202.99
3.199	73.49	0.37	0.22	120.0	0.000	0.192	0.192	Sandy	0.00	74.78	248.55
3.691	77.57	0.48	0.16	120.0	0.000	0.221	0.221	Sandy	0.00	74.12	265.31
4.183	70.23	0.46	0.55	120.0	0.006	0.251	0.245	Sandy	0.00	68.75	263.56
4.675	71.11	0.41	1.03	120.0	0.021	0.281	0.259	Sandy	0.00	68.22	269.34
5.167	93.52	0.44	0.84	120.0	0.036	0.310	0.274	Sandy	0.00	77.20	303.33
5.659	117.91	0.53	0.84	120.0	0.052	0.340	0.288	Sandy	0.00	85.60	330.82
6.152	129.39	0.58	1.00	120.0	0.067	0.369	0.302	Sandy	0.00	88.59	344.71
6.644	110.69	0.54	1.95	120.0	0.082	0.399	0.316	Sandy	0.00	81.01	336.17
7.136	100.72	0.47	1.70	120.0	0.098	0.428	0.330	Sandy	0.00	76.43	331.05
7.628	83.98	0.37	2.02	120.0	0.113	0.458	0.344	Sandy	0.00	69.06	313.48
8.120	67.44	0.32	2.23	120.0	0.129	0.487	0.359	Sandy	0.00	61.27	288.01
8.612	56.33	0.27	2.39	120.0	0.144	0.517	0.373	Sandy	0.00	55.45	265.97
9.104	46.14	0.21	2.66	120.0	0.159	0.546	0.387	Sandy	0.00	49.72	240.52
9.596	50.65	0.20	2.87	120.0	0.175	0.576	0.401	Sandy	0.00	51.63	255.48
10.088	62.04	0.28	3.00	120.0	0.190	0.605	0.415	Sandy	0.00	56.65	286.96
10.581	61.73	0.33	3.33	120.0	0.205	0.635	0.430	Sandy	0.00	56.03	288.57
11.073	61.14	0.22	3.53	120.0	0.221	0.664	0.444	Sandy	0.00	55.31	289.39
11.565	75.99	0.35	3.73	120.0	0.236	0.694	0.458	Sandy	0.00	61.18	325.00
12.057	89.15	0.41	4.02	120.0	0.251	0.723	0.472	Sandy	0.00	65.77	352.27
12.549	91.00	0.39	4.25	120.0	0.267	0.753	0.486	Sandy	0.00	65.96	358.40
13.041	92.73	0.38	4.40	120.0	0.282	0.782	0.500	Sandy	0.00	66.10	364.29
13.533	96.81	0.43	4.46	120.0	0.297	0.812	0.515	Sandy	0.00	67.07	374.01
14.025	89.00	0.39	4.81	120.0	0.313	0.842	0.529	Sandy	0.00	63.87	363.35
14.518	73.30	0.31	5.08	120.0	0.328	0.871	0.543	Sandy	0.00	57.58	333.59
15.010	65.38	0.29	5.37	120.0	0.344	0.901	0.557	Sandy	0.00	54.04	316.36
15.502	64.82	0.25	5.88	120.0	0.359	0.930	0.571	Sandy	0.00	53.47	316.74
15.994	67.10	0.28	6.25	120.0	0.374	0.960	0.585	Sandy	0.00	54.07	324.50
16.486	61.55	0.27	6.92	120.0	0.390	0.989	0.600	Sandy	0.00	51.47	311.30
16.978	44.81	0.27	10.03	120.0	0.405	1.019	0.614	Sandy	0.01	43.66	259.35
17.470	29.93	0.15	13.38	120.0	0.420	1.048	0.628	Sandy	0.02	35.48	199.52
17.962	17.39	0.12	22.21	120.0	0.436	1.078	0.642	Sandy	0.07	26.90	134.46
18.454	13.59	0.06	24.99	120.0	0.451	1.107	0.656	Clayey	0.11	-9999.00	102.98
18.947	12.87	0.03	21.38	120.0	0.466	1.137	0.670	Sandy	0.09	22.89	106.64
19.439	15.71	0.03	24.71	120.0	0.482	1.166	0.685	Sandy	0.09	25.16	125.17
19.931	67.38	0.17	6.25	120.0	0.497	1.196	0.699	Sandy	0.00	51.83	338.67
20.423	85.60	0.37	7.67	120.0	0.512	1.225	0.713	Sandy	0.00	58.13	385.92
20.915	61.22	0.25	8.56	120.0	0.528	1.255	0.727	Sandy	0.00	48.92	323.59
21.407	62.58	0.28	9.58	120.0	0.543	1.284	0.741	Sandy	0.00	49.22	329.06
21.899	64.98	0.31	10.35	120.0	0.558	1.314	0.755	Sandy	0.00	49.92	337.58
22.391	56.36	0.33	11.65	120.0	0.574	1.343	0.770	Sandy	0.00	46.28	311.82
22.884	27.46	0.41	13.42	120.0	0.589	1.373	0.784	Sandy	0.01	32.15	193.89
23.376	39.25	0.17	17.17	120.0	0.605	1.403	0.798	Sandy	0.02	38.27	249.35
23.868	49.15	0.14	16.41	120.0	0.620	1.432	0.812	Sandy	0.01	42.64	289.57
24.360	74.89	0.19	12.53	120.0	0.635	1.462	0.826	Sandy	0.00	52.40	372.73
24.852	82.10	0.28	12.02	120.0	0.651	1.491	0.841	Sandy	0.00	54.64	393.17
25.344	78.04	0.29	13.95	120.0	0.666	1.521	0.855	Sandy	0.00	53.04	384.13
25.836	47.48	0.29	17.42	120.0	0.681	1.550	0.869	Sandy	0.01	41.21	286.73
26.328	26.44	0.21	28.83	120.0	0.697	1.580	0.883	Sandy	0.06	30.62	191.68
26.821	23.41	0.04	38.13	120.0	0.712	1.609	0.897	Sandy	0.09	28.70	175.44
27.313	38.38	0.03	29.87	120.0	0.727	1.639	0.911	Sandy	0.04	36.61	250.93
27.805	87.41	0.25	20.67	120.0	0.743	1.668	0.926	Sandy	0.01	55.03	415.74
28.297	85.19	0.66	17.57	120.0	0.758	1.698	0.940	Sandy	0.01	54.12	411.59
28.789	53.82	0.46	19.83	120.0	0.773	1.727	0.954	Sandy	0.01	42.86	315.87
29.281	48.13	0.24	19.13	120.0	0.789	1.757	0.968	Sandy	0.01	40.38	294.83
29.773	51.79	0.22	28.90	120.0	0.804	1.786	0.982	Sandy	0.03	41.74	309.91
30.265	68.63	0.28	22.90	120.0	0.819	1.816	0.996	Sandy	0.01	47.87	369.38
30.758	63.44	0.30	19.85	120.0	0.835	1.845	1.011	Sandy	0.01	45.86	353.49
31.250	58.38	0.21	25.77	120.0	0.850	1.875	1.025	Sandy	0.02	43.84	336.85
31.742	78.10	0.35	22.40	120.0	0.866	1.905	1.039	Sandy	0.01	50.54	401.44
32.234	179.34	0.75	13.21	120.0	0.881	1.934	1.053	Sandy	0.00	76.32	590.55

CPT - 3
GWL (ft) = 4

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
32.726	219.36	1.19	12.56	120.0	0.896	1.964	1.067	Sandy	0.00	84.13	631.23
33.218	231.24	1.35	13.79	120.0	0.912	1.993	1.081	Sandy	0.00	86.09	643.23
33.710	195.33	1.02	13.86	120.0	0.927	2.023	1.096	Sandy	0.00	78.87	615.53
34.202	203.06	1.08	14.51	120.0	0.942	2.052	1.110	Sandy	0.00	80.16	625.82
34.694	203.13	1.02	14.56	120.0	0.958	2.082	1.124	Sandy	0.00	79.92	628.64
35.187	174.81	0.80	14.50	120.0	0.973	2.111	1.138	Sandy	0.00	73.90	600.18
35.679	155.26	0.65	14.37	120.0	0.988	2.141	1.152	Sandy	0.00	69.43	575.84
36.171	144.94	0.69	14.74	120.0	1.004	2.170	1.167	Sandy	0.00	66.88	561.79
36.663	139.99	0.66	15.00	120.0	1.019	2.200	1.181	Sandy	0.00	65.53	555.40
37.155	144.72	0.71	15.40	120.0	1.034	2.229	1.195	Sandy	0.00	66.43	565.32
37.647	139.35	0.64	15.50	120.0	1.050	2.259	1.209	Sandy	0.00	65.00	558.01
38.139	131.63	0.61	15.39	120.0	1.065	2.288	1.223	Sandy	0.00	62.99	545.71
38.631	124.50	0.55	15.74	120.0	1.080	2.318	1.237	Sandy	0.00	61.08	533.42
39.124	118.68	0.45	15.88	120.0	1.096	2.347	1.252	Sandy	0.00	59.47	522.86
39.616	115.90	0.40	16.13	120.0	1.111	2.377	1.266	Sandy	0.00	58.60	518.31
40.108	110.12	0.37	16.08	120.0	1.127	2.406	1.280	Sandy	0.00	56.96	506.59
40.600	115.21	0.37	16.48	120.0	1.142	2.436	1.294	Sandy	0.00	58.10	519.66
41.092	121.27	0.43	16.74	120.0	1.157	2.466	1.308	Sandy	0.00	59.45	534.43
41.584	147.36	0.60	17.60	120.0	1.173	2.495	1.322	Sandy	0.00	65.36	586.42
42.076	213.32	0.84	18.21	120.0	1.188	2.525	1.337	Sandy	0.00	78.43	677.40
42.568	243.74	1.34	18.78	120.0	1.203	2.554	1.351	Sandy	0.00	83.61	707.70
43.061	299.41	1.92	20.56	120.0	1.219	2.584	1.365	Sandy	0.00	92.43	746.58
43.553	336.57	2.70	20.33	120.0	1.234	2.613	1.379	Sandy	0.00	97.74	765.63
44.045	346.89	3.60	20.19	120.0	1.249	2.643	1.393	Sandy	0.00	98.97	772.47
44.537	275.62	3.20	19.37	120.0	1.265	2.672	1.407	Sandy	0.00	88.00	741.83
45.029	295.20	1.26	19.91	120.0	1.280	2.702	1.422	Sandy	0.00	90.84	756.45
45.521	346.57	1.24	19.80	120.0	1.295	2.731	1.436	Sandy	0.00	98.19	782.31
46.013	293.00	1.99	20.49	120.0	1.311	2.761	1.450	Sandy	0.00	90.06	761.05
46.505	340.06	0.99	20.59	120.0	1.326	2.790	1.464	Sandy	0.00	96.79	786.40
46.997	308.08	1.58	20.48	120.0	1.342	2.820	1.478	Sandy	0.00	91.90	775.16
47.490	348.82	0.98	20.68	120.0	1.357	2.849	1.493	Sandy	0.00	97.56	796.01
47.982	284.12	0.78	15.68	120.0	1.372	2.879	1.507	Sandy	0.00	87.84	766.85
48.474	248.24	0.02	19.07	120.0	1.388	2.908	1.521	Sandy	0.00	81.91	742.20
48.966	244.69	0.16	20.61	120.0	1.403	2.938	1.535	Sandy	0.00	81.14	741.46
49.458	250.85	0.29	20.78	120.0	1.418	2.967	1.549	Sandy	0.00	81.96	749.36
49.950	185.98	0.29	20.53	120.0	1.434	2.997	1.563	Sandy	0.00	70.41	678.21
50.442	112.07	0.50	20.64	120.0	1.449	3.027	1.578	Sandy	0.00	54.54	537.61
50.934	90.47	0.87	21.68	120.0	1.464	3.056	1.592	Sandy	0.00	48.89	478.44
51.427	187.09	0.54	19.76	120.0	1.480	3.086	1.606	Sandy	0.00	70.15	685.36
51.919	146.31	0.69	20.15	120.0	1.495	3.115	1.620	Sandy	0.00	61.90	618.05
52.411	86.30	0.38	20.61	120.0	1.510	3.145	1.634	Sandy	0.00	47.44	467.99
52.903	90.26	0.39	20.92	120.0	1.526	3.174	1.648	Sandy	0.00	48.41	481.32
53.395	129.63	0.22	19.09	120.0	1.541	3.204	1.663	Sandy	0.00	57.89	586.86
53.887	117.51	0.40	19.72	120.0	1.556	3.233	1.677	Sandy	0.00	55.00	559.21
54.379	124.74	0.66	22.01	120.0	1.572	3.263	1.691	Sandy	0.00	56.55	577.96
54.871	120.82	0.72	22.52	120.0	1.587	3.292	1.705	Sandy	0.00	55.54	569.67
55.364	104.55	0.73	22.60	120.0	1.603	3.322	1.719	Sandy	0.00	51.55	528.04
55.856	104.72	0.59	21.63	120.0	1.618	3.351	1.733	Sandy	0.00	51.49	529.48
56.348	90.16	0.42	22.54	120.0	1.633	3.381	1.748	Sandy	0.00	47.68	486.87
56.840	88.72	0.34	22.54	120.0	1.649	3.410	1.762	Sandy	0.00	47.20	483.07
57.332	64.06	0.43	22.95	120.0	1.664	3.440	1.776	Sandy	0.00	40.03	394.79
57.824	95.82	0.35	23.51	120.0	1.679	3.469	1.790	Sandy	0.00	48.86	507.01
58.316	133.20	0.32	22.95	120.0	1.695	3.499	1.804	Sandy	0.00	57.49	607.17
58.808	76.73	0.44	22.33	120.0	1.710	3.528	1.818	Sandy	0.00	43.55	444.97
59.300	92.68	0.61	24.93	120.0	1.725	3.558	1.833	Sandy	0.00	47.77	499.69
59.793	189.88	1.59	23.92	120.0	1.741	3.588	1.847	Sandy	0.00	68.25	718.85

CPT - 5
GWL (ft) = 4

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
0.246	14.43	0.06	0.09	120.0	0.000	0.015	0.015	Sandy	0.00	62.92	59.89
0.738	23.84	0.10	-0.03	120.0	0.000	0.044	0.044	Sandy	0.00	61.45	101.49
1.230	28.32	0.07	0.01	120.0	0.000	0.074	0.074	Sandy	0.00	58.95	125.89
1.722	40.85	0.12	-0.08	120.0	0.000	0.103	0.103	Sandy	0.00	65.09	163.32
2.215	51.99	0.18	-0.06	120.0	0.000	0.133	0.133	Sandy	0.00	68.95	194.45
2.707	50.08	0.19	-0.11	120.0	0.000	0.162	0.162	Sandy	0.00	64.36	202.75
3.199	36.67	0.15	-0.17	120.0	0.000	0.192	0.192	Sandy	0.00	52.82	181.20
3.691	29.25	0.15	-0.12	120.0	0.000	0.221	0.221	Sandy	0.00	45.52	163.96
4.183	25.90	0.16	0.24	120.0	0.006	0.251	0.245	Sandy	0.00	41.75	154.94
4.675	28.22	0.15	0.49	120.0	0.021	0.281	0.259	Sandy	0.00	42.97	165.29
5.167	35.37	0.15	0.77	120.0	0.036	0.310	0.274	Sandy	0.00	47.48	191.67
5.659	52.02	0.14	0.50	120.0	0.052	0.340	0.288	Sandy	0.00	56.85	239.75
6.152	67.96	0.25	-0.04	120.0	0.067	0.369	0.302	Sandy	0.00	64.21	275.87
6.644	92.06	0.41	-2.00	120.0	0.082	0.399	0.316	Sandy	0.00	73.88	316.23
7.136	103.73	0.52	-0.63	120.0	0.098	0.428	0.330	Sandy	0.00	77.56	334.33
7.628	133.94	0.80	0.60	120.0	0.113	0.458	0.344	Sandy	0.00	87.22	365.41
8.120	178.39	1.03	1.41	120.0	0.129	0.487	0.359	Sandy	0.00	99.64	392.68
8.612	199.39	1.13	0.99	120.0	0.144	0.517	0.373	Sandy	0.00	104.33	404.78
9.104	195.37	1.12	-0.05	120.0	0.159	0.546	0.387	Sandy	0.00	102.32	410.67
9.596	178.89	0.75	1.73	120.0	0.175	0.576	0.401	Sandy	0.00	97.03	411.97
10.088	155.02	0.76	1.66	120.0	0.190	0.605	0.415	Sandy	0.00	89.54	406.27
10.581	129.65	0.88	2.53	120.0	0.205	0.635	0.430	Sandy	0.00	81.20	392.41
11.073	124.65	0.90	2.68	120.0	0.221	0.664	0.444	Sandy	0.00	78.98	392.06
11.565	124.88	0.89	2.96	120.0	0.236	0.694	0.458	Sandy	0.00	78.43	396.50
12.057	118.27	0.95	3.64	120.0	0.251	0.723	0.472	Sandy	0.00	75.75	393.32
12.549	117.61	0.92	3.67	120.0	0.267	0.753	0.486	Sandy	0.00	74.98	396.35
13.041	119.93	0.97	3.73	120.0	0.282	0.782	0.500	Sandy	0.00	75.18	402.82
13.533	124.35	0.93	4.02	120.0	0.297	0.812	0.515	Sandy	0.00	76.02	411.65
14.025	125.49	0.94	4.32	120.0	0.313	0.842	0.529	Sandy	0.00	75.85	416.64
14.518	125.00	1.01	4.65	120.0	0.328	0.871	0.543	Sandy	0.00	75.20	419.68
15.010	105.59	0.95	4.57	120.0	0.344	0.901	0.557	Sandy	0.00	68.67	396.82
15.502	96.98	0.83	4.71	120.0	0.359	0.930	0.571	Sandy	0.00	65.40	385.65
15.994	100.09	0.69	4.95	120.0	0.374	0.960	0.585	Sandy	0.00	66.03	393.67
16.486	93.74	0.74	5.13	120.0	0.390	0.989	0.600	Sandy	0.00	63.52	385.03
16.978	93.67	0.73	5.77	120.0	0.405	1.019	0.614	Sandy	0.00	63.13	387.37
17.470	96.20	0.76	5.95	120.0	0.420	1.048	0.628	Sandy	0.00	63.61	394.53
17.962	93.25	0.68	5.94	120.0	0.436	1.078	0.642	Sandy	0.00	62.28	391.32
18.454	91.04	0.67	6.20	120.0	0.451	1.107	0.656	Sandy	0.00	61.20	389.22
18.947	97.00	0.71	6.46	120.0	0.466	1.137	0.670	Sandy	0.00	62.84	403.16
19.439	99.13	0.76	6.65	120.0	0.482	1.166	0.685	Sandy	0.00	63.19	409.50
19.931	96.82	0.72	6.97	120.0	0.497	1.196	0.699	Sandy	0.00	62.13	407.34
20.423	95.27	0.69	6.98	120.0	0.512	1.225	0.713	Sandy	0.00	61.33	406.45
20.915	90.13	0.69	7.18	120.0	0.528	1.255	0.727	Sandy	0.00	59.36	397.83
21.407	86.29	0.67	7.30	120.0	0.543	1.284	0.741	Sandy	0.00	57.80	391.26
21.899	77.39	0.59	7.36	120.0	0.558	1.314	0.755	Sandy	0.00	54.48	371.62
22.391	74.84	0.50	7.61	120.0	0.574	1.343	0.770	Sandy	0.00	53.33	366.60
22.884	82.03	0.55	7.85	120.0	0.589	1.373	0.784	Sandy	0.00	55.57	386.52
23.376	91.07	0.53	8.13	120.0	0.605	1.403	0.798	Sandy	0.00	58.29	409.42
23.868	99.38	0.51	8.57	120.0	0.620	1.432	0.812	Sandy	0.00	60.63	429.13
24.360	106.97	0.53	8.78	120.0	0.635	1.462	0.826	Sandy	0.00	62.63	446.21
24.852	111.88	0.51	8.97	120.0	0.651	1.491	0.841	Sandy	0.00	63.78	457.52
25.344	95.51	0.49	9.31	120.0	0.666	1.521	0.855	Sandy	0.00	58.68	426.51
25.836	86.52	0.31	11.94	120.0	0.681	1.550	0.869	Sandy	0.00	55.62	407.32
26.328	62.86	0.27	16.58	120.0	0.697	1.580	0.883	Sandy	0.01	47.22	342.15
26.821	63.69	0.29	17.40	120.0	0.712	1.609	0.897	Sandy	0.01	47.34	345.94
27.313	136.63	0.55	13.03	120.0	0.727	1.639	0.911	Sandy	0.00	69.07	509.95
27.805	157.16	0.77	12.10	120.0	0.743	1.668	0.926	Sandy	0.00	73.79	540.64
28.297	137.07	0.74	12.26	120.0	0.758	1.698	0.940	Sandy	0.00	68.65	515.29
28.789	116.21	0.60	13.39	120.0	0.773	1.727	0.954	Sandy	0.00	62.98	481.85
29.281	85.12	0.46	14.34	120.0	0.789	1.757	0.968	Sandy	0.00	53.70	414.27
29.773	94.29	0.45	15.59	120.0	0.804	1.786	0.982	Sandy	0.00	56.31	438.64
30.265	83.51	0.44	15.44	120.0	0.819	1.816	0.996	Sandy	0.00	52.81	412.74
30.758	69.31	0.44	17.07	120.0	0.835	1.845	1.011	Sandy	0.01	47.94	372.61
31.250	81.95	0.40	18.76	120.0	0.850	1.875	1.025	Sandy	0.01	51.95	411.10
31.742	93.93	0.49	17.07	120.0	0.866	1.905	1.039	Sandy	0.00	55.42	443.74
32.234	113.90	0.50	14.57	120.0	0.881	1.934	1.053	Sandy	0.00	60.82	490.16

CPT - 5
GWL (ft) = 4

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
32.726	125.10	0.72	13.94	120.0	0.896	1.964	1.067	Sandy	0.00	63.53	513.76
33.218	165.05	1.16	14.64	120.0	0.912	1.993	1.081	Sandy	0.00	72.73	578.23
33.710	298.61	1.53	14.78	120.0	0.927	2.023	1.096	Sandy	0.00	97.52	681.93
34.202	248.13	1.40	13.74	120.0	0.942	2.052	1.110	Sandy	0.00	88.61	660.89
34.694	127.17	1.16	13.60	120.0	0.958	2.082	1.124	Sandy	0.00	63.23	524.98
35.187	55.68	0.69	13.75	120.0	0.973	2.111	1.138	Sandy	0.00	41.71	333.33
35.679	40.28	0.51	13.83	120.0	0.988	2.141	1.152	Sandy	0.00	35.37	269.06
36.171	49.88	0.33	14.63	120.0	1.004	2.170	1.167	Sandy	0.00	39.24	311.65
36.663	59.67	0.54	14.03	120.0	1.019	2.200	1.181	Sandy	0.00	42.78	350.65
37.155	90.19	0.50	14.67	120.0	1.034	2.229	1.195	Sandy	0.00	52.44	448.57
37.647	94.89	0.32	14.40	120.0	1.050	2.259	1.209	Sandy	0.00	53.63	462.34
38.139	48.22	0.36	14.24	120.0	1.065	2.288	1.223	Sandy	0.00	38.12	307.12
38.631	83.33	0.34	14.79	120.0	1.080	2.318	1.237	Sandy	0.00	49.97	432.54
39.124	77.47	0.34	14.88	120.0	1.096	2.347	1.252	Sandy	0.00	48.04	415.72
39.616	54.58	0.33	14.87	120.0	1.111	2.377	1.266	Sandy	0.00	40.21	335.30
40.108	42.01	0.46	15.11	120.0	1.127	2.406	1.280	Sandy	0.00	35.18	281.51
40.600	51.28	0.39	16.47	120.0	1.142	2.436	1.294	Sandy	0.00	38.76	323.01
41.092	39.71	0.51	15.91	120.0	1.157	2.466	1.308	Sandy	0.00	34.02	271.49
41.584	33.14	0.40	18.25	120.0	1.173	2.495	1.322	Sandy	0.00	30.99	238.73
42.076	58.97	0.29	16.39	120.0	1.188	2.525	1.337	Sandy	0.00	41.23	355.94
42.568	25.88	0.54	17.91	120.0	1.203	2.554	1.351	Sandy	0.00	27.24	198.90
43.061	175.90	0.72	21.09	120.0	1.219	2.584	1.365	Sandy	0.00	70.84	636.72
43.553	219.73	0.87	18.98	120.0	1.234	2.613	1.379	Sandy	0.00	78.97	691.17
44.045	165.84	0.98	18.30	120.0	1.249	2.643	1.393	Sandy	0.00	68.43	625.80
44.537	126.19	0.79	17.42	120.0	1.265	2.672	1.407	Sandy	0.00	59.54	555.19
45.029	155.78	0.76	18.87	120.0	1.280	2.702	1.422	Sandy	0.00	65.99	613.15
45.521	168.29	0.73	18.73	120.0	1.295	2.731	1.436	Sandy	0.00	68.42	635.18
46.013	167.04	0.62	18.78	120.0	1.311	2.761	1.450	Sandy	0.00	68.00	635.07
46.505	144.64	0.59	18.69	120.0	1.326	2.790	1.464	Sandy	0.00	63.12	598.23
46.997	151.34	0.68	18.80	120.0	1.342	2.820	1.478	Sandy	0.00	64.41	612.15
47.490	207.51	0.89	19.58	120.0	1.357	2.849	1.493	Sandy	0.00	75.25	696.14
47.982	238.18	1.06	20.17	120.0	1.372	2.879	1.507	Sandy	0.00	80.42	730.67
48.474	272.24	1.44	20.38	120.0	1.388	2.908	1.521	Sandy	0.00	85.78	761.36
48.966	273.55	1.43	20.39	120.0	1.403	2.938	1.535	Sandy	0.00	85.79	764.93
49.458	245.80	1.17	20.37	120.0	1.418	2.967	1.549	Sandy	0.00	81.13	744.86
49.950	252.15	1.41	20.76	120.0	1.434	2.997	1.563	Sandy	0.00	81.99	752.91
50.442	234.72	1.06	20.35	120.0	1.449	3.027	1.578	Sandy	0.00	78.93	738.93
50.934	222.42	0.98	20.43	120.0	1.464	3.056	1.592	Sandy	0.00	76.66	728.17
51.427	214.16	0.87	20.65	120.0	1.480	3.086	1.606	Sandy	0.00	75.05	720.82
51.919	214.51	0.92	21.16	120.0	1.495	3.115	1.620	Sandy	0.00	74.95	723.29
52.411	216.61	1.19	21.16	120.0	1.510	3.145	1.634	Sandy	0.00	75.15	727.82
52.903	233.39	1.30	21.93	120.0	1.526	3.174	1.648	Sandy	0.00	77.84	748.63
53.395	253.67	1.43	21.52	120.0	1.541	3.204	1.663	Sandy	0.00	80.98	770.76
53.887	305.48	1.91	22.68	120.0	1.556	3.233	1.677	Sandy	0.00	88.68	812.64
54.379	271.07	0.75	22.16	120.0	1.572	3.263	1.691	Sandy	0.00	83.36	790.48
54.871	323.14	0.02	21.19	120.0	1.587	3.292	1.705	Sandy	0.00	90.82	828.35
55.364	381.50	0.43	21.98	120.0	1.603	3.322	1.719	Sandy	0.00	98.48	856.82
55.856	305.89	0.46	22.15	120.0	1.618	3.351	1.733	Sandy	0.00	88.00	823.28

CPT - 11
GWL (ft) = 4

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
0.246	14.18	0.11	1.32	120.0	0.000	0.015	0.015	Sandy	0.01	62.37	59.41
0.738	20.37	0.14	0.09	120.0	0.000	0.044	0.044	Sandy	0.00	56.80	93.96
1.230	33.43	0.17	0.40	120.0	0.000	0.074	0.074	Sandy	0.00	64.05	136.08
1.722	59.21	0.26	0.10	120.0	0.000	0.103	0.103	Sandy	0.00	78.36	188.23
2.215	74.66	0.34	0.09	120.0	0.000	0.133	0.133	Sandy	0.00	82.62	220.50
2.707	87.68	0.34	-0.44	120.0	0.000	0.162	0.162	Sandy	0.00	85.16	247.86
3.199	75.01	0.35	-0.46	120.0	0.000	0.192	0.192	Sandy	0.00	75.55	250.34
3.691	55.17	0.27	0.78	120.0	0.000	0.221	0.221	Sandy	0.00	62.51	230.60
4.183	45.34	0.21	0.98	120.0	0.006	0.251	0.245	Sandy	0.00	55.24	214.87
4.675	45.19	0.24	1.12	120.0	0.021	0.281	0.259	Sandy	0.00	54.38	217.36
5.167	51.34	0.27	1.46	120.0	0.036	0.310	0.274	Sandy	0.00	57.20	235.22
5.659	53.85	0.30	1.72	120.0	0.052	0.340	0.288	Sandy	0.00	57.85	243.98
6.152	51.29	0.29	1.94	120.0	0.067	0.369	0.302	Sandy	0.00	55.78	240.82
6.644	51.42	0.26	2.28	120.0	0.082	0.399	0.316	Sandy	0.00	55.21	243.80
7.136	60.20	0.30	2.43	120.0	0.098	0.428	0.330	Sandy	0.00	59.09	266.95
7.628	73.74	0.34	2.70	120.0	0.113	0.458	0.344	Sandy	0.00	64.71	296.72
8.120	91.19	0.47	3.00	120.0	0.129	0.487	0.359	Sandy	0.00	71.24	327.81
8.612	96.25	0.51	3.17	120.0	0.144	0.517	0.373	Sandy	0.00	72.49	338.64
9.104	102.90	0.53	3.38	120.0	0.159	0.546	0.387	Sandy	0.00	74.25	351.16
9.596	115.35	0.48	3.41	120.0	0.175	0.576	0.401	Sandy	0.00	77.91	369.54
10.088	104.50	0.45	3.71	120.0	0.190	0.605	0.415	Sandy	0.00	73.52	361.18
10.581	96.25	0.44	4.08	120.0	0.205	0.635	0.430	Sandy	0.00	69.97	353.71
11.073	93.98	0.41	5.31	120.0	0.221	0.664	0.444	Sandy	0.00	68.58	353.75
11.565	110.39	0.50	4.77	120.0	0.236	0.694	0.458	Sandy	0.00	73.74	380.07
12.057	113.65	0.53	5.03	120.0	0.251	0.723	0.472	Sandy	0.00	74.26	387.84
12.549	107.45	0.54	5.20	120.0	0.267	0.753	0.486	Sandy	0.00	71.67	383.43
13.041	105.79	0.41	5.35	120.0	0.282	0.782	0.500	Sandy	0.00	70.61	384.51
13.533	103.95	0.43	5.55	120.0	0.297	0.812	0.515	Sandy	0.00	69.50	385.09
14.025	106.99	0.46	5.95	120.0	0.313	0.842	0.529	Sandy	0.00	70.03	392.73
14.518	93.02	0.45	6.12	120.0	0.328	0.871	0.543	Sandy	0.00	64.87	373.29
15.010	99.80	0.44	6.52	120.0	0.344	0.901	0.557	Sandy	0.00	66.76	387.63
15.502	98.34	0.39	6.61	120.0	0.359	0.930	0.571	Sandy	0.00	65.86	387.98
15.994	81.64	0.26	7.18	120.0	0.374	0.960	0.585	Sandy	0.00	59.64	358.61
16.486	57.00	0.34	7.78	120.0	0.390	0.989	0.600	Sandy	0.00	49.53	298.10
16.978	67.64	0.35	8.60	120.0	0.405	1.019	0.614	Sandy	0.00	53.65	329.50
17.470	60.57	0.29	10.51	120.0	0.420	1.048	0.628	Sandy	0.01	50.48	311.66
17.962	58.65	0.24	10.23	120.0	0.436	1.078	0.642	Sandy	0.01	49.39	307.48
18.454	55.17	0.28	13.46	120.0	0.451	1.107	0.656	Sandy	0.01	47.65	298.10
18.947	35.08	0.25	18.57	120.0	0.466	1.137	0.670	Sandy	0.03	37.79	224.72
19.439	20.83	0.14	30.04	120.0	0.482	1.166	0.685	Sandy	0.09	28.97	155.39
19.931	59.05	0.14	22.90	120.0	0.497	1.196	0.699	Sandy	0.02	48.52	314.26
20.423	125.61	0.49	9.08	120.0	0.512	1.225	0.713	Sandy	0.00	70.42	458.03
20.915	117.27	0.41	9.66	120.0	0.528	1.255	0.727	Sandy	0.00	67.71	448.12
21.407	106.19	0.47	10.27	120.0	0.543	1.284	0.741	Sandy	0.00	64.12	431.72
21.899	98.00	0.47	11.33	120.0	0.558	1.314	0.755	Sandy	0.00	61.30	418.25
22.391	74.27	0.41	14.46	120.0	0.574	1.343	0.770	Sandy	0.01	53.12	365.09
22.884	45.38	0.38	20.44	120.0	0.589	1.373	0.784	Sandy	0.02	41.33	273.44
23.376	53.31	0.30	18.92	120.0	0.605	1.403	0.798	Sandy	0.01	44.60	303.60
23.868	76.29	0.26	19.46	120.0	0.620	1.432	0.812	Sandy	0.01	53.12	375.03
24.360	83.68	0.37	17.38	120.0	0.635	1.462	0.826	Sandy	0.01	55.39	395.52
24.852	104.82	0.46	13.60	120.0	0.651	1.491	0.841	Sandy	0.00	61.73	444.06
25.344	96.46	0.47	12.83	120.0	0.666	1.521	0.855	Sandy	0.00	58.97	428.59
25.836	85.39	0.47	13.72	120.0	0.681	1.550	0.869	Sandy	0.00	55.26	404.54
26.328	72.99	0.41	14.14	120.0	0.697	1.580	0.883	Sandy	0.00	50.88	372.94
26.821	52.76	0.33	16.02	120.0	0.712	1.609	0.897	Sandy	0.01	43.09	308.42
27.313	30.41	0.24	22.79	120.0	0.727	1.639	0.911	Sandy	0.03	32.59	213.12
27.805	20.57	0.15	24.55	120.0	0.743	1.668	0.926	Sandy	0.05	26.70	159.59
28.297	10.52	0.17	37.41	120.0	0.758	1.698	0.940	Clayey	0.22	-9999.00	72.78
28.789	13.41	0.12	43.33	120.0	0.773	1.727	0.954	Clayey	0.20	-9999.00	96.38
29.281	61.05	0.24	17.30	120.0	0.789	1.757	0.968	Sandy	0.01	45.48	342.45
29.773	58.75	0.33	16.02	120.0	0.804	1.786	0.982	Sandy	0.01	44.45	335.45
30.265	48.78	0.42	21.62	120.0	0.819	1.816	0.996	Sandy	0.02	40.36	298.91
30.758	68.02	0.31	19.06	120.0	0.835	1.845	1.011	Sandy	0.01	47.49	368.52
31.250	53.47	0.41	21.06	120.0	0.850	1.875	1.025	Sandy	0.01	41.96	318.72
31.742	32.98	0.41	27.08	120.0	0.866	1.905	1.039	Sandy	0.03	32.84	230.11
32.234	54.01	0.34	26.75	120.0	0.881	1.934	1.053	Sandy	0.02	41.88	322.36

CPT - 11
GWL (ft) = 4

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
32.726	94.59	0.41	20.89	120.0	0.896	1.964	1.067	Sandy	0.01	55.24	448.24
33.218	106.21	0.56	20.67	120.0	0.912	1.993	1.081	Sandy	0.01	58.35	477.05
33.710	121.05	0.55	17.18	120.0	0.927	2.023	1.096	Sandy	0.00	62.09	509.69
34.202	70.31	0.52	24.13	120.0	0.942	2.052	1.110	Sandy	0.01	47.17	383.06
34.694	49.76	0.36	28.69	120.0	0.958	2.082	1.124	Sandy	0.02	39.55	309.19
35.187	26.61	0.52	28.19	120.0	0.973	2.111	1.138	Sandy	0.04	28.83	198.97
35.679	68.62	0.28	17.63	120.0	0.988	2.141	1.152	Sandy	0.00	46.16	380.41
36.171	93.85	0.43	15.32	120.0	1.004	2.170	1.167	Sandy	0.00	53.82	455.82
36.663	128.82	0.73	16.19	120.0	1.019	2.200	1.181	Sandy	0.00	62.86	535.19
37.155	207.11	1.19	16.88	120.0	1.034	2.229	1.195	Sandy	0.00	79.47	645.90
37.647	369.66	2.03	17.78	120.0	1.050	2.259	1.209	Sandy	0.00	105.86	730.89
38.139	431.89	0.58	15.99	120.0	1.065	2.288	1.223	Sandy	0.00	114.09	740.78
38.631	452.35	0.78	13.99	120.0	1.080	2.318	1.237	Sandy	0.00	116.43	745.21
39.124	438.12	0.73	9.43	120.0	1.096	2.347	1.252	Sandy	0.00	114.25	749.35
39.616	438.46	0.40	13.99	120.0	1.111	2.377	1.266	Sandy	0.00	113.98	753.53
40.108	391.79	1.24	16.69	120.0	1.127	2.406	1.280	Sandy	0.00	107.44	753.78
40.600	379.15	2.46	17.72	120.0	1.142	2.436	1.294	Sandy	0.00	105.40	755.59
41.092	338.75	0.77	17.10	120.0	1.157	2.466	1.308	Sandy	0.00	99.36	749.36
41.584	409.01	0.37	17.81	120.0	1.173	2.495	1.322	Sandy	0.00	108.88	767.55
42.076	396.17	1.51	17.72	120.0	1.188	2.525	1.337	Sandy	0.00	106.88	769.68
42.568	330.97	1.96	17.99	120.0	1.203	2.554	1.351	Sandy	0.00	97.43	756.95
43.061	252.04	1.62	17.84	120.0	1.219	2.584	1.365	Sandy	0.00	84.80	716.92
43.553	315.02	0.91	16.94	120.0	1.234	2.613	1.379	Sandy	0.00	94.56	757.07
44.045	317.66	1.73	17.48	120.0	1.249	2.643	1.393	Sandy	0.00	94.71	761.40
44.537	294.75	1.19	16.94	120.0	1.265	2.672	1.407	Sandy	0.00	91.00	753.23
45.029	308.40	1.23	18.72	120.0	1.280	2.702	1.422	Sandy	0.00	92.85	763.33
45.521	290.34	0.83	18.26	120.0	1.295	2.731	1.436	Sandy	0.00	89.87	756.62
46.013	316.17	0.97	18.18	120.0	1.311	2.761	1.450	Sandy	0.00	93.55	773.16
46.505	321.79	1.20	19.64	120.0	1.326	2.790	1.464	Sandy	0.00	94.15	778.81
46.997	392.89	0.72	17.20	120.0	1.342	2.820	1.478	Sandy	0.00	103.78	805.17

CPT - 13
GWL (ft) = 4

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
0.246	21.09	0.02	1.76	120.0	0.000	0.015	0.015	Sandy	0.01	76.07	69.75
0.738	29.50	0.02	1.36	120.0	0.000	0.044	0.044	Sandy	0.00	68.36	111.46
1.230	33.33	0.02	0.75	120.0	0.000	0.074	0.074	Sandy	0.00	63.95	135.90
1.722	39.76	0.02	0.49	120.0	0.000	0.103	0.103	Sandy	0.00	64.21	161.38
2.215	50.74	0.02	0.31	120.0	0.000	0.133	0.133	Sandy	0.00	68.11	192.53
2.707	50.21	0.02	0.31	120.0	0.000	0.162	0.162	Sandy	0.00	64.44	202.99
3.199	59.18	0.02	0.45	120.0	0.000	0.192	0.192	Sandy	0.00	67.10	228.51
3.691	79.32	0.07	0.36	120.0	0.000	0.221	0.221	Sandy	0.00	74.96	267.43
4.183	72.20	0.15	0.48	120.0	0.006	0.251	0.245	Sandy	0.00	69.71	266.51
4.675	57.49	0.09	0.68	120.0	0.021	0.281	0.259	Sandy	0.00	61.34	245.22
5.167	61.44	0.10	0.94	120.0	0.036	0.310	0.274	Sandy	0.00	62.57	256.54
5.659	71.00	0.14	0.90	120.0	0.052	0.340	0.288	Sandy	0.00	66.42	277.40
6.152	100.53	0.16	-0.40	120.0	0.067	0.369	0.302	Sandy	0.00	78.09	321.09
6.644	116.22	0.22	-1.49	120.0	0.082	0.399	0.316	Sandy	0.00	83.01	340.99
7.136	67.47	0.43	-2.29	120.0	0.098	0.428	0.330	Sandy	0.00	62.56	281.80
7.628	63.01	0.85	-2.09	120.0	0.113	0.458	0.344	Sandy	0.00	59.82	275.90
8.120	117.55	0.57	-2.17	120.0	0.129	0.487	0.359	Sandy	0.00	80.89	357.74
8.612	140.67	0.61	-2.10	120.0	0.144	0.517	0.373	Sandy	0.00	87.63	381.03
9.104	161.05	0.78	-1.71	120.0	0.159	0.546	0.387	Sandy	0.00	92.90	398.33
9.596	218.54	0.75	-0.73	120.0	0.175	0.576	0.401	Sandy	0.00	107.24	421.89
10.088	284.49	1.24	0.52	120.0	0.190	0.605	0.415	Sandy	0.00	121.30	430.81
10.581	278.52	1.37	2.23	120.0	0.205	0.635	0.430	Sandy	0.00	119.02	438.74
11.073	257.99	1.02	3.10	120.0	0.221	0.664	0.444	Sandy	0.00	113.62	446.09
11.565	215.70	1.08	3.55	120.0	0.236	0.694	0.458	Sandy	0.00	103.08	447.45
12.057	171.80	0.63	4.05	120.0	0.251	0.723	0.472	Sandy	0.00	91.30	436.81
12.549	167.91	0.58	4.32	120.0	0.267	0.753	0.486	Sandy	0.00	89.59	439.68
13.041	129.75	0.50	5.12	120.0	0.282	0.782	0.500	Sandy	0.00	78.19	413.68
13.533	132.20	0.47	5.46	120.0	0.297	0.812	0.515	Sandy	0.00	78.38	420.14
14.025	177.37	0.86	5.48	120.0	0.313	0.842	0.529	Sandy	0.00	90.17	459.82
14.518	141.88	0.75	5.85	120.0	0.328	0.871	0.543	Sandy	0.00	80.12	437.58
15.010	129.70	0.49	5.47	120.0	0.344	0.901	0.557	Sandy	0.00	76.11	428.68
15.502	161.34	0.46	4.67	120.0	0.359	0.930	0.571	Sandy	0.00	84.35	462.48
15.994	177.15	0.63	4.75	120.0	0.374	0.960	0.585	Sandy	0.00	87.85	478.04
16.486	201.73	0.81	6.10	120.0	0.390	0.989	0.600	Sandy	0.00	93.19	496.43
16.978	212.71	0.81	6.39	120.0	0.405	1.019	0.614	Sandy	0.00	95.13	506.16
17.470	161.44	0.43	5.78	120.0	0.420	1.048	0.628	Sandy	0.00	82.41	478.58
17.962	81.67	0.38	7.03	120.0	0.436	1.078	0.642	Sandy	0.00	58.29	367.21
18.454	58.43	0.32	7.09	120.0	0.451	1.107	0.656	Sandy	0.00	49.03	308.24
18.947	47.43	0.36	7.00	120.0	0.466	1.137	0.670	Sandy	0.00	43.94	273.21
19.439	78.77	0.34	7.30	120.0	0.482	1.166	0.685	Sandy	0.00	56.33	366.33
19.931	133.57	0.54	7.93	120.0	0.497	1.196	0.699	Sandy	0.00	72.98	465.97
20.423	110.09	0.47	7.70	120.0	0.512	1.225	0.713	Sandy	0.00	65.92	433.83
20.915	93.98	0.55	7.21	120.0	0.528	1.255	0.727	Sandy	0.00	60.61	405.93
21.407	50.56	0.44	7.38	120.0	0.543	1.284	0.741	Sandy	0.00	44.24	289.73
21.899	58.40	0.41	7.63	120.0	0.558	1.314	0.755	Sandy	0.00	47.32	317.31
22.391	73.02	0.22	7.82	120.0	0.574	1.343	0.770	Sandy	0.00	52.67	361.74
22.884	23.92	0.30	7.73	120.0	0.589	1.373	0.784	Sandy	0.00	30.01	175.26
23.376	9.19	0.22	11.37	120.0	0.605	1.403	0.798	Sandy	0.03	18.52	82.12
23.868	25.61	0.06	14.35	120.0	0.620	1.432	0.812	Sandy	0.02	30.78	185.17
24.360	24.64	0.08	12.38	120.0	0.635	1.462	0.826	Sandy	0.01	30.06	180.39
24.852	19.04	0.12	13.84	120.0	0.651	1.491	0.841	Sandy	0.02	26.31	148.71
25.344	35.48	0.14	15.66	120.0	0.666	1.521	0.855	Sandy	0.01	35.77	235.36
25.836	42.97	0.07	16.19	120.0	0.681	1.550	0.869	Sandy	0.01	39.20	268.64
26.328	32.39	0.16	18.19	120.0	0.697	1.580	0.883	Sandy	0.02	33.90	221.92
26.821	12.80	0.27	30.73	120.0	0.712	1.609	0.897	Clayey	0.13	-9999.00	92.32
27.313	34.77	0.13	22.31	120.0	0.727	1.639	0.911	Sandy	0.03	34.84	234.36
27.805	48.36	0.21	16.74	120.0	0.743	1.668	0.926	Sandy	0.01	40.93	293.42
28.297	22.65	0.42	15.92	120.0	0.758	1.698	0.940	Sandy	0.02	27.91	172.09
28.789	19.72	0.19	28.76	120.0	0.773	1.727	0.954	Sandy	0.07	25.94	155.00
29.281	58.45	0.13	22.06	120.0	0.789	1.757	0.968	Sandy	0.01	44.50	333.46
29.773	31.02	0.23	21.53	120.0	0.804	1.786	0.982	Sandy	0.03	32.30	218.47
30.265	59.17	0.19	20.80	120.0	0.819	1.816	0.996	Sandy	0.01	44.45	337.85
30.758	38.99	0.54	18.77	120.0	0.835	1.845	1.011	Sandy	0.01	35.96	257.80
31.250	111.09	0.39	14.23	120.0	0.850	1.875	1.025	Sandy	0.00	60.48	480.92
31.742	112.31	0.56	13.23	120.0	0.866	1.905	1.039	Sandy	0.00	60.60	485.17
32.234	111.00	0.49	12.62	120.0	0.881	1.934	1.053	Sandy	0.00	60.05	484.15

CPT - 13
GWL (ft) = 4

Depth, z (ft)	q_T (tsf)	f_s (tsf)	u_{bt} (psi)	γ_T (pcf)	u_o (tsf)	σ_{vo} (tsf)	σ_{vo}' (tsf)	Soil Type	Normalized B_q	Density D_R (%)	Confined Stiffness Modulus M' (tsf)
32.726	56.19	0.46	13.74	120.0	0.896	1.964	1.067	Sandy	0.00	42.58	331.37
33.218	85.21	0.29	13.57	120.0	0.912	1.993	1.081	Sandy	0.00	52.26	425.14
33.710	30.35	0.41	13.48	120.0	0.927	2.023	1.096	Sandy	0.00	31.09	218.27
34.202	47.68	0.38	14.03	120.0	0.942	2.052	1.110	Sandy	0.00	38.84	299.93
34.694	91.99	0.40	13.48	120.0	0.958	2.082	1.124	Sandy	0.00	53.78	447.09
35.187	69.90	0.46	13.93	120.0	0.973	2.111	1.138	Sandy	0.00	46.73	383.69
35.679	95.47	0.44	14.43	120.0	0.988	2.141	1.152	Sandy	0.00	54.45	458.68
36.171	136.68	0.45	14.24	120.0	1.004	2.170	1.167	Sandy	0.00	64.95	547.76
36.663	230.29	0.57	15.23	120.0	1.019	2.200	1.181	Sandy	0.00	84.05	663.58
37.155	257.41	0.96	14.52	120.0	1.034	2.229	1.195	Sandy	0.00	88.60	685.71
37.647	267.99	0.96	13.69	120.0	1.050	2.259	1.209	Sandy	0.00	90.13	695.21
38.139	223.79	1.43	13.10	120.0	1.065	2.288	1.223	Sandy	0.00	82.13	666.64
38.631	380.89	0.88	13.91	120.0	1.080	2.318	1.237	Sandy	0.00	106.84	740.52
39.124	429.14	0.96	13.68	120.0	1.096	2.347	1.252	Sandy	0.00	113.08	749.07
39.616	424.57	1.06	14.60	120.0	1.111	2.377	1.266	Sandy	0.00	112.16	752.95
40.108	434.79	1.34	15.61	120.0	1.127	2.406	1.280	Sandy	0.00	113.18	757.53
40.600	428.15	0.86	13.99	120.0	1.142	2.436	1.294	Sandy	0.00	112.01	761.27
41.092	456.78	1.70	17.60	120.0	1.157	2.466	1.308	Sandy	0.00	115.38	766.26
41.584	391.58	1.89	16.82	120.0	1.173	2.495	1.322	Sandy	0.00	106.54	765.21
42.076	291.89	1.33	17.19	120.0	1.188	2.525	1.337	Sandy	0.00	91.74	736.52
42.568	327.15	0.62	16.85	120.0	1.203	2.554	1.351	Sandy	0.00	96.87	755.54
43.061	365.93	0.77	15.34	120.0	1.219	2.584	1.365	Sandy	0.00	102.18	771.01
43.553	359.18	0.89	17.47	120.0	1.234	2.613	1.379	Sandy	0.00	100.97	772.74
44.045	312.10	1.20	16.57	120.0	1.249	2.643	1.393	Sandy	0.00	93.88	758.91
44.537	413.65	1.32	18.53	120.0	1.265	2.672	1.407	Sandy	0.00	107.81	790.83
45.029	401.55	1.06	15.90	120.0	1.280	2.702	1.422	Sandy	0.00	105.95	792.67
45.521	360.62	0.87	17.46	120.0	1.295	2.731	1.436	Sandy	0.00	100.16	786.79
46.013	256.97	1.05	18.56	120.0	1.311	2.761	1.450	Sandy	0.00	84.34	736.75
46.505	285.59	0.68	17.63	120.0	1.326	2.790	1.464	Sandy	0.00	88.70	759.46
46.997	289.74	0.49	17.26	120.0	1.342	2.820	1.478	Sandy	0.00	89.13	764.83
47.490	291.71	0.73	18.29	120.0	1.357	2.849	1.493	Sandy	0.00	89.21	768.85
47.982	404.63	0.72	20.73	120.0	1.372	2.879	1.507	Sandy	0.00	104.82	814.47

ATTACHMENT 3

CORRELATION BETWEEN CONFINED STIFFNESS MODULUS BASED ON SPT DATA AND THAT ON CPT DATA

SPT B-1 vs CPT-1
Surface Elevation (ft): 15.37

Depth (feet)		Soil Type	Depth of Mid-Point (feet)	Elevation	Thickness of Layer (feet)	SPT N	Deformation Modulus (psi)			Confined Stiffness Module by SPT (tsf)	Confined Stiffness Module by CPT (tsf)
From	To						Method 1	Method 2	Average		
0.00	2.00	SAND	1.00	14.37	2.00	11	809	650	729	***79***	***18***
2.00	4.00	SAND	3.00	12.37	2.00	31	2279	1287	1783	***193***	***265***
4.00	6.00	SAND	5.00	10.37	2.00	60	4410	1991	3200	***346***	***197***
6.00	8.00	SAND	7.00	8.37	2.00	40	2940	1523	2232	***241***	***251***
8.00	10.00	SAND	9.00	6.37	2.00	54	3969	1857	2913	***315***	***321***
10.00	12.00	SAND	11.00	4.37	2.00	9	662	569	615	***66***	***421***
12.00	14.00	SAND	13.00	2.37	2.00	49	3602	1742	2672	***289***	***398***
14.00	16.00	SAND	15.00	0.37	2.00	16	1176	832	1004	***108***	***333***
16.00	18.00	SAND	17.00	-1.63	2.00	31	2279	1287	1783	***193***	***339***
18.00	20.00	SAND	19.00	-3.63	2.00	42	3087	1573	2330	***252***	***466***
20.00	22.00	SAND	21.00	-5.63	2.00	42	3087	1573	2330	***252***	***367***
22.00	24.00	SAND	23.00	-7.63	2.00	44	3234	1622	2428	***262***	***449***
24.00	26.00	SAND	25.00	-9.63	2.00	8	588	527	557	***60***	***455***
26.00	28.00	SAND	27.00	-11.63	2.00	4	294	333	314	***34***	***344***
28.00	30.00	SAND	29.00	-13.63	2.00	19	1397	932	1164	***126***	***543***
30.00	32.00	SAND	31.00	-15.63	2.00	10	735	610	673	***73***	***428***
32.00	34.00	SAND	33.00	-17.63	2.00	50	3675	1765	2720	***294***	***462***
34.00	36.00	SAND	35.00	-19.63	2.00	19	1397	932	1164	***126***	***491***
36.00	38.00	SAND	37.00	-21.63	2.00	49	3602	1742	2672	***289***	***560***
38.00	40.00	SAND	39.00	-23.63	2.00	23	1691	1057	1374	***148***	***511***
40.00	42.00	SAND	41.00	-25.63	2.00	23	1691	1057	1374	***148***	***556***
42.00	44.00	SAND	43.00	-27.63	2.00	57	4190	1924	3057	***330***	***698***
44.00	46.00	SAND	45.00	-29.63	2.00	54	3969	1857	2913	***315***	***743***
46.00	48.00	SAND	47.00	-31.63	2.00	80	5880	2407	4143	***447***	***755***
48.00	50.00	SAND	49.00	-33.63	2.00	79	5807	2387	4097	***442***	***802***
50.00	52.00	SAND	51.00	-35.63	2.00	100	7350	2789	5069	***547***	***821***
52.00	54.00	SAND	53.00	-37.63	2.00	39	2867	1498	2182	***236***	***807***
54.00	56.00	SAND	55.00	-39.63	2.00	100	7350	2789	5069	***547***	***782***
56.00	58.00	SAND	57.00	-41.63	2.00	48	3528	1718	2623	***283***	***861***
58.00	60.00	SAND	59.00	-43.63	2.00	100	7350	2789	5069	***547***	***667***
64.00	66.00	SAND	65.00	-49.63	2.00	36	2646	1421	2033	***220***	***613***
66.00	68.00	SAND	67.00	-51.63	2.00	50	3675	1765	2720	***294***	***81***
68.00	70.00	SAND	69.00	-53.63	2.00	100	7350	2789	5069	***547***	***482***

SPT B-2 vs CPT-2

Surface Elevation (ft): 14.37

Depth (feet)		Soil Type	Depth of Mid-Point (feet)	Elevation	Thickness of Layer (feet)	SPT N	Deformation Modulus (psi)			Confined Stiffness Module (tsf)	Confined Stiffness Module by CPT (tsf)
From	To						Method 1	Method 2	Average		
0.00	2.00	SAND	1.00	13.37	2.00	6	441	435	438	***47***	***35***
2.00	4.00	SAND	3.00	11.37	2.00	16	1176	832	1004	***108***	***233***
4.00	6.00	SAND	5.00	9.37	2.00	31	2279	1287	1783	***193***	***274***
6.00	8.00	SAND	7.00	7.37	2.00	34	2499	1368	1934	***209***	***336***
8.00	10.00	SAND	9.00	5.37	2.00	47	3455	1694	2574	***278***	***349***
10.00	12.00	SAND	11.00	3.37	2.00	21	1544	996	1270	***137***	***235***
12.00	14.00	SAND	13.00	1.37	2.00	44	3234	1622	2428	***262***	***264***
14.00	16.00	SAND	15.00	-0.63	2.00	13	956	725	840	***91***	***293***
16.00	18.00	SAND	17.00	-2.63	2.00	19	1397	932	1164	***126***	***309***
18.00	20.00	SAND	19.00	-4.63	2.00	35	2573	1395	1984	***214***	***223***
20.00	22.00	SAND	21.00	-6.63	2.00	8	588	527	557	***60***	***316***
22.00	24.00	SAND	23.00	-8.63	2.00	28	2058	1204	1631	***176***	***271***
24.00	26.00	SAND	25.00	-10.63	2.00	11	809	650	729	***79***	***296***
26.00	28.00	SAND	27.00	-12.63	2.00	26	1911	1146	1529	***165***	***280***
28.00	30.00	SAND	29.00	-14.63	2.00	30	2205	1260	1732	***187***	***286***
30.00	32.00	SAND	31.00	-16.63	2.00	4	294	333	314	***34***	***367***
32.00	34.00	SAND	33.00	-18.63	2.00	30	2205	1260	1732	***187***	***344***
34.00	36.00	SAND	35.00	-20.63	2.00	5	368	386	377	***41***	***273***
36.00	38.00	SAND	37.00	-22.63	2.00	27	1985	1175	1580	***171***	***385***
38.00	40.00	SAND	39.00	-24.63	2.00	63	4631	2056	3343	***361***	***540***
40.00	42.00	SAND	41.00	-26.63	2.00	11	809	650	729	***79***	***647***
42.00	44.00	SAND	43.00	-28.63	2.00	55	4043	1880	2961	***320***	***621***
44.00	46.00	SAND	45.00	-30.63	2.00	28	2058	1204	1631	***176***	***520***
46.00	48.00	SAND	47.00	-32.63	2.00	54	3969	1857	2913	***315***	***521***
48.00	50.00	SAND	49.00	-34.63	2.00	62	4557	2034	3296	***356***	***456***
50.00	52.00	SAND	51.00	-36.63	2.00	23	1691	1057	1374	***148***	***336***
52.00	54.00	SAND	53.00	-38.63	2.00	38	2793	1473	2133	***230***	***615***
54.00	56.00	SAND	55.00	-40.63	2.00	49	3602	1742	2672	***289***	***693***
56.00	58.00	SAND	57.00	-42.63	2.00	29	2132	1232	1682	***182***	***552***
58.00	60.00	SAND	59.00	-44.63	2.00	25	1838	1117	1477	***160***	***397***
60.00	62.00	SAND	61.00	-46.63	2.00	100	7350	2789	5069	***547***	***790***

SPT B-3 vs CPT-3
Surface Elevation (ft): 13.5

Depth (feet)		Soil Type	Depth of Mid-Point (feet)	Elevation	Thickness of Layer (feet)	SPT N	Deformation Modulus (psi)			Confined Stiffness Module (tsf)	Confined Stiffness Module by CPT (tsf)
From	To						Method 1	Method 2	Average		
0.00	2.00	SAND	1.00	12.50	2.00	6	441	435	438	***47***	***35***
2.00	4.00	SAND	3.00	10.50	2.00	10	735	610	673	***73***	***226***
4.00	6.00	SAND	5.00	8.50	2.00	16	1176	832	1004	***108***	***286***
6.00	8.00	SAND	7.00	6.50	2.00	19	1397	932	1164	***126***	***334***
8.00	10.00	SAND	9.00	4.50	2.00	21	1544	996	1270	***137***	***253***
10.00	12.00	SAND	11.00	2.50	2.00	14	1029	762	895	***97***	***289***
12.00	14.00	SAND	13.00	0.50	2.00	19	1397	932	1164	***126***	***364***
14.00	16.00	SAND	15.00	-1.50	2.00	6	441	435	438	***47***	***316***
16.00	18.00	SAND	17.00	-3.50	2.00	9	662	569	615	***66***	***259***
18.00	20.00	SAND	19.00	-5.50	2.00	22	1617	1027	1322	***143***	***107***
20.00	22.00	SAND	21.00	-7.50	2.00	6	441	435	438	***47***	***324***
22.00	24.00	SAND	23.00	-9.50	2.00	14	1029	762	895	***97***	***222***
24.00	26.00	SAND	25.00	-11.50	2.00	4	294	333	314	***34***	***389***
26.00	28.00	SAND	27.00	-13.50	2.00	12	882	688	785	***85***	***213***
28.00	30.00	SAND	29.00	-15.50	2.00	6	441	435	438	***47***	***305***
30.00	32.00	SAND	31.00	-17.50	2.00	9	662	569	615	***66***	***345***
32.00	34.00	SAND	33.00	-19.50	2.00	40	2940	1523	2232	***241***	***637***
34.00	36.00	SAND	35.00	-21.50	2.00	31	2279	1287	1783	***193***	***614***
36.00	38.00	SAND	37.00	-23.50	2.00	29	2132	1232	1682	***182***	***560***
38.00	40.00	SAND	39.00	-25.50	2.00	71	5219	2225	3722	***402***	***528***
40.00	42.00	SAND	41.00	-27.50	2.00	19	1397	932	1164	***126***	***534***
42.00	44.00	SAND	43.00	-29.50	2.00	90	6615	2601	4608	***498***	***747***
44.00	46.00	SAND	45.00	-31.50	2.00	100	7350	2789	5069	***547***	***756***
46.00	48.00	SAND	47.00	-33.50	2.00	82	6027	2446	4237	***458***	***775***
48.00	50.00	SAND	49.00	-35.50	2.00	30	2205	1260	1732	***187***	***741***
50.00	52.00	SAND	51.00	-37.50	2.00	20	1470	964	1217	***131***	***478***
52.00	54.00	SAND	53.00	-39.50	2.00	48	3528	1718	2623	***283***	***481***
54.00	56.00	SAND	55.00	-41.50	2.00	20	1470	964	1217	***131***	***549***
56.00	58.00	SAND	57.00	-43.50	2.00	39	2867	1498	2182	***236***	***439***
58.00	60.00	CLAYEY SILT	59.00	-45.50	2.00	50	4781	3336	4059	***438***	***472***

SPT B-7 vs CPT-5

Surface Elevation (ft): 16.22

Depth (feet)		Soil Type	Depth of Mid-Point (feet)	Elevation	Thickness of Layer (feet)	SPT N	Deformation Modulus (psi)			Confined Stiffness Module (tsf)	Confined Stiffness Module by CPT (tsf)
From	To						Method 1	Method 2	Average		
0.00	2.00	SAND	1.00	15.22	2.00	11	809	650	729	***79***	***114***
2.00	4.00	SAND	3.00	13.22	2.00	14	1029	762	895	***97***	***192***
4.00	6.00	SAND	5.00	11.22	2.00	14	1029	762	895	***97***	***178***
6.00	8.00	SAND	7.00	9.22	2.00	19	1397	932	1164	***126***	***325***
8.00	10.00	SAND	9.00	7.22	2.00	16	1176	832	1004	***108***	***408***
15.00	17.00	SAND	16.00	0.22	2.00	14	1029	762	895	***97***	***394***
20.00	22.00	SAND	21.00	-4.78	2.00	12	882	688	785	***85***	***395***
24.75	26.75	SAND	25.75	-9.53	2.00	8	588	527	557	***60***	***417***
30.00	32.00	SAND	31.00	-14.78	2.00	6	441	435	438	***47***	***392***
35.00	37.00	SAND	36.00	-19.78	2.00	9	662	569	615	***66***	***290***
40.00	42.00	SAND	41.00	-24.78	2.00	12	882	688	785	***85***	***271***
45.00	47.00	SAND	46.00	-29.78	2.00	35	2573	1395	1984	***214***	***635***
50.00	52.00	SAND	51.00	-34.78	2.00	27	1985	1175	1580	***171***	***724***

SPT B-11 vs CPT-11
Surface Elevation (ft): 14.27

Depth (feet)		Soil Type	Depth of Mid-Point (feet)	Elevation	Thickness of Layer (feet)	SPT N	Deformation Modulus (psi)			Confined Stiffness Module (tsf)	Confined Stiffness Module by CPT (tsf)
From	To						Method 1	Method 2	Average		
0.00	2.00	SAND	1.00	13.27	2.00	6	441	435	438	***47***	***115***
2.00	4.00	SAND	3.00	11.27	2.00	11	809	650	729	***79***	***249***
4.00	6.00	SAND	5.00	9.27	2.00	6	441	435	438	***47***	***226***
6.00	8.00	SAND	7.00	7.27	2.00	12	882	688	785	***85***	***255***
8.00	10.00	SAND	9.00	5.27	2.00	19	1397	932	1164	***126***	***345***
13.00	15.00	SAND	14.00	0.27	2.00	10	735	610	673	***73***	***393***
18.00	20.00	SAND	19.00	-4.73	2.00	7	515	482	498	***54***	***225***
26.00	28.00	SAND	27.00	-12.73	2.00	4	294	333	314	***34***	***261***
29.00	31.00	SAND	30.00	-15.73	2.00	5	368	386	377	***41***	***317***
33.00	35.00	SAND	34.00	-19.73	2.00	6	441	435	438	***47***	***446***
38.00	40.00	SAND	39.00	-24.73	2.00	72	5292	2245	3769	***407***	***754***
43.00	45.00	SAND	44.00	-29.73	2.00	67	4925	2141	3533	***382***	***761***

SPT B-13 vs CPT-13 B-13
Surface Elevation (ft): 15.17

Depth (feet)		Soil Type	Depth of Mid-Point (feet)	Elevation	Thickness of Layer (feet)	SPT N	Deformation Modulus (psi)			Confined Stiffness Module (tsf)	Confined Stiffness Module by CPT (tsf)
From	To						Method 1	Method 2	Average		
0.00	2.00	SAND	1.00	14.17	2.00	11	809	650	729	***79***	***124***
2.00	4.00	SAND	3.00	12.17	2.00	40	2940	1523	2232	***241***	***216***
4.00	6.00	SAND	5.00	10.17	2.00	40	2940	1523	2232	***241***	***251***
6.00	8.00	SAND	7.00	8.17	2.00	27	1985	1175	1580	***171***	***311***
8.00	10.00	SAND	9.00	6.17	2.00	31	2279	1287	1783	***193***	***390***
13.00	15.00	SAND	14.00	1.17	2.00	25	1838	1117	1477	***160***	***460***
18.00	20.00	SAND	19.00	-3.83	2.00	15	1103	797	950	***103***	***273***
23.00	25.00	SAND	24.00	-8.83	2.00	17	1250	866	1058	***114***	***183***
28.00	30.00	SAND	29.00	-13.83	2.00	32	2352	1315	1833	***198***	***244***
33.00	35.00	SAND	34.00	-18.83	2.00	15	1103	797	950	***103***	***259***
38.00	40.00	SAND	39.00	-23.83	2.00	10	735	610	673	***73***	***755***
43.00	45.00	SAND	44.00	-28.83	2.00	108	7938	2934	5436	***587***	***759***

REFERENCE

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Electric Power
Research Institute

Topics:
Soils
Testing
Foundations
Transmission towers
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Project 1493-6
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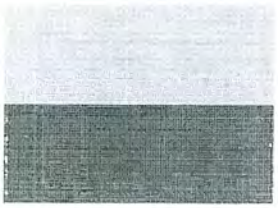


Manual on Estimating Soil Properties for Foundation Design

Prepared by
Cornell University
Ithaca, New York

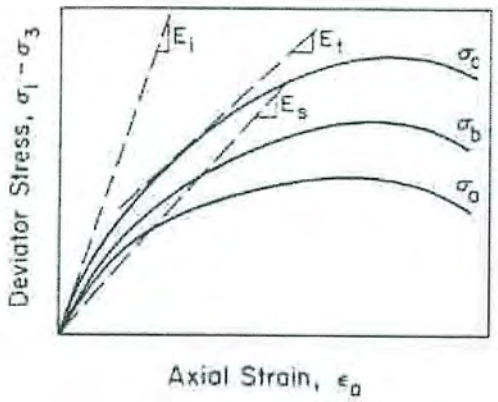


Figure 5-1. Modulus Definitions

being both nonlinear and stress-dependent. In sophisticated numerical models, the actual stress path can be followed, and the modulus can be evaluated for each stress state along the stress path. In simpler, closed-form solutions, an effort must be made to estimate the overall average modulus from the initial to the final stress states.

Poisson's ratio (ν) is defined in an analogous form for triaxial tests in which both axial and volumetric strains are measured. From these data, the axial and radial strains can be obtained. Poisson's ratio is the ratio of the radial strain (ϵ_r) to the axial strain (ϵ_a), as given below:

$$\nu = - \partial\epsilon_r / \partial\epsilon_a \qquad (5\text{-}2)$$

As with the modulus, Poisson's ratio is both nonlinear and stress-dependent. However, the range of ν is relatively small compared with the range of E, and therefore less effort usually is made in evaluating ν precisely.

For elastic materials, Young's modulus and Poisson's ratio are interrelated uniquely with the shear modulus (G) as follows:

$$G = E/2(1 + \nu) \qquad (5\text{-}3)$$

The shear modulus also is defined as the slope of the shear stress (τ)-shear strain (γ) curve, which resembles that in Figure 5-1, and is given below:

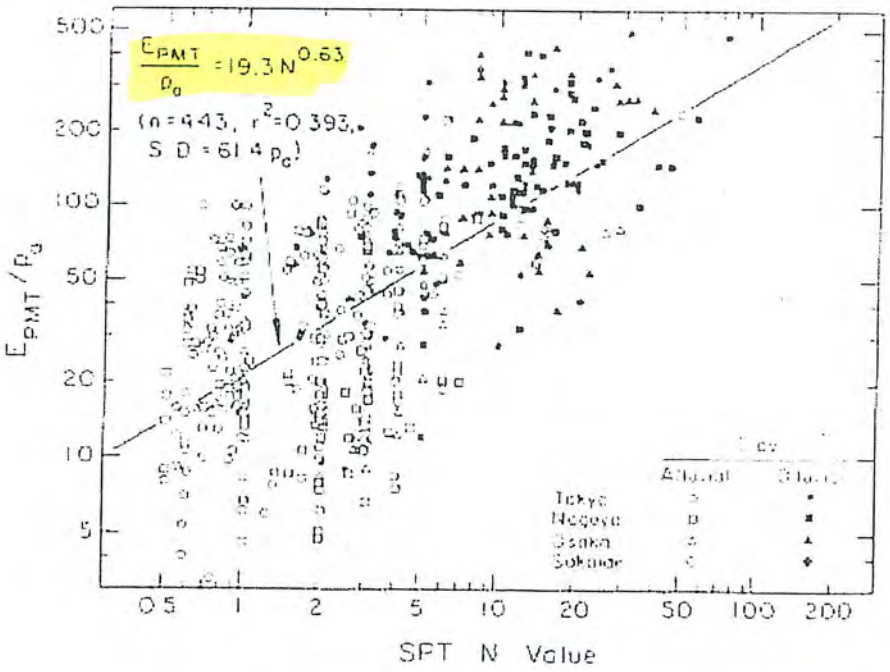


Figure 5-8. PMT Modulus of Clay versus N Value

Source: Ohya, et al. (11), p. 129

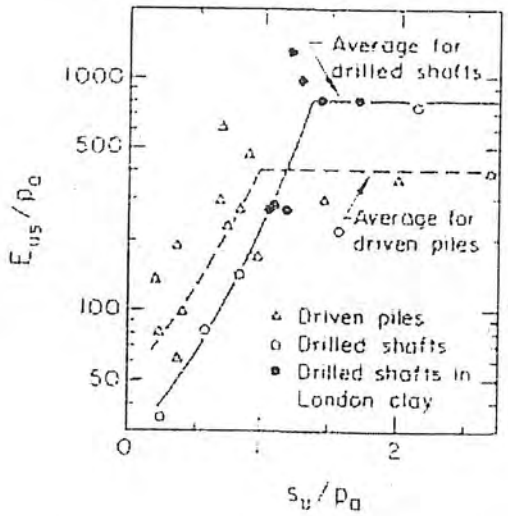


Figure 5-9. Undrained Modulus for Deep Foundations in Compression

Source: Poulos and Davis (12), p. 103.

diameter (B) ratio. Of particular interest to note is that E_{us}/s_u is normally greater than 200. Figure 5-10b shows limited data for spread foundations with

$$G_{max}/P_a = 321 \frac{(2.97 - e)^2}{1 + e} OCR^M (\bar{\sigma}_o/P_a)^{0.5} \qquad (5\text{-}19)$$

in which e = void ratio (not to exceed 2), M = exponent given in Table 5-4, and $\bar{\sigma}_o$ = mean principal effective stress.

However, it must be remembered that G_{max} at small dynamic strains is much larger than G at large static strains, as shown in Figure 5-11. From this figure, it is clear that G for static loading is on the order of 5 to 10 percent of G_{max} for dynamic loading. This general pattern holds for all soil types.

Wroth, et al. (9) reviewed a number of relationships for G_{max} at dynamic strains versus N, as shown in Figure 5-12. From this figure, it is clear that considerable scatter is present in the data. From these data, they suggested the following:

$$G_{max}/P_a = 120\ N^{0.77} \qquad (5\text{-}20)$$

with limits of the data being $60\ N^{0.71} < G_{max}/P_a < 300\ N^{0.8}$. The static shear modulus then would be some 5 to 10 percent of the computed G_{max} value.

Table 5-4

EXPONENT M FOR SHEAR MODULUS

Plasticity Index, PI	Exponent, M
0	0
20	0.18
40	0.30
60	0.41
80	0.48
≥ 100	0.50

Source: Hardin and Drnevich (15), p. 672

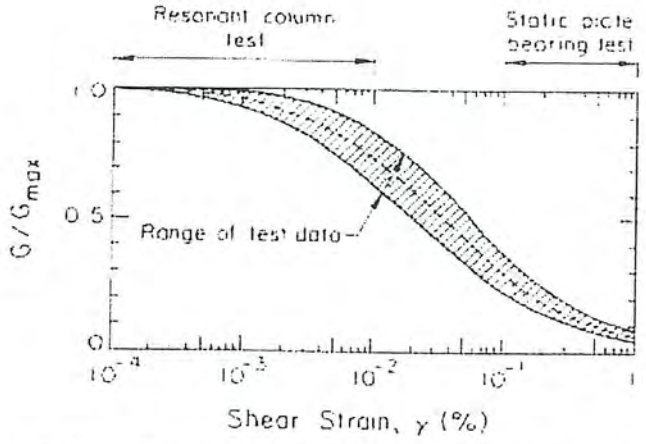


Figure 5-11 Shear Modulus versus Shear Strain for Sands

Source: Seed and Idriss (10)

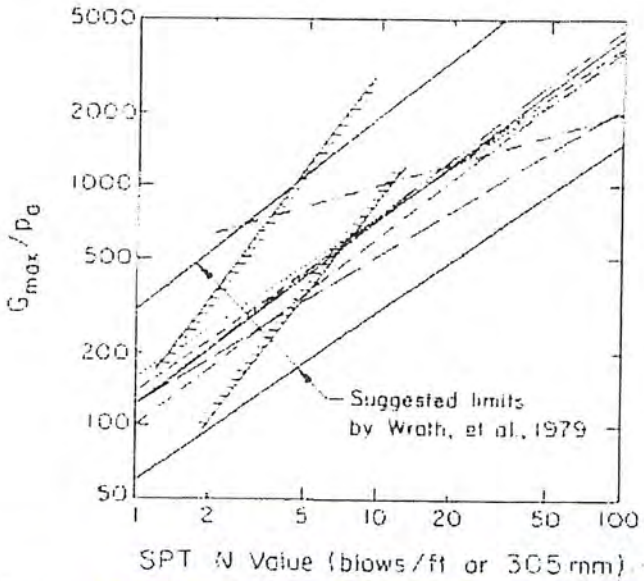


Figure 5-12 Dynamic Shear Modulus versus N for Cohesive Soils

Source: Wroth et al (9) p 96

MODULUS FOR COHESIONLESS SOILS

Cohesionless soils such as sands do not exhibit significant time-dependency to loading caused by excess pore water stress dissipation, and therefore the modulus under undrained loading conditions exists only briefly. Almost always, the modulus is considered for drained conditions. However, for finer-grained silts, some significant time-dependency may develop that will have to be considered on

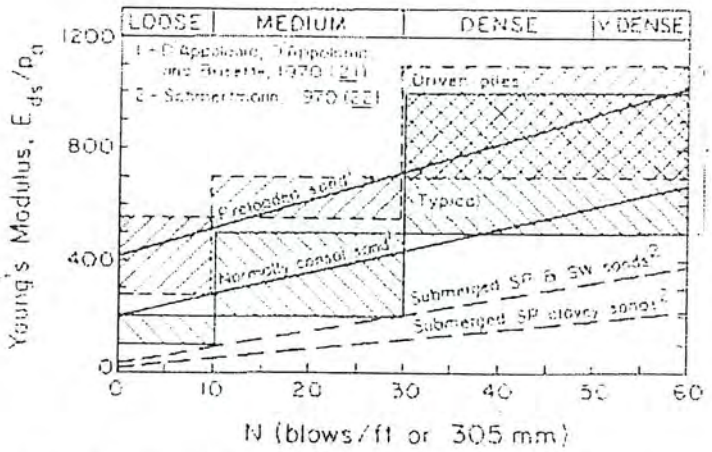


Table 5-5

Figure 5-13. Comparative Plot of Drained Modulus Correlations for Sand

Source: Callanan and Kulhawy (13), p. 3-16

scatter. This lack of correlation is to be expected because the SPT N value varies with many factors, as described in Section 2, and these factors have yet to be incorporated in these correlations. Therefore, as a first order estimator, the following may be used:

$$E/p_a \approx 5\ N_{60} \quad \text{(sands with fines)} \tag{5-26a}$$

$$\approx 10\ N_{60} \quad \text{(clean NC sands)} \tag{5-26b}$$

$$\approx 15\ N_{60} \quad \text{(clean OC sands)} \tag{5-26c}$$

in which N_{60} is the N value corrected for field procedures to an average energy ratio of 60 percent. Equation 2-11 gives the appropriate correction factors.

Pressuremeter Modulus. The pressuremeter test (PMT) provides a direct measurement of the horizontal modulus of cohesionless soils. This modulus (E_{PMT}) often is presumed to be roughly equivalent to Young's modulus (E). Correlations between the N value and E_{PMT} have been developed, as shown in Figure 5-14. The scatter shown is typical of other N correlations because of the reasons noted above.

Dilatometer Modulus. The dilatometer test (DMT) also provides a direct modulus measurement for cohesionless soils. The dilatometer modulus (E_D) is related to Young's modulus as follows:

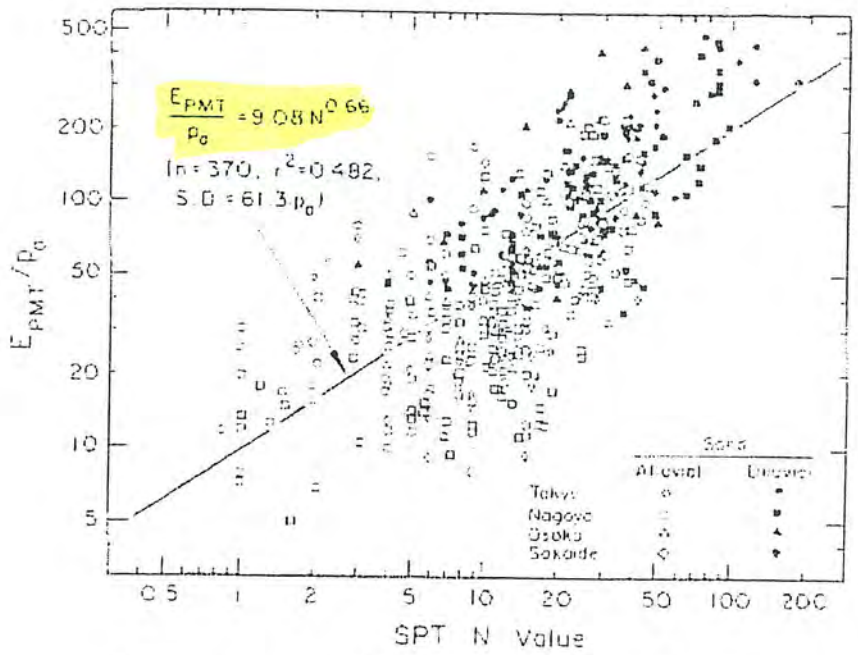


Figure 5-14 PMT Modulus of Sand versus N Value

Source: Ohya, et al. (11) p. 129

$$E_D = E_s/(1 - \nu^2) \qquad (5\text{-}27)$$

No general correlations of E_D with N have been presented at this time. However, the DMT and other in-situ tests can be used effectively to develop convenient correlations within a specific geologic setting. For example, Mayne and Frost (25) developed the relationship shown in Figure 5-15, which correlates the SPT N value with both the E_D and the secant modulus (E_{ds}) back-calculated from eight case histories of field performance data on building foundations. All of these data were obtained in sandy silts of the Piedmont geologic province, in and around the Washington, D.C. area. Local correlations of this type normally are much more accurate than generalized global correlations.

Correlations with CPT q_c Value

Modulus values for cohesionless soils have been correlated with the cone penetration test (CPT) q_c value. Initial correlation studies attempted to link E_{ds} with q_c directly, using the general form below:

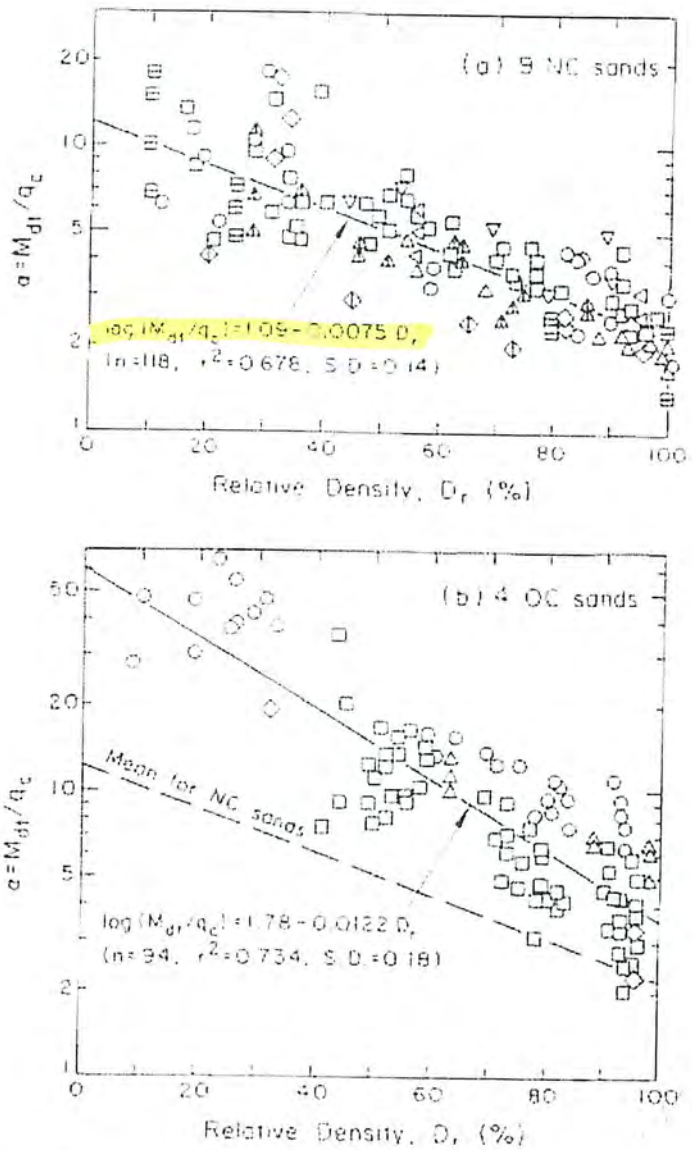


Figure 5-16 Variation of α with D_r for Sands in Calibration Chambers

literature typically range from 7 to 25 or more. However, Figure 5-16b shows further ranges in α and a definite trend with relative density. These data also were from the calibration chamber studies.

For one sand tested extensively in a calibration chamber, the effects of relative density, overconsolidation and stress level adopt consistent patterns, as

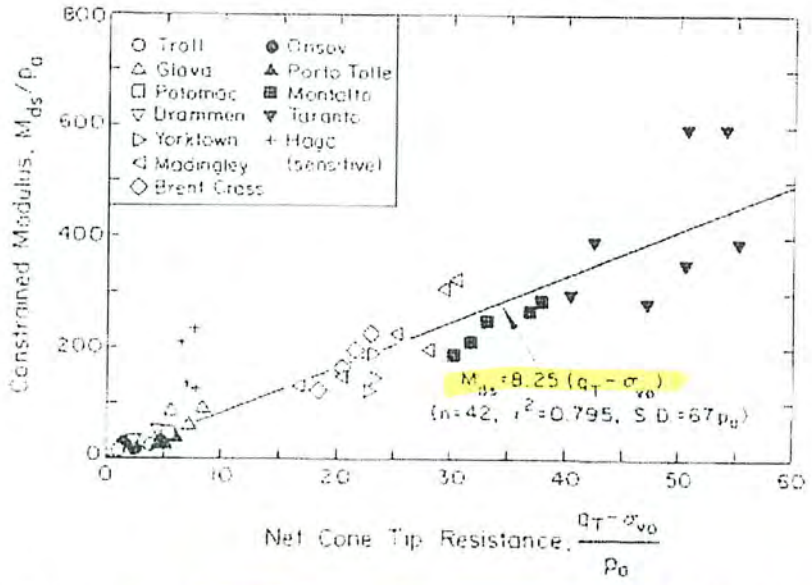


Figure 6-10. Constrained Modulus versus q_T from CPTU for Clays

Source: Database from Mayne, et al. (18)

Correlations with DMT Results

The dilatometer test (DMT) provides an estimate of M_{ds} through an empirical relationship between the dilatometer parameters E_D and K_D, as shown in Figure 6-11. The effect of the dilatometer parameter I_D on this relationship is given in explicit equations by Marchetti (19).

COMPRESSION INDEX FOR COHESIONLESS SOILS

For the predominant quartz type cohesionless soils found throughout the world, the compressibility characteristics are much less than for cohesive soils. Exceptions to this observation could include micaceous sands and the calcareous sands associated with coralline deposits, which show significant compressibility compared with the more prevalent silica sands. The compression index of cohesionless soils is somewhat stress-dependent, indicating that e-log σ_v plots are perhaps not the most appropriate means of presenting one-dimensional compression data. Typical values for the compression index and unload-reload index of six different sands are given in Table 6-2.

The effect of grain size distribution on sand compressibility is illustrated in

as a function of cone type and shape, as given in Appendix B.

Piezocone Penetration Test (CPTU) Classifications

With the recent development of the piezocone, which measures the total penetration pore water stress (u_m) in addition to q_c and f_s, the ability of the cone penetrometer to delineate soil stratigraphy and provide an accurate classification of soil type is enhanced greatly. In loose, contractive sands, the value of u_m closely follows the hydrostatic stress (u_o). In dense, dilatant sands, u_m may be less than u_o. In clays, cone penetration generates excess pore water stresses that are recorded by the pore water transducer. Two of the recent soil classification systems based on CPTU measurements are given in Figures 2-9 and 2-10. Other classification charts are given by Robertson, et al. (22). In the first of these figures, the parameter B_q is used, which is defined as:

$$B_q = \frac{u_m - u_o}{q_T - \sigma_{vo}} \qquad (2\text{-}4)$$

in which u_m = measured total pore water stress (usually behind the tip), u_o =

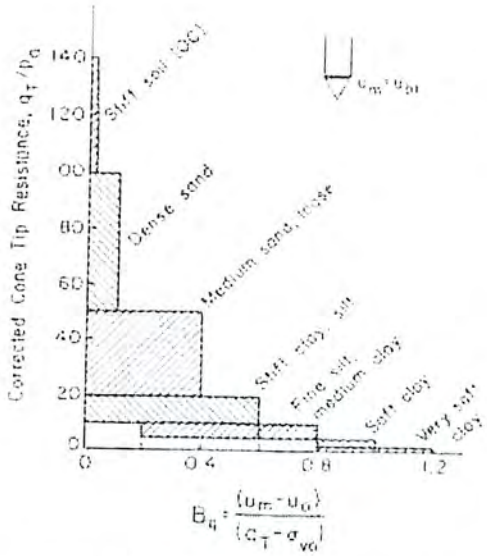


Figure 2-9 Soil Classification Based on q_T and B_q

Source: Sanglerat and Jambu (21), p. 48.

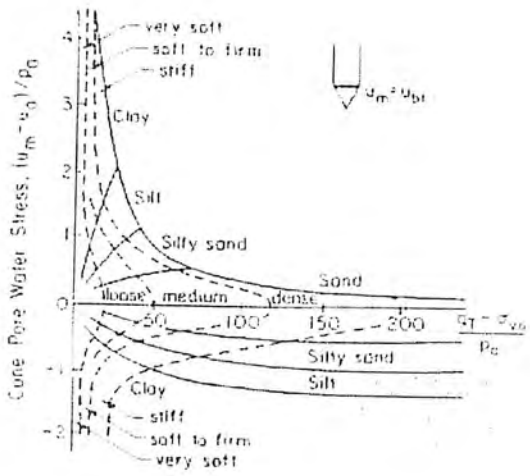
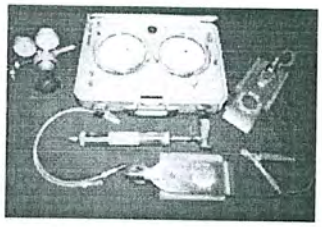
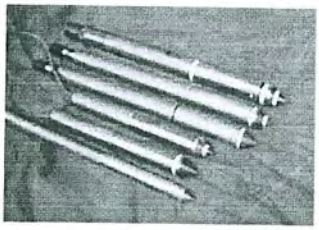


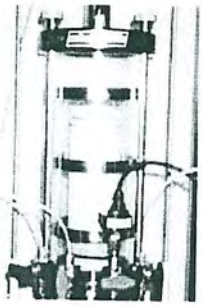
Figure 2-10 Soil Classification Based on CPTU Data

Source: Jones and Rust (22), p. 612.






Manual on Subsurface Investigations

National Highway Institute
Publication No. FHWA NHI-01-031
Federal Highway Administration
Washington, DC

Geotechnical Site Characterization

July 2001

by Paul W. Mayne, Barry R. Christopher, and Jason DeJong

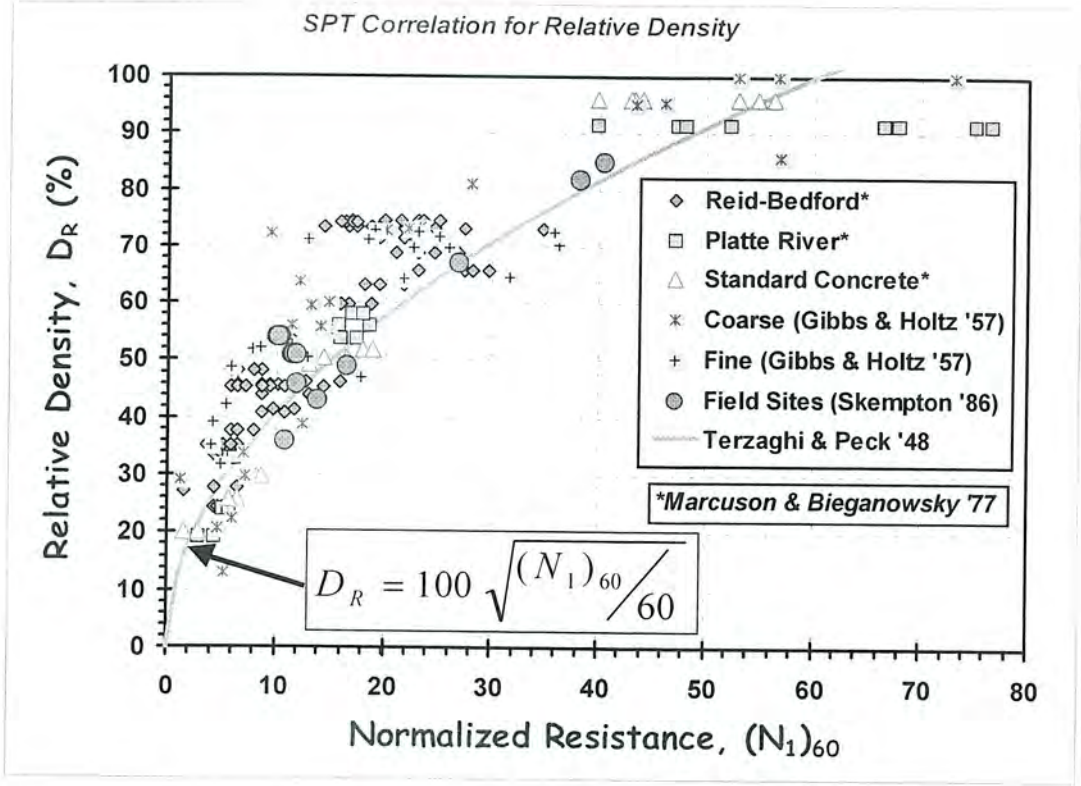


Figure 9-8. Relative Density of Clean Sands from Standard Penetration Test Data.
Note: normalized value $(N_1)_{60} = N_{60}/(\sigma'_{vo})^{0.5}$ where σ'_{vo} is in units of bars or tsf.

A comparable approach for the CPT can be made based on calibration chamber test data on clean quartz sands (Figure 9-9). The trends for relative density (in percent) of unaged uncemented sands are:

Normally-Consolidated Sands: $$D_R = 100\sqrt{\frac{q_{t1}}{300}} \qquad (9\text{-}14a)$$

Overconsolidated Sands: $$D_R = 100\sqrt{\frac{q_{t1}}{300\,OCR^{0.2}}} \qquad (9\text{-}14b)$$

where $q_{t1} = q_c/(\sigma'_{vo})^{0.5}$ is the normalized tip resistance with both the measured q_c and effective overburden stress are in atmospheric units. The relationship should be restricted to $q_{t1} < 300$ because of possible grain crushing effects. For any units of effective overburden stress and cone tip resistance, the normalized value is given by: $q_{t1} = (q_t/p_a)/(\sigma'_{vo}/p_a)^{0.5}$, where p_a is a reference stress = 1 bar • •1 kg/cm^2 • •1 tsf • •100 kPa . Additional effects due to overconsolidation ratio (OCR), mean particle size, soil compressibility, and aging can also be considered (Kulhawy and Mayne, 1991), but these factors are often not well quantified during routine site investigations. As indicated by Figure 9-9b, an increase in OCR in the sand will lower the apparent relative density given by eq (9-13).

STABILITY ANALYSIS FOR LANDFILL AREA B		
Job No. 043-2650.1	**Made by** BG	**Date** March 15, 2007
Ref.	**Chk'd** SJC	**Sheet** 1 of 5
SJRPP/Area B Hydrogeologic and Geotechnical Evaluation/FL	**Rev'd** SJC	

OBJECTIVE:

Perform slope stability analyses under static and seismic loads for Landfill By-product Area B.

This calculation sheet presents the slope stability analyses for Landfill By-product Area B. The analyses were performed using the generalized limit equilibrium method that satisfies both force and moment equilibrium (Abramson et al. 1996). The limit equilibrium slope stability program SLIDE (Rocscience 2003), version 5, was used to calculate the factors of safety for the slope stability problem.

ASSUMPTIONS:

The following assumptions were made during the calculation:

1. Disposal will occur within 5 feet of the existing ground surface (no significant cuts or fills).
2. Groundwater averages 3 feet below ground surface.
3. The facility is unlined.
4. The density of the by-products average 1.35 tons/cubic yard = 100 pcf.
5. The maximum height of the by-product disposal area will be 100 feet.

SITE INVESTIGATION:

16 SPT Boring logs and 13 CPT tests were conducted in the property. The CPT data refuses out at about 60 to 65 feet below ground surface (bgs) whereas the SPT data goes down to 120 feet bgs. SPT Borehole locations and CPT locations are shown in Figure 1. Ground surface elevation varied from 8 ft above Mean Sea Level (ft-MSL) to 22 ft-MSL. For stability analysis, use the average ground surface elevation at 15 ft-MSL. Estimated Hawthorn Formation is at about -90 ft-MSL.

Since the maximum height of the landfill is 100 ft, which is greater than the refusal depth of most CPT data, only SPT data was used to develop foundation material properties.

ANALYSIS GEOMETRY

Cross-section for the landfill was based on the design geometry, as shown in Figure 2.

MATERIAL PROPERTIES

Five types of material are encountered in the slope stability analysis of Landfill Area B By-Product:

(1) By-Product Material

(2) Foundation Material 1
(3) Foundation Material 2
(4) Foundation Material 3
(5) Foundation Material 4

The shear strength parameters of the by-product material were based on Golder's previous letter report regarding the "Vertical Expansion Stability Evaluation Landfill Area 1," dated November 26, 1997. In the letter report, friction angles of 32 and 36 degrees were recommended corresponding to different depths of the material; and moist and saturated unit weights of 95 and 105 pcf were estimated. A unit weight of 100 pcf and a friction angle of 32 degree were used in this analysis.

The shear strength parameters of the foundation material were estimated based on the N-values recorded in the recent geotechnical investigation and published correlations between N-value and effective angle of internal friction (Attachment 1). The blow counts used to estimate the friction angles were corrected for overburden pressure. A unit weight of 120 pcf was assumed for foundation soil, which is in the normal range of the foundation material. A statistical analysis was performed on friction angle from SPT borings (B-1 to B-16) to calculate an 'Average Angle' line with elevations and an 'Average – Standard Deviation' line with elevations. The average angle and standard deviation were calculated using the friction angles within adjacent elevations. A Golder model was developed based on the correlation results. As shown in Figure 3, the model is generally along the line of "Average – Standard Deviation." Four types of foundation material properties were developed as shown in Table 2. Foundation material 1 to 3 were based on N-value data. Foundation material 4 was considered as Hawthorn Formation material. A friction angle of 33 degree, which is the maximum value of foundation material on top of the Hawthorn Formation, is estimated for the Hawthorn Formation. Since no cohesion was considered in the analysis, these strength parameters were considered appropriate for the stability analysis.

MATERIAL PROPERTIES

The ground water level within the landfill mass was assumed to be 50 percent of the landfill height. The ground water level at the toe of the fill slope was assumed to be 1 ft below ground surface (Current ground water levels average about 3 ft below ground surface).

SEISMIC COEFFICIENT

Based on Golder's previous letter report regarding the "Vertical Expansion Stability Evaluation Landfill Area 1," dated November 26, 1997, a horizontal seismic coefficient of 0.045 g, representing 50 percent of the peak ground acceleration, was used in the analysis.

ANALYSIS CASES AND RESULTS

Limiting equilibrium slope stability calculations were performed using the computer program SLIDE, version 5. Normally the undrained shear strength is greater than the shear strength obtained using static shear strength parameters. To be conservative, all cases were calculated using effective stress shear strength parameters.

(1) Global slope stability under static load - circular failure

(2) Global slope stability under static load - block failure
(3) Global slope stability under seismic load - circular failure
(4) Global slope stability under seismic load - block failure

Figures 4 to 7 show the critical slip circles and the calculated factors of safety for cross-section, respectively. The results were also tabulated in Table 2.

CONCLUSIONS

The Landfill Area B By-Product has factors of safety greater than the required factors of safety under static load and seismic load for its slope stability. These values of safety factor are considered to be sufficient.

REFERENCES

Abramson, L. W., Lee, T. S., Sharma, S., and Boyce, G. M., 1996. Slope Stability and Stabilization Methods, John Wiley & Sons, New York.

Rocscience Inc., 2003. Slide – 2D Limit Equilibrium Slope Stability for Soil and Rock Slopes, Version 5, Toronto, Canada.

TABLES:

Table 1: Estimated Material Properties
Table 2: Slope Stability Analysis Results

FIGURES:

Figure 1: Site Investigation
Figure 2: Stability Analysis Cross Section
Figure 3: Foundation Material Friction Angle Profile
Figure 4: Global Slope Stability under Static Load – Circular Failure
Figure 5: Global Slope Stability under Static Load – Block Failure
Figure 6: Global Slope Stability under Seismic Load – Circular Failure
Figure 7: Global Slope Stability under Seismic Load – Block Failure

ATTACHMENTS

Attachment 1 Estimation of Friction Angle based on SPT Data

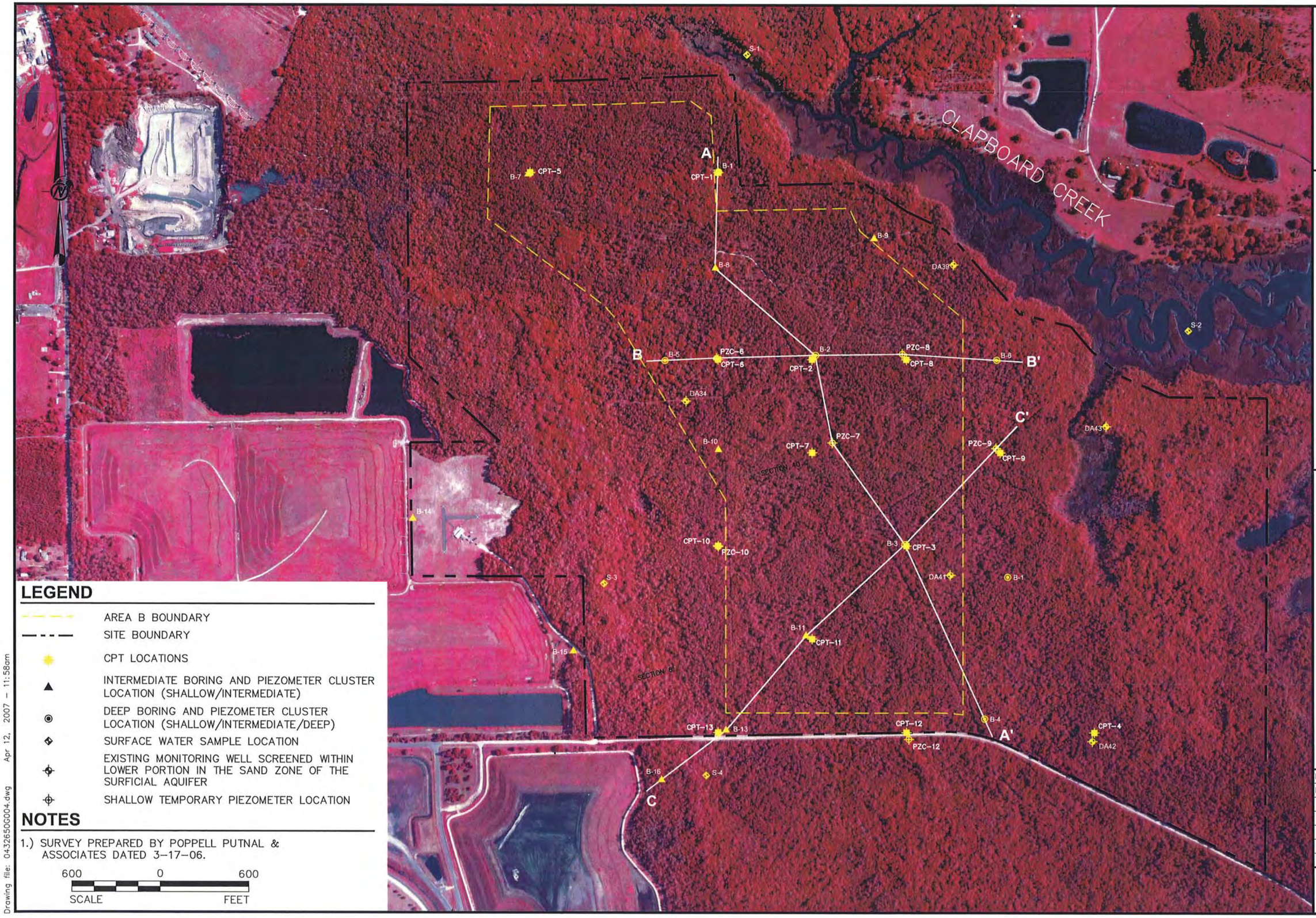
Table 1 Estimated Material Properties

Material Type	Total Unit Weight (lb/ft^3)	Effective Cohesion (psf)	Effective Friction Angle (degree)
By-product material	100	0	32
Foundation material 1	120	0	28
Foundation material 2	120	0	33
Foundation material 3	120	0	30
Foundation material 4	120	0	33

Table 2 Slope Stability Analysis Results

Cases	Factor of Safety Required	Actual Factor of Safety
Global slope stability under static load - circular failure	1.5	1.88
Global slope stability under static load - block failure	1.5	1.87
Global slope stability under seismic load - circular failure	1.1	1.59
Global slope stability under seismic load - block failure	1.1	1.59

STABILITY ANALYSES



LEGEND

- AREA B BOUNDARY
- SITE BOUNDARY
- CPT LOCATIONS
- INTERMEDIATE BORING AND PIEZOMETER CLUSTER LOCATION (SHALLOW/INTERMEDIATE)
- DEEP BORING AND PIEZOMETER CLUSTER LOCATION (SHALLOW/INTERMEDIATE/DEEP)
- SURFACE WATER SAMPLE LOCATION
- EXISTING MONITORING WELL SCREENED WITHIN LOWER PORTION IN THE SAND ZONE OF THE SURFICIAL AQUIFER
- SHALLOW TEMPORARY PIEZOMETER LOCATION

NOTES

1.) SURVEY PREPARED BY POPPELL PUTNAL & ASSOCIATES DATED 3-17-06.

600 0 600
SCALE FEET

Drawing file: 0432650G004.dwg Apr 12, 2007 - 11:58am

Gobler Associates
Jacksonville, Florida

PROJECT
SJRPP / AREA B HYDROGEOLOGY / FL

TITLE
SOIL BORING, CPT, PIEZOMETER AND SITE-SPECIFIC GEOLOGIC CROSS SECTION MAP

PROJECT No.	043-2650	
FILE No.	0432650G004	
REV. 1	SCALE AS SHOWN	
DESIGN	TEA	02/19/07
CADD	ADK	03/13/07
CHECK	SAS	4/13/07
REVIEW	KBK	4/16/07

FIGURE 1

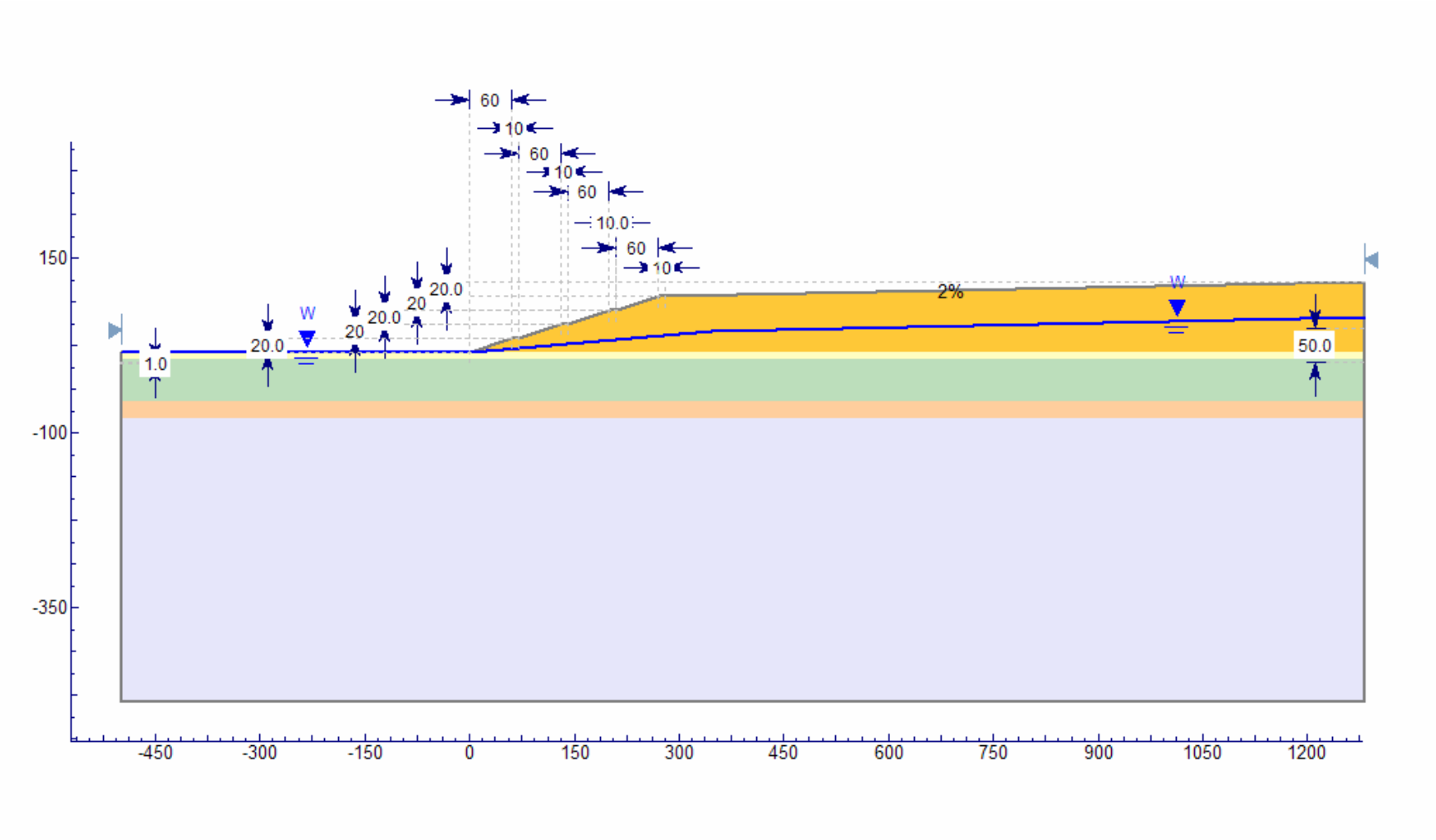
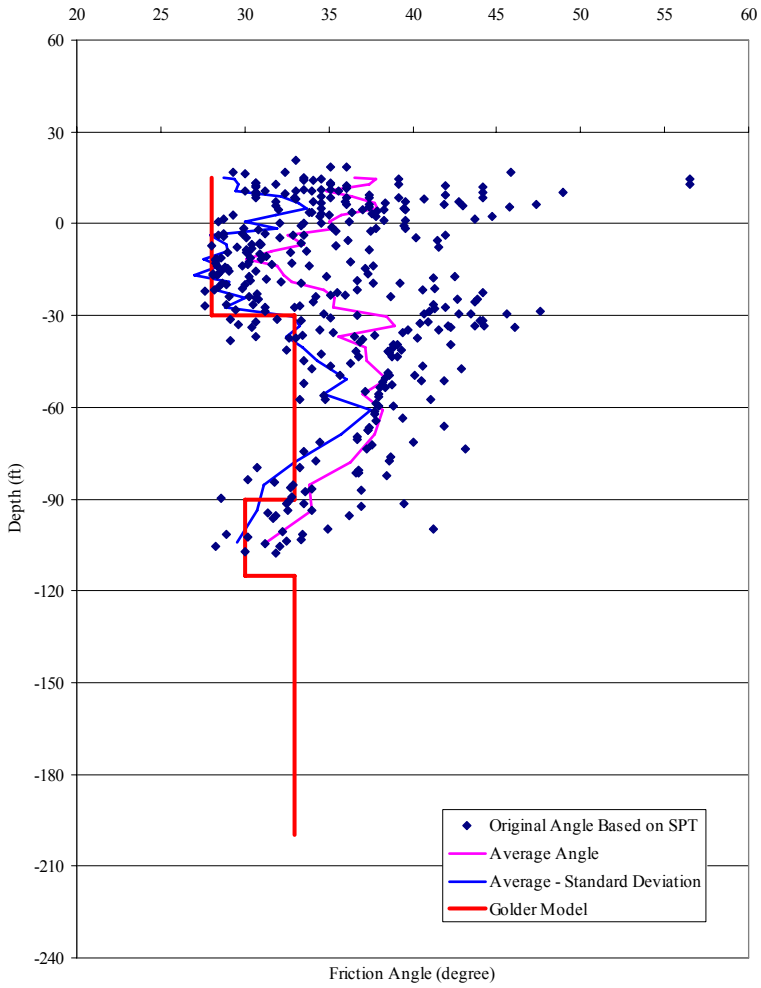


Figure 2: Stability Analysis Cross Section



Golder Model

Soil Layer	Elevation (ft)	Angle (degree)
1	15	28
	-30	28
2	-30	33
	-90	33
3	-90	30
	-115	30
4	-115	33
	-200	33

Figure 3: Foundation Material Friction Angle Profile

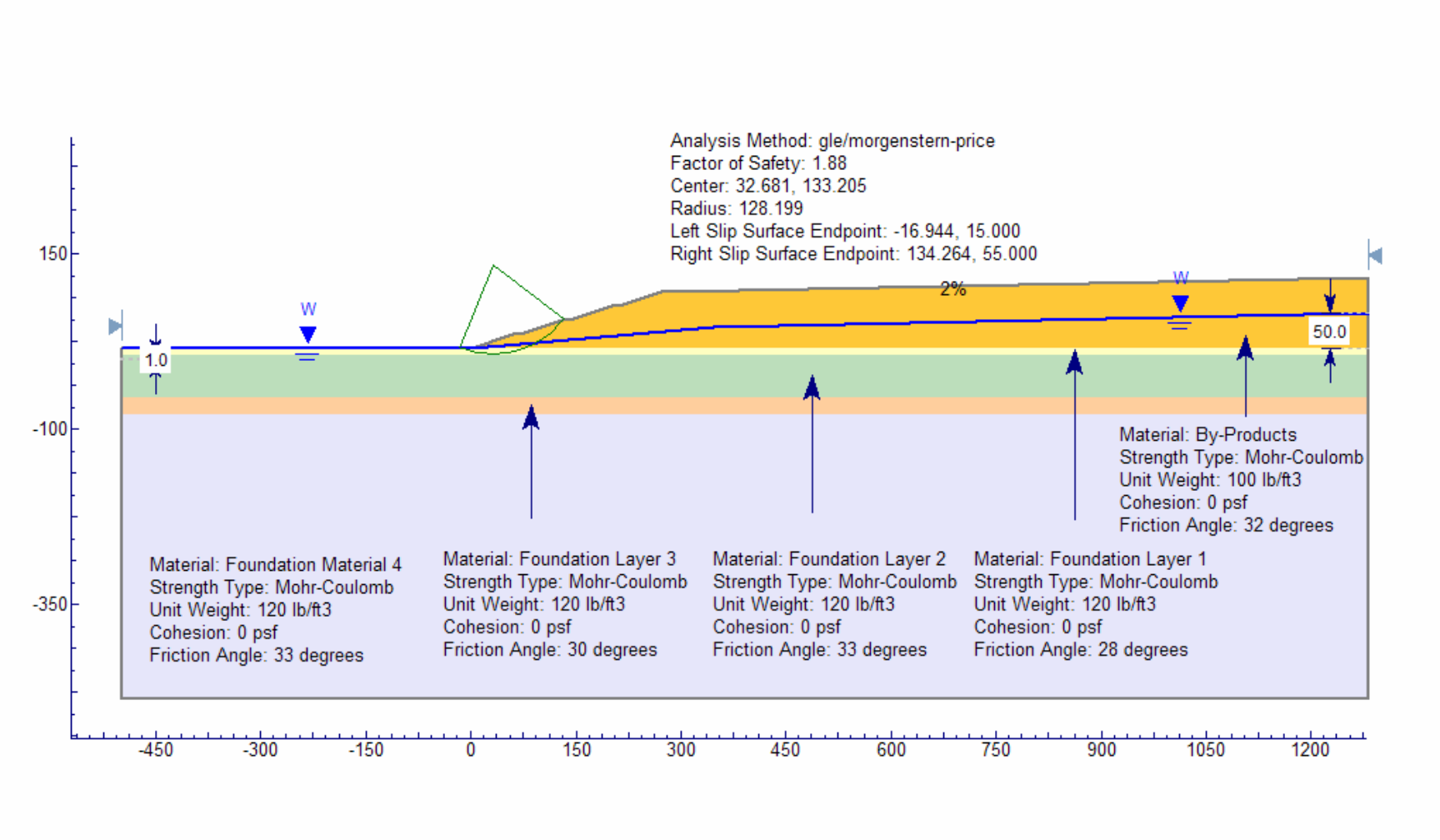


Figure 4: Global Slope Stability under Static Load – Circular Failure

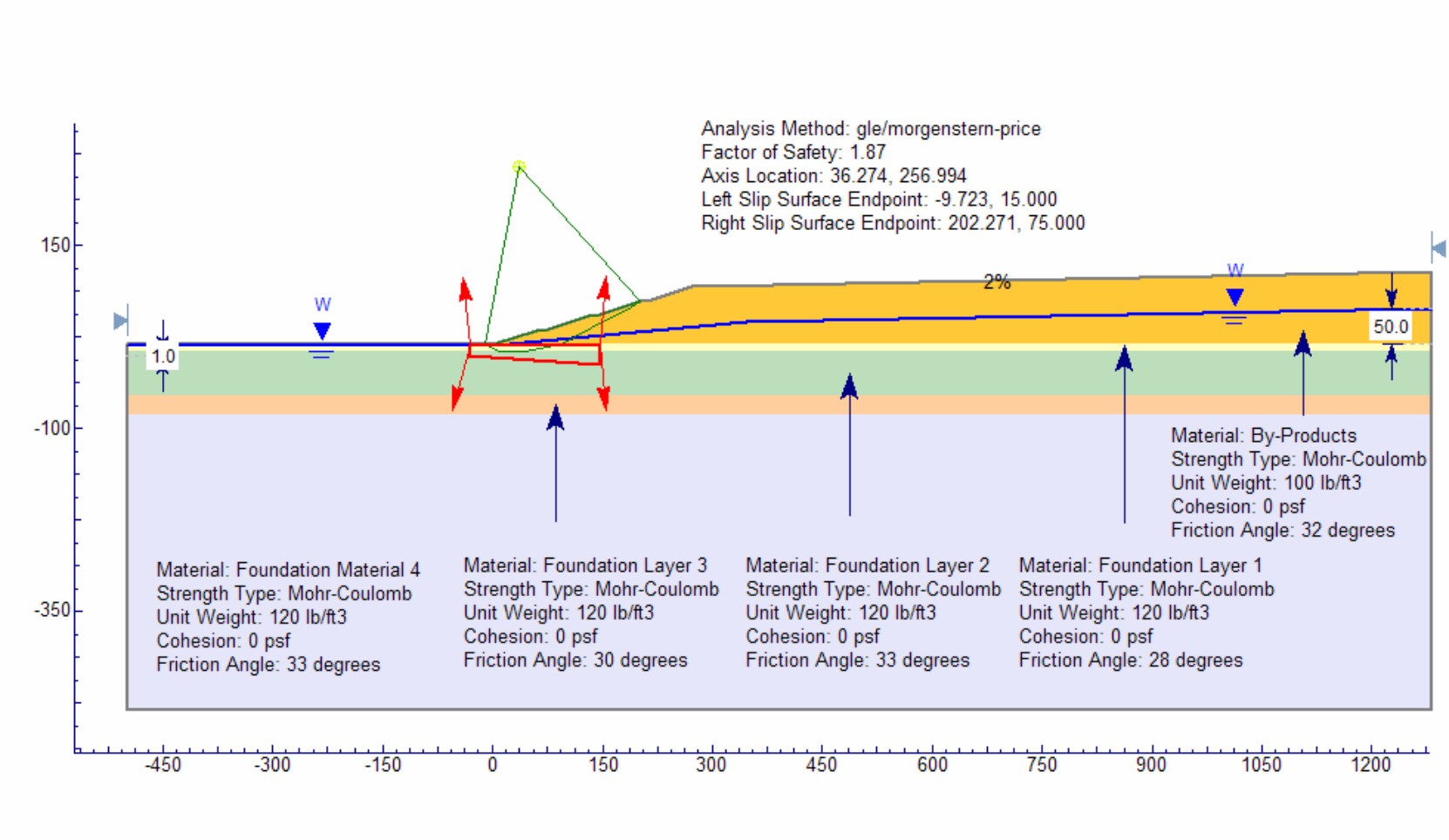


Figure 5: Global Slope Stability under Static Load – Block Failure

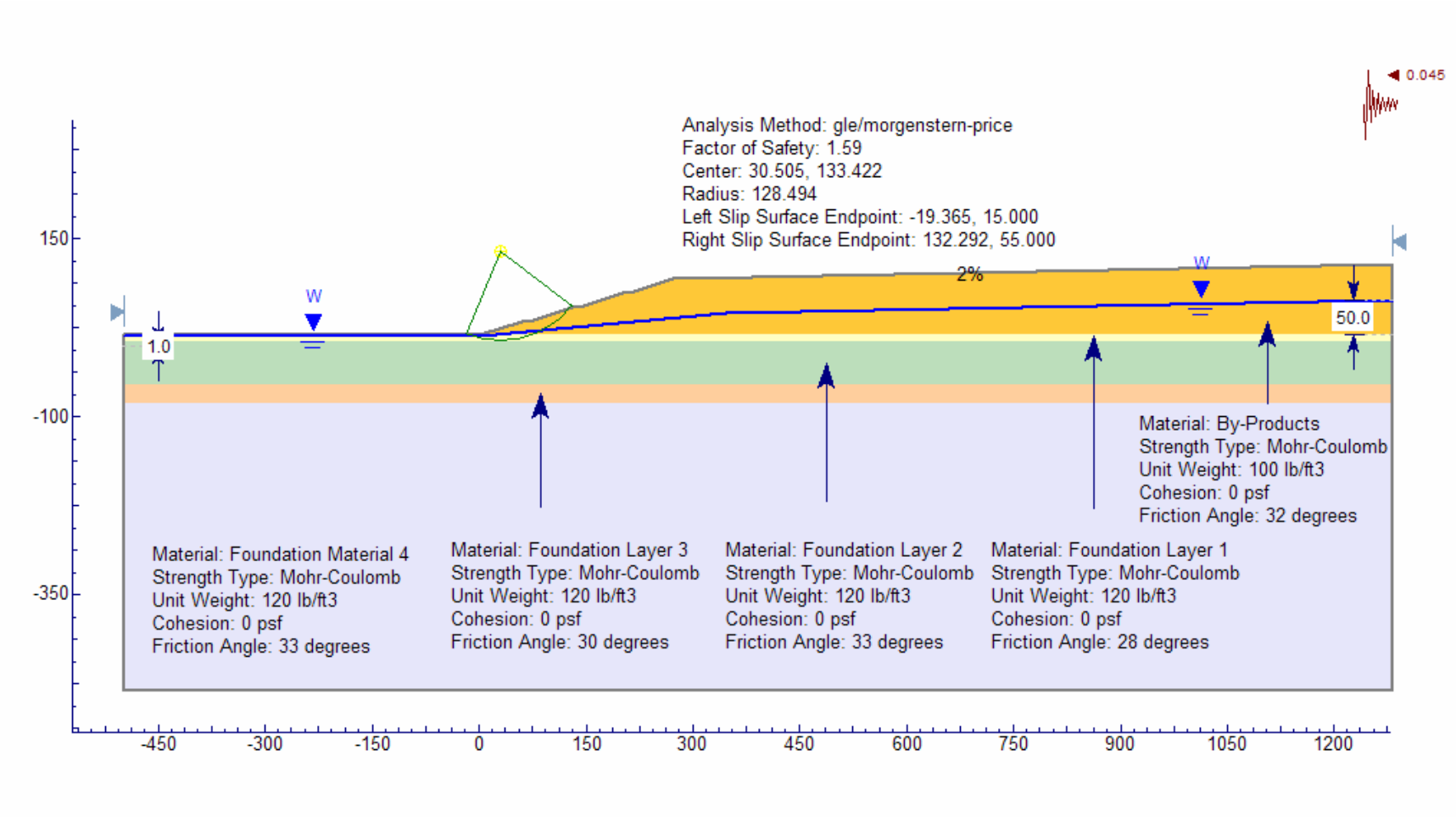


Figure 6: Global Slope Stability under Seismic Load – Circular Failure

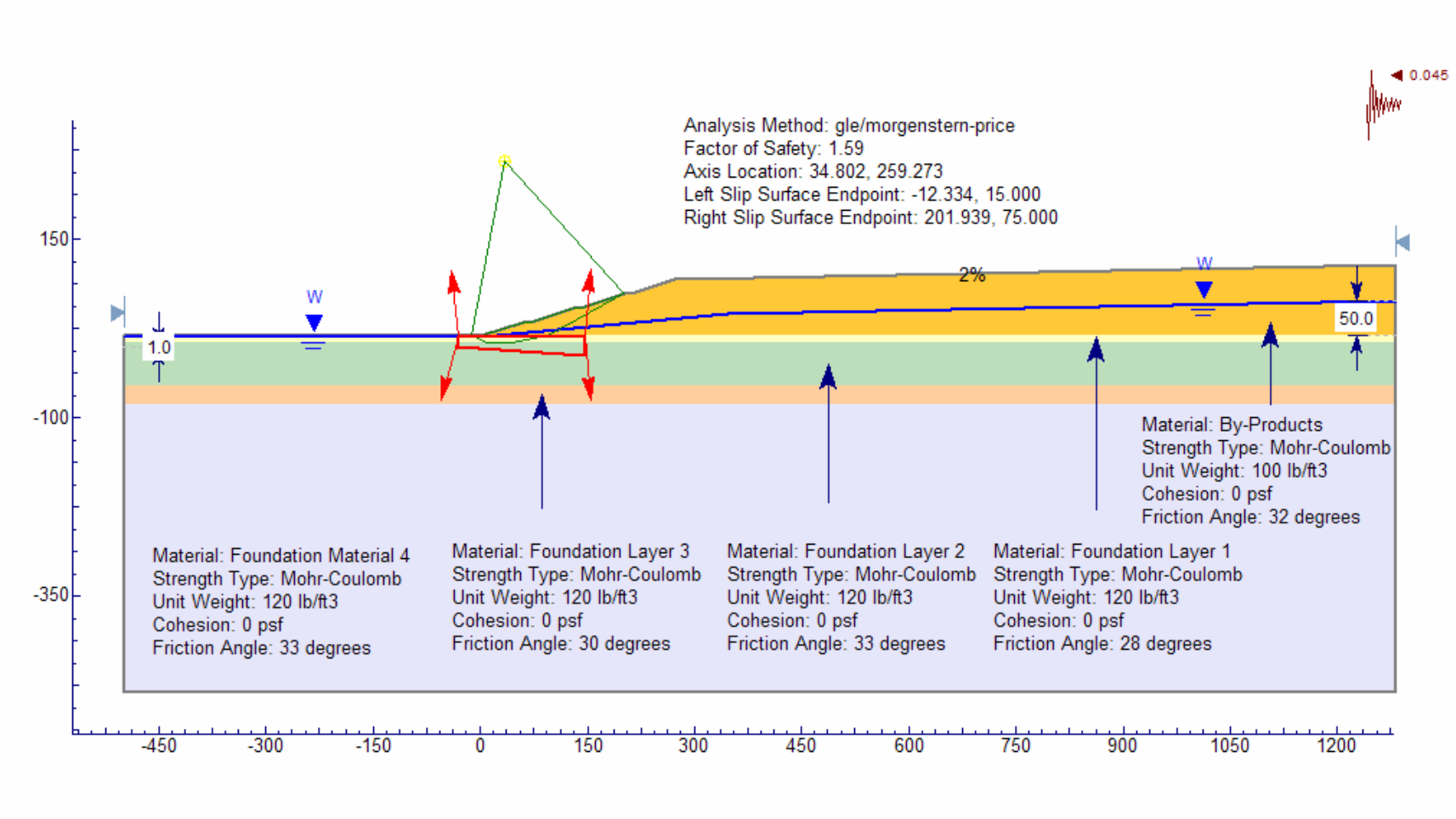


Figure 7: Global Slope Stability under Seismic Load – Block Failure

ATTACHMENT 1

ESTIMATION OF FRICTION ANGLE BASED ON SPT DATA

Boring No: B-1
Water level depth (ft): 3 Surface Elevation (ft): 15.37
Assumed unit weight (pcf): 120

SPT Log				Elevation	SPT *N* Values					Relative	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type	(ft)						Density	Terzaghi et al.	Peck et al.	Average
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$	(%)	(1996)	(1974)	Value
0.00	2.00	1.0	SAND	14.4	11	11	120	0.5	19	56	34	33	34
2.00	4.00	3.0	SAND	12.4	31	31	360	0.5	53	94	42	41	42
4.00	6.00	5.0	SAND	10.4	60	60	475.2	0.5	102	100	47	51	49
6.00	8.00	7.0	SAND	8.4	40	40	590.4	0.5	68	100	44	44	44
8.00	10.00	9.0	SAND	6.4	54	54	705.6	0.5	91	100	46	49	47
10.00	12.00	11.0	SAND	4.4	9	9	820.8	0.5	14	48	33	31	32
12.00	14.00	13.0	SAND	2.4	49	49	936	0.5	72	100	44	45	45
14.00	16.00	15.0	SAND	0.4	16	16	1051.2	0.5	22	61	35	34	35
16.00	18.00	17.0	SAND	-1.6	31	31	1166.4	0.5	41	82	40	39	40
18.00	20.00	19.0	SAND	-3.6	42	42	1281.6	0.5	52	94	42	41	42
20.00	22.00	21.0	SAND	-5.6	42	42	1396.8	0.5	50	92	42	41	42
22.00	24.00	23.0	SAND	-7.6	44	44	1512	0.5	51	92	42	41	42
24.00	26.00	25.0	SAND	-9.6	8	8	1627.2	0.5	9	38	31	30	30
26.00	28.00	27.0	SAND	-11.6	4	4	1742.4	0.5	4	27	29	27	28
28.00	30.00	29.0	SAND	-13.6	19	19	1857.6	0.5	20	57	35	33	34
30.00	32.00	31.0	SAND	-15.6	10	10	1972.8	0.5	10	41	31	30	31
32.00	34.00	33.0	SAND	-17.6	50	50	2088	0.5	49	90	42	41	41
34.00	36.00	35.0	SAND	-19.6	19	19	2203.2	0.5	18	55	34	33	33
36.00	38.00	37.0	SAND	-21.6	49	49	2318.4	0.5	46	87	41	40	41
38.00	40.00	39.0	SAND	-23.6	23	23	2433.6	0.5	21	59	35	33	34
40.00	42.00	41.0	SAND	-25.6	23	23	2548.8	0.5	20	58	35	33	34
42.00	44.00	43.0	SAND	-27.6	57	57	2664	0.5	49	91	42	41	41
44.00	46.00	45.0	SAND	-29.6	54	54	2779.2	0.5	46	87	41	40	41
46.00	48.00	47.0	SAND	-31.6	80	80	2894.4	0.5	67	100	44	44	44
48.00	50.00	49.0	SAND	-33.6	79	79	3009.6	0.5	64	100	44	44	44
50.00	52.00	51.0	SAND	-35.6	50	50	3124.8	0.5	40	82	40	39	39
52.00	54.00	53.0	SAND	-37.6	39	39	3240	0.5	31	71	38	36	37
54.00	56.00	55.0	SAND	-39.6	50	50	3355.2	0.5	39	80	40	38	39
56.00	58.00	57.0	SAND	-41.6	48	48	3470.4	0.5	36	78	39	38	39
58.00	60.00	59.0	SAND	-43.6	50	50	3585.6	0.5	37	79	40	38	39
64.00	66.00	65.0	SAND	-49.6	36	36	3931.2	0.5	26	65	37	35	36
66.00	68.00	67.0	SAND	-51.6	50	50	4046.4	0.5	35	77	39	37	38
68.00	70.00	69.0	SAND	-53.6	50	50	4161.6	0.5	35	76	39	37	38
70.00	72.00	71.0	SAND	-55.6	50	50	4276.8	0.5	34	75	39	37	38
72.00	74.00	73.0	CLAYEY SILT	-57.6	50	50	4392	1	23	62	36	34	35
74.00	76.00	75.0	CLAYEY SILT	-59.6	85	85	4507.2	1	38	79	40	38	39
82.00	84.00	83.0	SAND	-67.6	50	50	4968	0.5	32	73	38	36	37
86.00	88.00	87.0	SAND	-71.6	35	35	5198.4	0.5	22	60	35	34	34
88.00	90.00	89.0	SAND	-73.6	98	98	5313.6	0.5	60	100	43	43	43
92.00	94.00	93.0	CLAYEY SILT	-77.6	58	58	5544	1	21	59	35	33	34
94.00	96.00	95.0	CLAYEY SILT	-79.6	50	50	5659.2	1	18	54	34	32	33
100.00	102.00	101.0	CLAYEY SILT	-85.6	50	50	6004.8	1	17	53	34	32	33
106.00	108.00	107.0	SAND	-91.6	72	72	6350.4	0.5	40	82	40	39	40
110.00	112.00	111.0	SAND	-95.6	50	50	6580.8	0.5	28	68	37	35	36
114.00	116.00	115.0	SAND	-99.6	90	90	6811.2	0.5	49	90	42	41	41
118.00	120.00	119.0	SAND	-103.6	29	29	7041.6	0.5	15	51	33	32	32

Boring No: B-2
Water level depth (ft): 3 Surface Elevation (ft): 14.37
Assumed unit weight (pcf): 120

SPT Log				Elevation (ft)	SPT *N* Values					Relative Density (%)	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type								Terzaghi et al. (1996)	Peck et al. (1974)	Average Value
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$				
0.00	2.00	1.0	SAND	13.4	6	6	120	0.5	10	41	31	30	31
2.00	4.00	3.0	SAND	11.4	16	16	360	0.5	27	67	37	35	36
4.00	6.00	5.0	SAND	9.4	31	31	475.2	0.5	53	94	42	41	42
6.00	8.00	7.0	SAND	7.4	34	34	590.4	0.5	58	98	43	42	43
8.00	10.00	9.0	SAND	5.4	47	47	705.6	0.5	79	100	45	47	46
10.00	12.00	11.0	SAND	3.4	21	21	820.8	0.5	33	74	38	37	38
12.00	14.00	13.0	SAND	1.4	44	44	936	0.5	64	100	44	44	44
14.00	16.00	15.0	SAND	-0.6	13	13	1051.2	0.5	18	55	34	33	33
16.00	18.00	17.0	SAND	-2.6	19	19	1166.4	0.5	25	64	36	35	35
18.00	20.00	19.0	SAND	-4.6	35	35	1281.6	0.5	44	85	41	39	40
20.00	22.00	21.0	SAND	-6.6	8	8	1396.8	0.5	10	40	31	30	30
22.00	24.00	23.0	SAND	-8.6	28	28	1512	0.5	32	73	38	37	37
24.00	26.00	25.0	SAND	-10.6	11	11	1627.2	0.5	12	45	32	31	31
26.00	28.00	27.0	SAND	-12.6	26	26	1742.4	0.5	28	68	37	35	36
28.00	30.00	29.0	SAND	-14.6	30	30	1857.6	0.5	31	72	38	36	37
30.00	32.00	31.0	SAND	-16.6	4	4	1972.8	0.5	4	26	29	27	28
32.00	34.00	33.0	SAND	-18.6	30	30	2088	0.5	29	70	38	36	37
34.00	36.00	35.0	SAND	-20.6	5	5	2203.2	0.5	5	28	29	28	28
36.00	38.00	37.0	SAND	-22.6	27	27	2318.4	0.5	25	65	36	35	35
38.00	40.00	39.0	SAND	-24.6	63	63	2433.6	0.5	57	98	43	42	43
40.00	42.00	41.0	SAND	-26.6	11	11	2548.8	0.5	10	40	31	30	30
42.00	44.00	43.0	SAND	-28.6	55	55	2664	0.5	48	89	42	40	41
44.00	46.00	45.0	SAND	-30.6	28	28	2779.2	0.5	24	63	36	34	35
46.00	48.00	47.0	SAND	-32.6	54	54	2894.4	0.5	45	86	41	40	40
48.00	50.00	49.0	SAND	-34.6	62	62	3009.6	0.5	51	92	42	41	42
50.00	52.00	51.0	SAND	-36.6	23	23	3124.8	0.5	18	55	34	33	33
52.00	54.00	53.0	SAND	-38.6	38	38	3240	0.5	30	71	38	36	37
54.00	56.00	55.0	SAND	-40.6	49	49	3355.2	0.5	38	79	40	38	39
56.00	58.00	57.0	SAND	-42.6	29	29	3470.4	0.5	22	61	35	34	35
58.00	60.00	59.0	SAND	-44.6	25	25	3585.6	0.5	19	56	34	33	34
60.00	62.00	61.0	SAND	-46.6	62	62	3700.8	0.5	46	87	41	40	41
62.00	64.00	63.0	SAND	-48.6	50	50	3816	0.5	36	78	39	38	39
64.00	66.00	65.0	SAND	-50.6	50	50	3931.2	0.5	36	77	39	38	38
66.00	68.00	67.0	SAND	-52.6	53	53	4046.4	0.5	37	79	40	38	39
68.00	70.00	69.0	SAND	-54.6	45	45	4161.6	0.5	31	72	38	36	37
70.00	72.00	71.0	SAND	-56.6	50	50	4276.8	0.5	34	75	39	37	38
72.00	74.00	73.0	SAND	-58.6	50	50	4392	0.5	34	75	39	37	38
78.00	80.00	79.0	SAND	-64.6	52	52	4737.6	0.5	34	75	39	37	38
80.00	82.00	81.0	SAND	-66.6	50	50	4852.8	0.5	32	73	38	37	37
84.00	86.00	85.0	SAND	-70.6	47	47	5083.2	0.5	29	70	38	36	37
88.00	90.00	89.0	CLAY	-74.6	50	50	5313.6	1	19	56	34	33	34
94.00	96.00	95.0	SAND	-80.6	50	50	5659.2	0.5	30	70	38	36	37
98.00	100.00	99.0	CLAY	-84.6	39	39	5889.6	1	13	47	32	31	32
100.00	102.00	101.0	CLAY	-86.6	61	61	6004.8	1	20	58	35	33	34
104.00	106.00	105.0	CLAY	-90.6	50	50	6235.2	1	16	52	33	32	33
108.00	110.00	109.0	CLAY	-94.6	40	40	6465.6	1	12	45	32	31	31
114.00	116.00	115.0	CLAY	-100.6	50	50	6811.2	1	15	49	33	32	32
118.00	120.00	119.0	CLAY	-104.6	42	42	7041.6	1	12	45	32	31	31

Boring No: B-3
Water level depth (ft): 3 Surface Elevation (ft): 13.5
Assumed unit weight (pcf): 120

SPT Log				Elevation	SPT N Values					Relative	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type	(ft)						Density	Terzaghi et al.	Peck et al.	Average
From	To	SPT Depth			N	N_{60}	sigma_v'	exp_n	$(N_1)_{60}$	(%)	(1996)	(1974)	Value
0.00	2.00	1.0	SAND	12.5	6	6	120	0.5	10	41	31	30	31
2.00	4.00	3.0	SAND	10.5	10	10	360	0.5	17	53	34	32	33
4.00	6.00	5.0	SAND	8.5	16	16	475.2	0.5	27	67	37	35	36
6.00	8.00	7.0	SAND	6.5	19	19	590.4	0.5	32	73	38	37	37
8.00	10.00	9.0	SAND	4.5	21	21	705.6	0.5	35	77	39	37	38
10.00	12.00	11.0	SAND	2.5	14	14	820.8	0.5	22	60	35	34	35
12.00	14.00	13.0	SAND	0.5	19	19	936	0.5	28	68	37	35	36
14.00	16.00	15.0	SAND	-1.5	6	6	1051.2	0.5	8	37	31	29	30
16.00	18.00	17.0	SAND	-3.5	9	9	1166.4	0.5	12	44	32	31	31
18.00	20.00	19.0	SAND	-5.5	22	22	1281.6	0.5	27	68	37	35	36
20.00	22.00	21.0	SAND	-7.5	6	6	1396.8	0.5	7	35	30	29	30
22.00	24.00	23.0	SAND	-9.5	14	14	1512	0.5	16	52	33	32	33
24.00	26.00	25.0	SAND	-11.5	4	4	1627.2	0.5	4	27	29	27	28
26.00	28.00	27.0	SAND	-13.5	12	12	1742.4	0.5	13	46	32	31	32
28.00	30.00	29.0	SAND	-15.5	6	6	1857.6	0.5	6	32	30	28	29
30.00	32.00	31.0	SAND	-17.5	9	9	1972.8	0.5	9	39	31	30	30
32.00	34.00	33.0	SAND	-19.5	40	40	2088	0.5	39	81	40	38	39
34.00	36.00	35.0	SAND	-21.5	31	31	2203.2	0.5	30	70	38	36	37
36.00	38.00	37.0	SAND	-23.5	29	29	2318.4	0.5	27	67	37	35	36
38.00	40.00	39.0	SAND	-25.5	71	71	2433.6	0.5	64	100	44	44	44
40.00	42.00	41.0	SAND	-27.5	19	19	2548.8	0.5	17	53	34	32	33
42.00	44.00	43.0	SAND	-29.5	90	90	2664	0.5	78	100	45	46	46
44.00	46.00	45.0	SAND	-31.5	80	80	2779.2	0.5	68	100	44	44	44
46.00	48.00	47.0	SAND	-33.5	82	82	2894.4	0.5	68	100	44	44	44
48.00	50.00	49.0	SAND	-35.5	30	30	3009.6	0.5	24	64	36	34	35
50.00	52.00	51.0	SAND	-37.5	20	20	3124.8	0.5	16	52	33	32	33
52.00	54.00	53.0	SAND	-39.5	48	48	3240	0.5	38	79	40	38	39
54.00	56.00	55.0	SAND	-41.5	20	20	3355.2	0.5	15	51	33	32	32
56.00	58.00	57.0	SAND	-43.5	39	39	3470.4	0.5	30	70	38	36	37
58.00	60.00	59.0	CLAYEY SILT	-45.5	50	50	3585.6	1	28	68	37	35	36
60.00	62.00	61.0	SAND	-47.5	80	80	3700.8	0.5	59	99	43	43	43
62.00	64.00	63.0	SAND	-49.5	60	60	3816	0.5	43	85	41	39	40
64.00	66.00	65.0	SAND	-51.5	63	63	3931.2	0.5	45	87	41	40	40
70.00	72.00	71.0	SAND	-57.5	26	26	4276.8	0.5	18	54	34	33	33
74.00	76.00	75.0	SAND	-61.5	50	50	4507.2	0.5	33	75	39	37	38
94.00	96.00	95.0	SAND	-81.5	50	50	5659.2	0.5	30	70	38	36	37
100.00	102.00	101.0	CLAYEY SILT	-87.5	57	57	6004.8	1	19	56	34	33	34
102.00	104.00	103.0	CLAYEY SILT	-89.5	50	50	6120	1	16	52	34	32	33
104.00	106.00	105.0	CLAYEY SILT	-91.5	58	58	6235.2	1	19	56	34	33	33
106.00	108.00	107.0	CLAYEY SILT	-93.5	50	50	6350.4	1	16	51	33	32	33
108.00	110.00	109.0	CLAYEY SILT	-95.5	44	44	6465.6	1	14	48	33	31	32
114.00	116.00	115.0	CLAYEY SILT	-101.5	20	20	6811.2	1	6	31	30	28	29
116.00	118.00	117.0	CLAYEY SILT	-103.5	63	63	6926.4	1	18	55	34	33	33
118.00	120.00	119.0	CLAYEY SILT	-105.5	50	50	7041.6	1	14	49	33	31	32

Boring No: B-4
Water level depth (ft): 3 Surface Elevation (ft): 11.32
Assumed unit weight (pcf): 120

SPT Log				Elevation	SPT N Values					Relative	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type	(ft)						Density	Terzaghi et al.	Peck et al.	Average
From	To	SPT Depth			N	N_{60}	sigma_v'	exp_n	$(N_1)_{60}$	(%)	(1996)	(1974)	Value
0.00	2.00	1.0	SAND	10.3	6	6	120	0.5	10	41	31	30	31
2.00	4.00	3.0	SAND	8.3	14	14	360	0.5	24	63	36	34	35
4.00	6.00	5.0	SAND	6.3	16	16	475.2	0.5	27	67	37	35	36
6.00	8.00	7.0	SAND	4.3	20	20	590.4	0.5	34	75	39	37	38
8.00	10.00	9.0	SAND	2.3	20	20	705.6	0.5	34	75	39	37	38
14.00	16.00	15.0	SAND	-3.7	12	12	1051.2	0.5	17	53	34	32	33
20.00	22.00	21.0	SAND	-9.7	9	9	1396.8	0.5	11	42	31	30	31
24.00	26.00	25.0	SAND	-13.7	4	4	1627.2	0.5	4	27	29	27	28
30.00	32.00	31.0	SAND	-19.7	33	33	1972.8	0.5	33	74	39	37	38
34.00	36.00	35.0	SAND	-23.7	39	39	2203.2	0.5	37	79	40	38	39
40.00	42.00	41.0	SAND	-29.7	71	71	2548.8	0.5	63	100	44	43	43
44.00	46.00	45.0	SAND	-33.7	64	64	2779.2	0.5	54	95	43	42	42
50.00	52.00	51.0	SAND	-39.7	68	68	3124.8	0.5	54	95	43	42	42
54.00	56.00	55.0	SAND	-43.7	50	50	3355.2	0.5	39	80	40	38	39
60.00	62.00	61.0	SAND	-49.7	50	50	3700.8	0.5	37	78	40	38	39
64.00	66.00	65.0	SAND	-53.7	50	50	3931.2	0.5	36	77	39	38	38
70.00	72.00	71.0	SAND	-59.7	50	50	4276.8	0.5	34	75	39	37	38
74.00	76.00	75.0	SAND	-63.7	60	60	4507.2	0.5	40	82	40	39	39
80.00	82.00	81.0	SAND	-69.7	46	46	4852.8	0.5	30	70	38	36	37
84.00	86.00	85.0	SAND	-73.7	50	50	5083.2	0.5	31	72	38	36	37
90.00	92.00	91.0	CLAYEY SILT	-79.7	28	28	5428.8	1	10	41	31	30	31
94.00	96.00	95.0	CLAYEY SILT	-83.7	25	25	5659.2	1	9	38	31	30	30
100.00	102.00	101.0	CLAYEY SILT	-89.7	15	15	6004.8	1	5	29	29	28	29
104.00	106.00	105.0	SILTY CLAY	-93.7	63	63	6235.2	1	20	58	35	33	34
110.00	112.00	111.0	SILTY CLAY	-99.7	76	76	6580.8	1	23	62	36	34	35
116.00	118.00	117.0	SILTY CLAY	-105.7	15	15	6926.4	1	4	27	29	27	28
118.00	120.00	119.0	SILTY CLAY	-107.7	48	48	7041.6	1	14	48	33	31	32

Boring No: B-5
Water level depth (ft): 3 Surface Elevation (ft): 17.64
Assumed unit weight (pcf): 120

SPT Log				Elevation	SPT *N* Values					Relative	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type	(ft)						Density	Terzaghi et al.	Peck et al.	Average
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$	(%)	(1996)	(1974)	Value
0.00	2.00	1.0	SAND	16.6	4	4	120	0.5	7	34	30	29	29
2.00	4.00	3.0	SAND	14.6	13	13	360	0.5	22	61	35	34	35
4.00	6.00	5.0	SAND	12.6	14	14	475.2	0.5	24	63	36	34	35
6.00	8.00	7.0	SAND	10.6	15	15	590.4	0.5	26	65	37	35	36
8.00	10.00	9.0	SAND	8.6	19	19	705.6	0.5	32	73	38	36	37
13.00	15.00	14.0	SAND	3.6	14	14	993.6	0.5	20	58	35	33	34
18.00	20.00	19.0	SAND	-1.4	27	27	1281.6	0.5	34	75	39	37	38
23.00	25.00	24.0	SAND	-6.4	16	16	1569.6	0.5	18	55	34	33	33
28.00	30.00	29.0	SAND	-11.4	9	9	1857.6	0.5	9	39	31	30	30
33.00	35.00	34.0	SAND	-16.4	33	33	2145.6	0.5	32	73	38	36	37
38.00	40.00	39.0	SAND	-21.4	54	54	2433.6	0.5	49	90	42	41	41
43.00	45.00	44.0	SAND	-26.4	57	57	2721.6	0.5	49	90	42	41	41
48.00	50.00	49.0	SAND	-31.4	17	17	3009.6	0.5	14	48	33	31	32
53.00	55.00	54.0	SAND	-36.4	43	43	3297.6	0.5	33	75	39	37	38
58.00	60.00	59.0	SAND	-41.4	53	53	3585.6	0.5	40	81	40	38	39
63.00	65.00	64.0	SAND	-46.4	33	33	3873.6	0.5	24	63	36	34	35
68.00	70.00	69.0	SAND	-51.4	75	75	4161.6	0.5	52	93	42	41	42
73.00	75.00	74.0	CLAYEY SILT	-56.4	50	50	4449.6	1	22	61	36	34	35
83.00	85.00	84.0	SAND	-66.4	83	83	5025.6	0.5	52	93	42	41	42
88.00	90.00	89.0	SAND	-71.4	70	70	5313.6	0.5	43	85	41	39	40
93.00	95.00	94.0	SAND	-76.4	62	62	5601.6	0.5	37	79	40	38	39
98.00	100.00	99.0	SAND	-81.4	50	50	5889.6	0.5	29	70	38	36	37
103.00	105.00	104.0	CLAYEY SILT	-86.4	50	50	6177.6	1	16	52	33	32	33
108.00	110.00	109.0	SILTY CLAY	-91.4	50	50	6465.6	1	15	51	33	32	32
113.00	115.00	114.0	SILTY CLAY	-96.4	44	44	6753.6	1	13	47	32	31	32
118.00	120.00	119.0	SILTY CLAY	-101.4	65	65	7041.6	1	18	55	34	33	33

Boring No: B-6
Water level depth (ft): 3 Surface Elevation (ft): 11.66
Assumed unit weight (pcf): 120

SPT Log				Elevation	SPT N Values					Relative	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type	(ft)						Density	Terzaghi et al.	Peck et al.	Average
From	To	SPT Depth			N	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$	(%)	(1996)	(1974)	Value
0.00	2.00	1.0	SAND	10.7	7	7	120	0.5	12	45	32	31	31
2.00	4.00	3.0	SAND	8.7	23	23	360	0.5	39	81	40	38	39
4.00	6.00	5.0	SAND	6.7	21	21	475.2	0.5	36	77	39	38	38
6.00	8.00	7.0	SAND	4.7	24	24	590.4	0.5	41	82	40	39	40
8.00	10.00	9.0	SAND	2.7	14	14	705.6	0.5	24	63	36	34	35
13.00	15.00	14.0	SAND	-2.3	23	23	993.6	0.5	33	74	38	37	38
18.00	20.00	19.0	SAND	-7.3	20	20	1281.6	0.5	25	65	36	35	35
23.00	25.00	24.0	SAND	-12.3	8	8	1569.6	0.5	9	39	31	30	30
28.00	30.00	29.0	SAND	-17.3	54	54	1857.6	0.5	56	97	43	42	43
33.00	35.00	34.0	SAND	-22.3	70	70	2145.6	0.5	68	100	44	44	44
38.00	40.00	39.0	SAND	-27.3	58	58	2433.6	0.5	53	94	42	41	42
43.00	45.00	44.0	SAND	-32.3	55	55	2721.6	0.5	47	89	42	40	41
48.00	50.00	49.0	SAND	-37.3	54	54	3009.6	0.5	44	86	41	40	40
53.00	55.00	54.0	SAND	-42.3	47	47	3297.6	0.5	37	78	39	38	39
58.00	60.00	59.0	SAND	-47.3	27	27	3585.6	0.5	20	58	35	33	34
63.00	65.00	64.0	SAND	-52.3	26	26	3873.6	0.5	19	56	34	33	34
68.00	70.00	69.0	SAND	-57.3	69	69	4161.6	0.5	48	89	42	40	41
73.00	75.00	74.0	SAND	-62.3	50	50	4449.6	0.5	34	75	39	37	38
78.00	80.00	79.0	SAND	-67.3	49	49	4737.6	0.5	32	73	38	36	37
83.00	85.00	84.0	SAND	-72.3	52	52	5025.6	0.5	33	74	38	37	38
88.00	90.00	89.0	SAND	-77.3	60	60	5313.6	0.5	37	78	40	38	39
93.00	95.00	94.0	SAND	-82.3	60	60	5601.6	0.5	36	77	39	38	38
98.00	100.00	99.0	SAND	-87.3	52	52	5889.6	0.5	30	71	38	36	37
103.00	105.00	104.0	SAND	-92.3	53	53	6177.6	0.5	30	71	38	36	37
113.00	115.00	114.0	SILTY CLAY	-102.3	30	30	6753.6	1	9	38	31	30	30
118.00	120.00	119.0	SILTY CLAY	-107.3	30	30	7041.6	1	9	38	31	29	30

Boring No: B-7
Water level depth (ft): 3 Surface Elevation (ft): 16.22
Assumed unit weight (pcf): 120

SPT Log				Elevation (ft)	SPT *N* Values					Relative Density (%)	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type								Terzaghi et al. (1996)	Peck et al. (1974)	Average Value
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$				
0.00	2.00	1.0	SAND	15.2	11	11	120	0.5	19	56	34	33	34
2.00	4.00	3.0	SAND	13.2	14	14	360	0.5	24	63	36	34	35
4.00	6.00	5.0	SAND	11.2	14	14	475.2	0.5	24	63	36	34	35
6.00	8.00	7.0	SAND	9.2	19	19	590.4	0.5	32	73	38	37	37
8.00	10.00	9.0	SAND	7.2	16	16	705.6	0.5	27	67	37	35	36
15.00	17.00	16.0	SAND	0.2	14	14	1108.8	0.5	19	56	34	33	34
20.00	22.00	21.0	SAND	-4.8	12	12	1396.8	0.5	14	49	33	31	32
24.75	26.75	25.8	SAND	-9.5	8	8	1670.4	0.5	9	38	31	29	30
30.00	32.00	31.0	SAND	-14.8	6	6	1972.8	0.5	6	32	30	28	29
35.00	37.00	36.0	SAND	-19.8	9	9	2260.8	0.5	8	38	31	29	30
40.00	42.00	41.0	SAND	-24.8	12	12	2548.8	0.5	11	42	31	30	31
45.00	47.00	46.0	SAND	-29.8	35	35	2836.8	0.5	29	70	38	36	37
50.00	52.00	51.0	SAND	-34.8	27	27	3124.8	0.5	22	60	35	34	34

Boring No: B-8
Water level depth (ft): 3 Surface Elevation (ft): 17.29
Assumed unit weight (pcf): 120

SPT Log				Elevation (ft)	SPT *N* Values					Relative Density (%)	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type								Terzaghi et al. (1996)	Peck et al. (1974)	Average Value
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$				
0.00	2.00	1.0	SAND	16.3	5	5	120	0.5	9	38	31	29	30
2.00	4.00	3.0	SAND	14.3	12	12	360	0.5	20	58	35	33	34
4.00	6.00	5.0	SAND	12.3	16	16	475.2	0.5	27	67	37	35	36
6.00	8.00	7.0	SAND	10.3	6	6	590.4	0.5	10	41	31	30	31
8.00	10.00	9.0	SAND	8.3	10	10	705.6	0.5	17	53	34	32	33
15.00	17.00	16.0	SAND	1.3	4	4	1108.8	0.5	5	30	30	28	29
20.00	22.00	21.0	SAND	-3.7	4	4	1396.8	0.5	5	28	29	28	28
24.75	26.75	25.8	SAND	-8.5	8	8	1670.4	0.5	9	38	31	29	30
30.00	32.00	31.0	SAND	-13.7	8	8	1972.8	0.5	8	37	31	29	30
35.00	37.00	36.0	SAND	-18.7	10	10	2260.8	0.5	9	40	31	30	30
40.00	42.00	41.0	SAND	-23.7	7	7	2548.8	0.5	6	32	30	28	29
45.00	47.00	46.0	SAND	-28.7	14	14	2836.8	0.5	12	44	32	31	31
50.00	52.00	51.0	SAND	-33.7	12	12	3124.8	0.5	10	40	31	30	30

Boring No: B-9
Water level depth (ft): 3 Surface Elevation (ft): 12.86
Assumed unit weight (pcf): 120

SPT Log				Elevation (ft)	SPT *N* Values					Relative Density (%)	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type								Terzaghi et al. (1996)	Peck et al. (1974)	Average Value
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$				
0.00	2.00	1.0	SAND	11.9	6	6	120	0.5	10	41	31	30	31
2.00	4.00	3.0	SAND	9.9	9	9	360	0.5	15	50	33	32	32
4.00	6.00	5.0	SAND	7.9	10	10	475.2	0.5	17	53	34	32	33
6.00	8.00	7.0	SAND	5.9	8	8	590.4	0.5	14	48	33	31	32
8.00	10.00	9.0	SAND	3.9	12	12	705.6	0.5	20	58	35	33	34
15.00	17.00	16.0	SAND	-3.1	6	6	1108.8	0.5	8	37	31	29	30
20.00	22.00	21.0	SAND	-8.1	8	8	1396.8	0.5	10	40	31	30	30
25.00	27.00	26.0	SAND	-13.1	15	15	1684.8	0.5	16	52	34	32	33
30.00	32.00	31.0	SAND	-18.1	12	12	1972.8	0.5	12	45	32	31	31
35.00	37.00	36.0	SAND	-23.1	11	11	2260.8	0.5	10	42	31	30	31
40.00	42.00	41.0	SAND	-28.1	8	8	2548.8	0.5	7	34	30	29	29
45.00	47.00	46.0	SAND	-33.1	9	9	2836.8	0.5	8	35	30	29	30
50.00	52.00	51.0	SAND	-38.1	8	8	3124.8	0.5	6	33	30	28	29

Boring No: B-10
Water level depth (ft): 3 Surface Elevation (ft): 13.97
Assumed unit weight (pcf): 120

SPT Log				Elevation (ft)	SPT *N* Values					Relative Density (%)	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type								Terzaghi et al. (1996)	Peck et al. (1974)	Average Value
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$				
0.00	2.00	1.0	SAND	13.0	8	8	120	0.5	14	48	33	31	32
2.00	4.00	3.0	SAND	11.0	13	13	360	0.5	22	61	35	34	35
4.00	6.00	5.0	SAND	9.0	13	13	475.2	0.5	22	61	35	34	35
6.00	8.00	7.0	SAND	7.0	24	24	590.4	0.5	41	82	40	39	40
8.00	10.00	9.0	SAND	5.0	24	24	705.6	0.5	40	82	40	39	40
15.00	17.00	16.0	SAND	-2.0	8	8	1108.8	0.5	11	42	31	30	31
20.00	22.00	21.0	SAND	-7.0	9	9	1396.8	0.5	11	42	31	30	31
25.00	27.00	26.0	SAND	-12.0	4	4	1684.8	0.5	4	27	29	27	28
30.00	32.00	31.0	SAND	-17.0	4	4	1972.8	0.5	4	26	29	27	28
35.00	37.00	36.0	SAND	-22.0	3	3	2260.8	0.5	3	22	28	27	28
40.00	42.00	41.0	SAND	-27.0	20	20	2548.8	0.5	18	54	34	33	33
45.00	47.00	46.0	SAND	-32.0	12	12	2836.8	0.5	10	41	31	30	31
50.00	52.00	51.0	SAND	-37.0	36	36	3124.8	0.5	29	69	37	36	37

Boring No: B-11
Water level depth (ft): 3 Surface Elevation (ft): 14.27
Assumed unit weight (pcf): 120

SPT Log				Elevation (ft)	SPT *N* Values					Relative Density (%)	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type								Terzaghi et al. (1996)	Peck et al. (1974)	Average Value
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$				
0.00	2.00	1.0	SAND	13.3	6	6	120	0.5	10	41	31	30	31
2.00	4.00	3.0	SAND	11.3	11	11	360	0.5	19	56	34	33	34
4.00	6.00	5.0	SAND	9.3	6	6	475.2	0.5	10	41	31	30	31
6.00	8.00	7.0	SAND	7.3	12	12	590.4	0.5	20	58	35	33	34
8.00	10.00	9.0	SAND	5.3	19	19	705.6	0.5	32	73	38	36	37
13.00	15.00	14.0	SAND	0.3	10	10	993.6	0.5	14	49	33	31	32
18.00	20.00	19.0	SAND	-4.7	7	7	1281.6	0.5	9	38	31	29	30
26.00	28.00	27.0	SAND	-12.7	4	4	1742.4	0.5	4	27	29	27	28
29.00	31.00	30.0	SAND	-15.7	5	5	1915.2	0.5	5	29	29	28	29
33.00	35.00	34.0	SAND	-19.7	6	6	2145.6	0.5	6	31	30	28	29
38.00	40.00	39.0	SAND	-24.7	72	72	2433.6	0.5	65	100	44	44	44
43.00	45.00	44.0	SAND	-29.7	67	67	2721.6	0.5	57	98	43	42	43
48.00	50.00	49.0	SAND	-34.7	51	51	3009.6	0.5	42	83	41	39	40

Boring No: B-12
Water level depth (ft): 3 Surface Elevation (ft): 8.18
Assumed unit weight (pcf): 120

SPT Log				Elevation (ft)	SPT *N* Values					Relative Density (%)	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type								Terzaghi et al. (1996)	Peck et al. (1974)	Average Value
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$				
0.00	2.00	1.0	SAND	7.2	8	8	120	0.5	14	48	33	31	32
2.00	4.00	3.0	SAND	5.2	13	13	360	0.5	22	61	35	34	35
4.00	6.00	5.0	SAND	3.2	13	13	475.2	0.5	22	61	35	34	35
6.00	8.00	7.0	SAND	1.2	24	24	590.4	0.5	41	82	40	39	40
8.00	10.00	9.0	SAND	-0.8	24	24	705.6	0.5	40	82	40	39	40
14.00	16.00	15.0	SAND	-6.8	8	8	1051.2	0.5	11	43	32	30	31
19.00	21.00	20.0	SAND	-11.8	9	9	1339.2	0.5	11	43	32	30	31
24.00	26.00	25.0	SAND	-16.8	4	4	1627.2	0.5	4	27	29	27	28
29.00	31.00	30.0	SAND	-21.8	4	4	1915.2	0.5	4	26	29	27	28
34.00	36.00	35.0	SAND	-26.8	3	3	2203.2	0.5	3	22	29	27	28
39.00	41.00	40.0	SAND	-31.8	20	20	2491.2	0.5	18	55	34	33	33
44.00	46.00	45.0	SAND	-36.8	12	12	2779.2	0.5	10	41	31	30	31
49.00	51.00	50.0	SAND	-41.8	36	36	3067.2	0.5	29	70	37	36	37

Boring No: B-13
Water level depth (ft): 3 Surface Elevation (ft): 15.17
Assumed unit weight (pcf): 120

SPT Log				Elevation (ft)	SPT *N* Values					Relative Density (%)	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type								Terzaghi et al. (1996)	Peck et al. (1974)	Average Value
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$				
0.00	2.00	1.0	SAND	14.2	11	11	120	0.5	19	56	34	33	34
2.00	4.00	3.0	SAND	12.2	40	40	360	0.5	68	100	44	44	44
4.00	6.00	5.0	SAND	10.2	40	40	475.2	0.5	68	100	44	44	44
6.00	8.00	7.0	SAND	8.2	27	27	590.4	0.5	46	87	41	40	41
8.00	10.00	9.0	SAND	6.2	31	31	705.6	0.5	52	93	42	41	42
13.00	15.00	14.0	SAND	1.2	25	25	993.6	0.5	35	77	39	37	38
18.00	20.00	19.0	SAND	-3.8	15	15	1281.6	0.5	19	56	34	33	34
23.00	25.00	24.0	SAND	-8.8	17	17	1569.6	0.5	19	57	34	33	34
28.00	30.00	29.0	SAND	-13.8	32	32	1857.6	0.5	33	74	39	37	38
33.00	35.00	34.0	SAND	-18.8	15	15	2145.6	0.5	14	49	33	32	32
38.00	40.00	39.0	SAND	-23.8	10	10	2433.6	0.5	9	39	31	30	30
43.00	45.00	44.0	SAND	-28.8	108	108	2721.6	0.5	93	100	46	49	48
48.00	50.00	49.0	SAND	-33.8	100	100	3009.6	0.5	82	100	45	47	46

Boring No: B-14
Water level depth (ft): 3 Surface Elevation (ft): 21.67
Assumed unit weight (pcf): 120

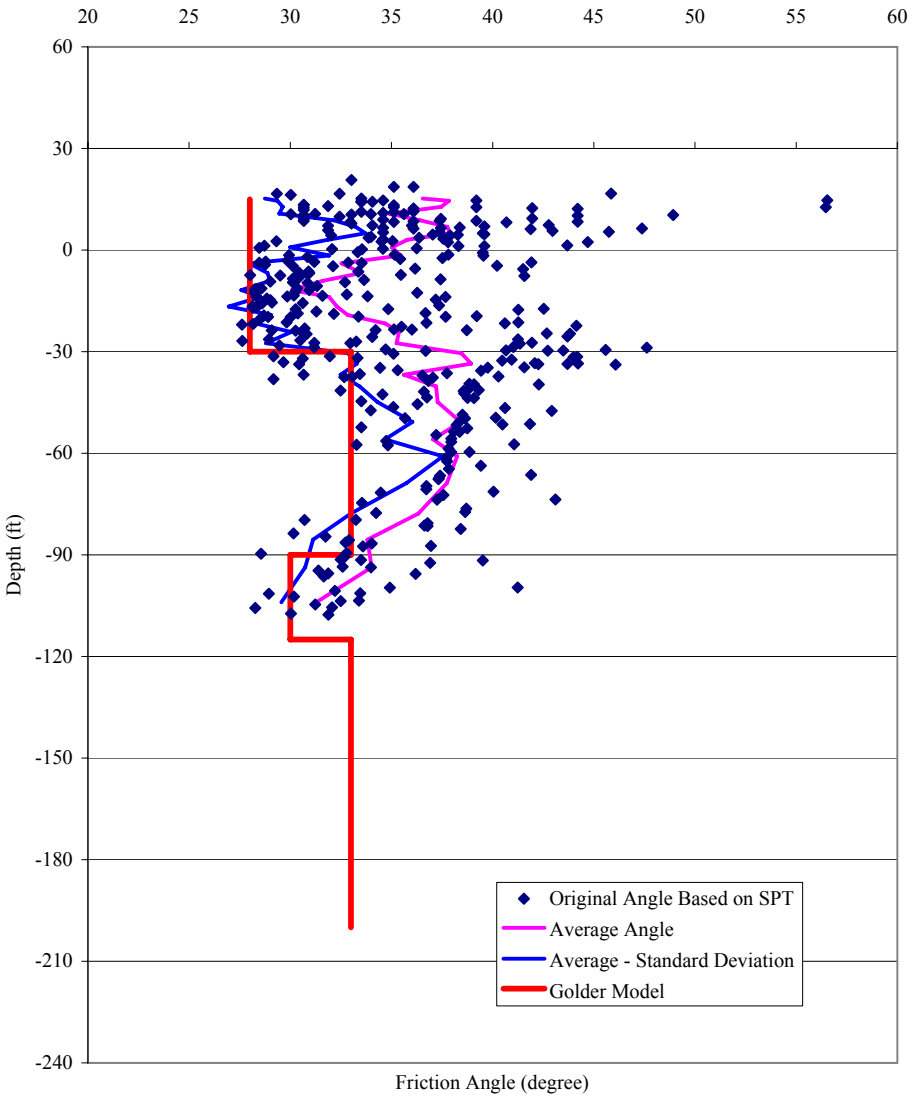
SPT Log				Elevation (ft)	SPT *N* Values					Relative Density (%)	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type								Terzaghi et al. (1996)	Peck et al. (1974)	Average Value
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$				
0.00	2.00	1.0	SAND	20.7	10	10	120	0.5	17	53	34	32	33
2.00	4.00	3.0	SAND	18.7	16	16	360	0.5	27	67	37	35	36
4.00	6.00	5.0	SAND	16.7	47	47	475.2	0.5	80	100	45	47	46
6.00	8.00	7.0	SAND	14.7	100	100	590.4	0.5	170	100	53	60	57
8.00	10.00	9.0	SAND	12.7	100	100	705.6	0.5	168	100	53	60	56
15.00	17.00	16.0	SAND	5.7	44	44	1108.8	0.5	59	99	43	43	43
20.00	22.00	21.0	SAND	0.7	4	4	1396.8	0.5	5	28	29	28	28
25.00	27.00	26.0	SAND	-4.3	5	5	1684.8	0.5	5	30	30	28	29
30.00	32.00	31.0	SAND	-9.3	6	6	1972.8	0.5	6	32	30	28	29
35.00	37.00	36.0	SAND	-14.3	6	6	2260.8	0.5	6	31	30	28	29
40.00	42.00	41.0	SAND	-19.3	6	6	2548.8	0.5	5	30	29	28	29
45.00	47.00	46.0	SAND	-24.3	12	12	2836.8	0.5	10	41	31	30	31
50.00	52.00	51.0	SAND	-29.3	28	28	3124.8	0.5	22	61	36	34	35

Boring No: B-15
Water level depth (ft): 3 Surface Elevation (ft): 19.65
Assumed unit weight (pcf): 120

SPT Log				Elevation (ft)	SPT *N* Values					Relative Density (%)	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type								Terzaghi et al. (1996)	Peck et al. (1974)	Average Value
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$				
0.00	2.00	1.0	SAND	18.7	14	14	120	0.5	24	63	36	34	35
2.00	4.00	3.0	SAND	16.7	9	9	360	0.5	15	50	33	32	32
4.00	6.00	5.0	SAND	14.7	23	23	475.2	0.5	39	81	40	38	39
6.00	8.00	7.0	SAND	12.7	23	23	590.4	0.5	39	81	40	38	39
8.00	10.00	9.0	SAND	10.7	12	12	705.6	0.5	20	58	35	33	34
15.00	17.00	16.0	SAND	3.7	21	21	1108.8	0.5	28	69	37	35	36
20.00	22.00	21.0	SAND	-1.4	20	20	1396.8	0.5	24	63	36	34	35
25.00	27.00	26.0	SAND	-6.4	10	10	1684.8	0.5	11	43	32	30	31
30.00	32.00	31.0	SAND	-11.4	5	5	1972.8	0.5	5	29	29	28	29
35.00	37.00	36.0	SAND	-16.4	5	5	2260.8	0.5	5	28	29	28	28
40.00	42.00	41.0	SAND	-21.4	9	9	2548.8	0.5	8	36	31	29	30
45.00	47.00	46.0	SAND	-26.4	7	7	2836.8	0.5	6	31	30	28	29
50.00	52.00	51.0	SAND	-31.4	8	8	3124.8	0.5	6	33	30	28	29

Boring No: B-16
Water level depth (ft): 3 Surface Elevation (ft): 11.58
Assumed unit weight (pcf): 120

SPT Log				Elevation (ft)	SPT *N* Values					Relative Density (%)	Effective Friction Angle (deg.)		
Depth (feet)			Soil Type								Terzaghi et al. (1996)	Peck et al. (1974)	Average Value
From	To	SPT Depth			*N*	N_{60}	*sigma_v'*	*exp_n*	$(N_1)_{60}$				
0.00	2.00	1.0	SAND	10.6	5	5	120	0.5	9	38	31	29	30
2.00	4.00	3.0	SAND	8.6	6	6	360	0.5	10	41	31	30	31
4.00	6.00	5.0	SAND	6.6	13	13	475.2	0.5	22	61	35	34	35
6.00	8.00	7.0	SAND	4.6	18	18	590.4	0.5	31	71	38	36	37
8.00	10.00	9.0	SAND	2.6	4	4	705.6	0.5	7	34	30	29	29
14.00	16.00	15.0	SAND	-3.4	4	4	1051.2	0.5	6	30	30	28	29
18.00	20.00	19.0	SAND	-7.4	3	3	1281.6	0.5	4	25	29	27	28
24.00	26.00	25.0	SAND	-13.4	8	8	1627.2	0.5	9	38	31	30	30
28.00	30.00	29.0	SAND	-17.4	22	22	1857.6	0.5	23	62	36	34	35
34.00	36.00	35.0	SAND	-23.4	25	25	2203.2	0.5	24	63	36	34	35
38.00	40.00	39.0	SAND	-27.4	13	13	2433.6	0.5	12	44	32	31	31
44.00	46.00	45.0	SAND	-33.4	63	63	2779.2	0.5	53	94	43	42	42
48.00	50.00	49.0	SAND	-37.4	21	21	3009.6	0.5	17	53	34	32	33



Golder Model

Soil Layer	Elevation (ft)	Angle (degree)
1	15	28
	-30	28
2	-30	33
	-90	33
3	-90	30
	-115	30
4	-115	33
	-200	33

REFERENCES:

1: Assumed SPT N_{60} = field recorded N value. N_{60} is N corrected for an energy ratio of 60%.

2: Performed depth correction to obtain $(N_1)_{60}$ as

$$(N_1)_{60} = C_N N_{60}$$

$$C_N = \left(\frac{2000\text{psf}}{\sigma_v^{'}(\text{psf})} \right)^n$$

where n=0.75 (based on n=0.5 for sandy soil, n=1 for clayey soil, Olsen 1994, Olsen 1997), C_N was limited to a maximum value of 1.7 (Youd et al. 2001) and σ_v' is the effective vertical stress.

3: Relative density was estimated as

$$\text{RelativeDensity}(\%) = \sqrt{\frac{(N_1)_{60}}{60}} \times 100$$ (based on Kuthawy & Mayne, 1990)

4: Terzaghi, K., R. B. Peck, and G. Mesri (1996). Soil mechanics in engineering practice. New York: John Wiley & Sons.

5: Peck, R. B., W. E. Hanson, and T. H. Thornburn (1974). Foundation Engineering, 2nd edition. New York: John Wiley ans Sons.

6. Youd, T.L. 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." Journal of Geotechnical and Geoenvironmental Engineering. Vol. 127, No. 10. October 2001.

7. Olsen, R.S. 1994. Normalization and prediction of geotechnical properties using the cone penetrometer test. U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg. Miss., Technical Report GL-94-29.

8. Olsen, R.S. 1997. Cyclic liquefaction based on the cone penetrometer test. In Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils. Edited by T. Leslie Youd and Izzat M. Idriss. National Center for Earthquake Engineering Research. State University of New York at Buffalo, Buffalo, Technical Report NCEER-97-0022, pp. 225-276.

9: Kulhawy, F. H. and P.W. Mayne (1990). Manual on Estimating Soil Properties for Foundation Design, EL-6800, Electric Power Research Institute.

APPENDIX B

Liquefaction Screening

Date:	September 18, 2018	**Made by:**	S. Secara
Project No.:	15263562	**Checked by:**	G. Martin
Subject:	Seismic Hazard and Liquefaction Assessment	**Reviewed by:**	S.Cribb
Project:	**JEA SJRPP BYPRODUCT STORAGE AREA B**		

1.0 OBJECTIVE

This calculation package identifies and summarizes the seismic hazard and liquefaction potential at the project site located at the St. Johns River Power Park (SJRPP) in Jacksonville, FL (81.537°W and 30.446°N). The seismic hazard assessment is necessary for geotechnical design evaluations of stability under earthquake loading and liquefaction susceptibility. Liquefaction potential is assessed for the final closure condition.

This liquefaction assessment uses the screening-level assessment described in Youd et al. (2001). Cone Penetration Test (CPT) data is used to characterize soils for this assessment with updates suggested by Robertson (2009).

2.0 SEISMIC HAZARD SUMMARY

The United State Environmental Protection Agency's (USEPA) CCR Rule has specified seismic analyses be completed for a seismic event with a 2% probability of exceedance in 50 years (2% / 50yr), equivalent to a return period of approximately 2,500 years. The United States Geological Survey (USGS) has provided online tools associated with this hazard for its 2014 seismic hazard model. The sections below detail the use of these tools to obtain seismic hazard data for use in analyses.

3.0 REFERENCE SITE PEAK GROUND AND SPECTRAL ACCELERATION

The peak ground acceleration (PGA) and spectral ground accelerations (S_a) corresponding to a range of spectral periods are necessary for many engineering analyses including slope stability analysis and liquefaction analysis. For a 2% probability of exceedance (PE) in 50 years, The USGS provides a reference PGA and spectral accelerations corresponding to a reference site on the border between the National Earthquake Reductions Hazard Program (NEHRP) site classes B (Rock) and C (Dense Soil) with an average shear wave velocity in the upper 30 m (V_{s30}) of 760 m/s. These reference accelerations are often referenced with a BC subscript (e.g. PGA_{BC}) and are scaled as appropriate to match site conditions and analysis input requirements. Figure 1 below shows the project site on the 2014 seismic hazard map for PGA_{BC}, and Figure 2 displays the uniform hazard response spectrum curve, which plots the reference spectral acceleration, or ground motion, for various spectral periods. The uniform hazard response spectrum curve is presented in tabular form in Table 1.

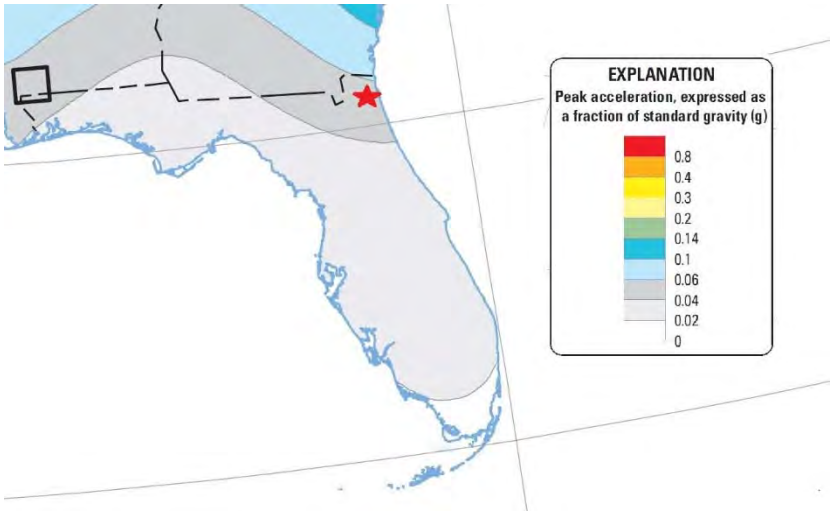


Figure 1: PGA_{BC} for the 2% PE in 50 years at the project site (red star). (USGS 2014).

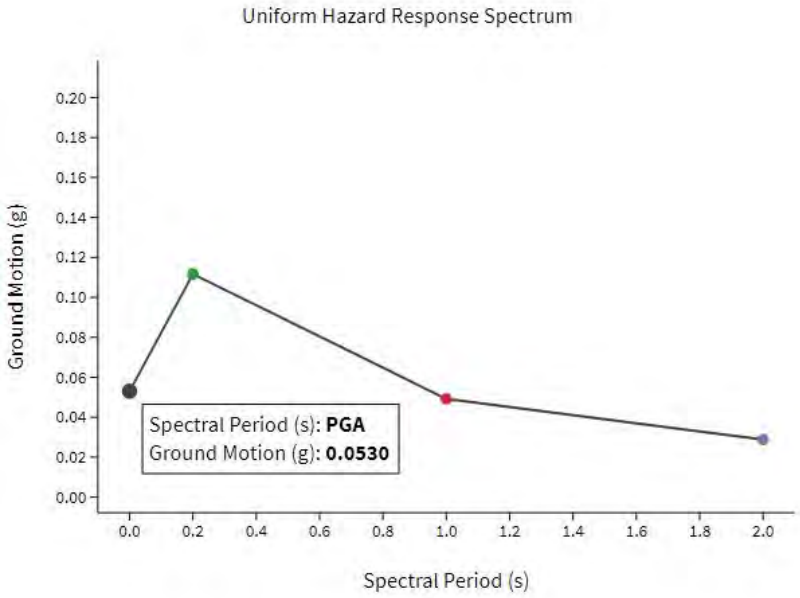


Figure 2: Uniform Hazard Response Spectrum for the 2% PE in 50 years Seismic Hazard at the Project Site (USGS 2014).

Table 1: Reference site (BC) PGA and Spectral Acceleration for the 2% PE in 50 year Seismic Hazard at the Project Site (USGS 2014).

Spectral Period (s)	Acceleration, BC (g)
0 (PGA)	0.0530
0.2	0.1117
1.0	0.0492
2.0	0.0288

The seismic hazard is compiled from multiple predictive models which consider many seismic sources of varying combinations of earthquake magnitude and distance from the project site. For each magnitude and distance pair, models predict the resulting accelerations and activity rates for the project site. The results of these predictive models are aggregated to produce the seismic hazard model for specified return periods. The seismic hazard model can be deaggregated to obtain the contribution to hazard percentage of each magnitude and distance combination. This information is necessary for analyses requiring earthquake magnitude (e.g. liquefaction susceptibility) or distance. Figure 3 below displays a deaggregation plot of the PGA_{BC} at the project site for a 2% PE in 50 years with descriptive statistics available through the USGS online tools.

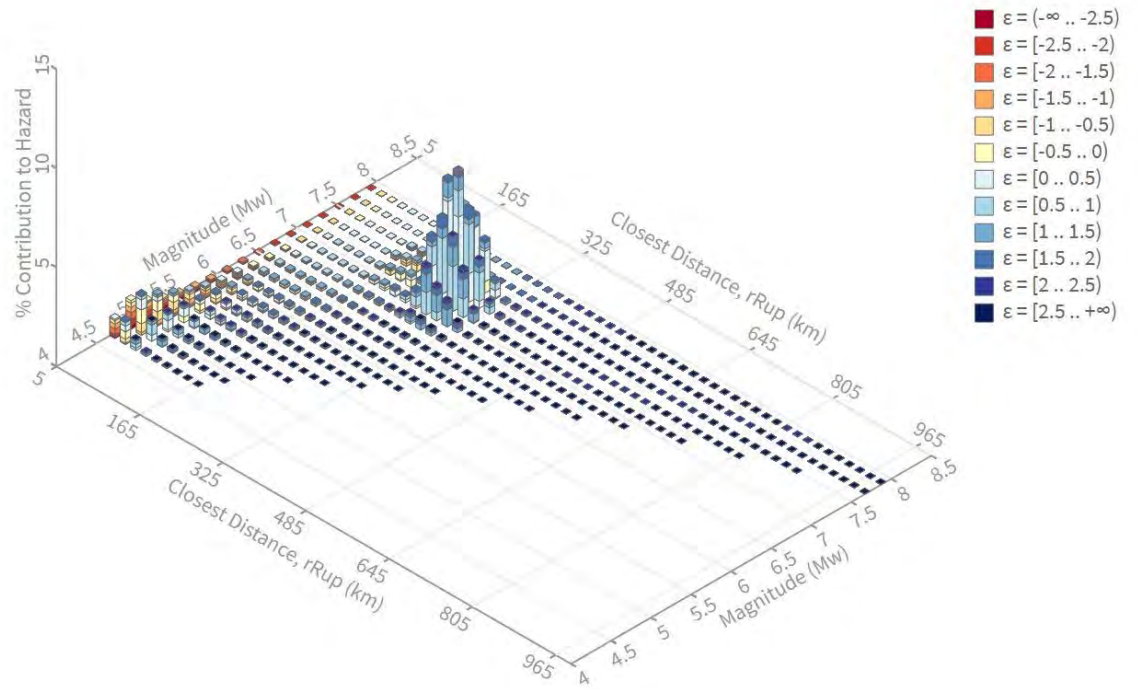


Figure 3: Deaggregation Plot of the PGA_{BC} at the Project Site for a 2% PE in 50 Years

4.0 SITE-SPECIFIC PEAK GROUND ACCELERATION

For liquefaction analysis, the site-specific peak ground acceleration at the surface, a_{max}, was calculated from the site reference peak ground acceleration (PGA_{BC}). The PGA_{BC} was multiplied by an amplification factor calculated from the average shear wave velocity in the upper 30 meters (Vs30) to obtain a_{max}. Section 4.1 discusses the calculation of the amplification factor (F_a) from Vs30. A representative shear

wave velocity profile was derived from CPT correlations and the Vs30 (listed in Table 2) was calculated from the representative profile to be 659 ft/s.

Table 2: Representative Shear Wave Velocity in the Upper 30 m (Vs30)

Vs30 (ft/s)	Vs30 (m/s)
659	201

4.1 Determination of site coefficient F_a

An amplification factor (F_a) was evaluated from three sources:

- Atkinson and Boore's 2006 publication on earthquake ground-motion prediction equations for Eastern North America
- the International Building Code (IBC, 2012)
- Stewart and Choi (2003)

All three methods use Vs30 as the primary input for selecting Fa. Amplification factors from these three sources were averaged to obtain a representative amplification factor, and the results are shown in the following table:

Table 3: Site coefficient F_a

Atkinson and Boore (2006)	IBC (2012)	Stewart and Choi (2013)	Selected for Analysis
2.12	1.6	1.74	1.82

4.2 Site-specific peak ground acceleration a_{max}

$$a_{max} = PGA_{BC} * F_a = 0.0530g * 1.82 = 0.0965\ g \quad (1)$$

With an amplification factor F_a of 1.82, Golder calculated the site-specific peak ground acceleration a_{max} to be 0.0965 g for the considered seismic hazard.

5.0 LIQUEFACTION ASSESSMENT METHODOLOGY

Seismically-induced liquefaction susceptibility was evaluated using the National Center for Earthquake Engineering Research (NCEER) simplified procedure with CPT data (Youd et al., 2001). The simplified procedure is an empirical method used to calculate the factor of safety against liquefaction. The factor of safety is defined as a ratio of the cyclic resistance ratio (CRR) to the cyclic stress ratio (CSR). The CRR is a measure of a soil's resistance to liquefaction and was estimated using CPT data. The CSR is a measure of the seismic demand on the soil.

5.1 CSR Calculation

The CSR is defined as:

$$CSR = \frac{\tau_{ave}}{\sigma'_v} = 0.65\left(\frac{a_{max}}{g}\right)\left(\frac{\sigma_v}{\sigma'_v}\right)r_d$$

where a_{max} is the peak horizontal acceleration at the ground surface, g is the acceleration due to gravity, σ_v is the total vertical overburden stress, σ'_v is the effective vertical overburden stress, and r_d is a depth-dependent stress reduction factor defined as:

$$r_d = 1.0 - 0.00765z \quad for\ z \leq 9.15\ m$$

$$r_d = 1.174 - 0.0267z \quad for\ 9.15\ m < z \leq 23\ m$$

$$r_d = 0.744 - 0.008z \quad for\ 23\ m < z \leq 30\ m$$

$$r_d = 0.50 \quad for\ z > 30\ m$$

where z is the depth in meters (m).

5.2 CRR Calculation

The second major step in assessing the liquefaction susceptibility using the simplified approach is to estimate the CRR. Robertson and Wride (1998) developed the procedure for calculating CRR from the CPT as a function of the "clean sand" cone penetration resistance normalized to 1 atmosphere (atm; approximately 100 kilopascals; kPa) and denoted as $(q_{c1N})_{cs}$. The CRR is based on an earthquake magnitude of 7.5, and a magnitude scaling factor (MSF) is applied in later steps to adjust the CRR for magnitudes other than 7.5.

The CRR for an earthquake magnitude (M) of 7.5 is given as:

$$(q_{c1N})_{cs} < 50 \quad CRR_{7.5} = 0.833\left[\frac{(q_{c1N})_{cs}}{1000}\right] + 0.05$$

$$50 \leq (q_{c1N})_{cs} < 160 \quad CRR_{7.5} = 93\left[\frac{(q_{c1N})_{cs}}{1000}\right]^3 + 0.08$$

where $(q_{c1N})_{cs}$ is the clean sand cone penetration resistance normalized to 1 atm (approximately 100 kPa or 1 ton per square foot; tsf).

The tip resistance (q_c) is normalized to obtain q_{c1N} as:

$$q_{c1N} = C_Q\left(\frac{q_c}{P_a}\right)$$

$$C_Q = \left(\frac{P_a}{\sigma'_v}\right)^n$$

where C_Q is the normalizing factor for cone penetration resistance, P_a is 1 atm of pressure, n is an exponent that is dependent on the soil type, and q_c is the cone tip penetration resistance (q_c is replaced by q_t the cone tip resistance corrected for geometric impacts of the pore pressure measurement in all instances).

The method adopted in this assessment calculates the exponent, n, according to a method developed by Robertson (2009) and represents a small modification from the standard NCEER approach. The exponent, n, is calculated as:

$$n = 0.381I_c + 0.05\left(\frac{\sigma'_{vo}}{P_a}\right) - 0.15 \leq 1.0$$

where

$$I_c = [(3.47 - logQ_{t1})^2 + (1.22 + logF_r)^2]^{0.5}$$

$$Q_{t1} = \left[\frac{q_c - \sigma_{vo}}{\sigma'_{vo}}\right]$$

$$F_r = \left[\frac{f_s}{q_c - \sigma_{vo}}\right] \times 100\%$$

5.2.1 Clean Sand Equivalent Cone Penetration Resistance $(q_{c1N})_{cs}$

According to the NCEER approach, the presence of fines affects the liquefaction resistance of soils. A correction factor, K_c, is applied to the normalized penetration resistance (q_{c1N}) to determine the clean sand equivalent $(q_{c1N})_{cs}$ where

$$(q_{c1N})_{cs} = K_c q_{c1N}$$

$$for\ I_c \leq 1.64 \quad K_c = 1.0$$

$$for\ I_c > 1.64 \quad K_c = -0.403I_c^4 + 5.581I_c^3 - 21.63I_c^2 + 33.75I_c - 17.88$$

5.2.2 Magnitude Scaling Factor (MSF)

The magnitude scaling factor (MSF) adjusts the CRR for magnitudes other than 7.5 (Youd et al. 2001) where the factor of safety against liquefaction is calculated as

$$FS = \frac{CRR_{7.5}}{CSR} \times MSF$$

A number of different MSF values are discussed in the NCEER approach. The MSF values used in this assessment are the revised Idriss values (which are considered a lower bound set of values), and are calculated as:

$$MSF = \frac{10^{2.24}}{M^{2.56}}$$

Where M is the design earthquake magnitude.

A probabilistic seismic hazard analysis was used to estimate the ground acceleration, and while such an analysis includes the aggregate contributions of all possible combinations of magnitude and distance from all sources, a design earthquake magnitude is not specified in the probabilistic tools provided by the USGS. The simplified approach requires the selection of a single earthquake magnitude. Since liquefaction is sensitive to ground motion duration, which is correlated to earthquake magnitude, this selection is an important issue in liquefaction assessments.

The selection of either the mean or modal magnitude produces inconsistent risks of liquefaction because the relationship between duration (represented by magnitude) and liquefaction potential is non-linear. Kramer (2008) suggests that the best way to handle this issue is to perform liquefaction calculations for all magnitudes and to weight the results according to the relative contribution of each magnitude.

Golder has implemented this approach by recognizing that the MSF is the only term in the simplified approach that is affected by the magnitude selection. Golder calculated a weighted-average MSF (weighted by the relative contribution of each magnitude) and then calculated the magnitude corresponding to that MSF.

Golder calculated the earthquake magnitude to be M = 6.40.

5.3 Factor of Safety Against Liquefaction

The factor of safety was calculated as:

$$FS = \frac{CRR_{7.5}}{CSR} \times MSF$$

The factor of safety was calculated for every recorded depth reading in each CPT. Liquefaction calculations for each CPT including the calculated factors of safety are graphically presented in the figures attached to the end of this text.

6.0 RESULTS AND CONCLUSIONS

A factor of safety of 1.2 against liquefaction is considered acceptable. The foundation soils at the SJRPP byproduct storage area B site meet this requirement as all calculated factors of safety against liquefaction for foundation materials are in excess of 1.2 for all CPT soundings analyzed.

7.0 REFERENCE

Atkinson, G.M. and D.M. Boore (2006) "Earthquake Ground-Motion Prediction Equations for Eastern North America," *Bulletin of the Seismological Society of America,* Vol. 96, No. 6, pp. 2181-2205.

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Kramer, S.L. (2008). "Evaluation of Liquefaction Hazards in Washington State" Final Research report WA-RD 668.1, December 2008.

Robertson, P.K. and C.E. (Fear) Wride (1998) "Evaluating Cyclic Liquefaction Potential Using the Cone Penetration Test," *Canadian Geotechnical Journal*, Vol. 35, pp. 442-459.

Stewart, J.P., Liu, A.H., and Choi, Y. (2003). "Amplification factors for spectral acceleration in tectonically active regions," Bulletin of the Seismological Society of America, 93(1), 332-352.

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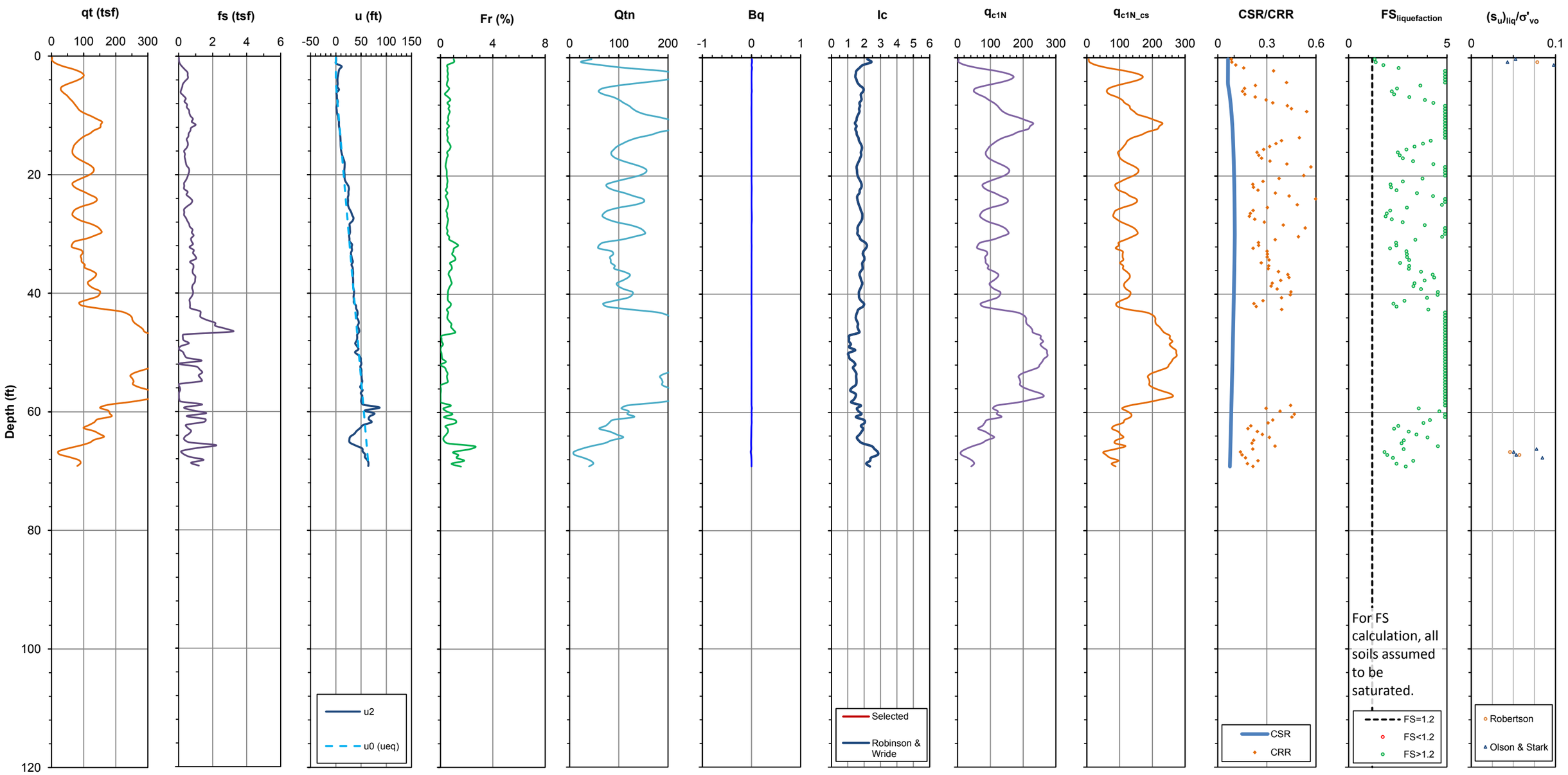
Youd, T.L. et al. (2001). "Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF workshops on Evaluation of Liquefaction Resistance of Soils", Journal of Geotechnical and Geoenvironmental Engineering, vol. 127, No. 4, April 2001.

8.0 ATTACHMENTS

Liquefaction Factor of Safety Results

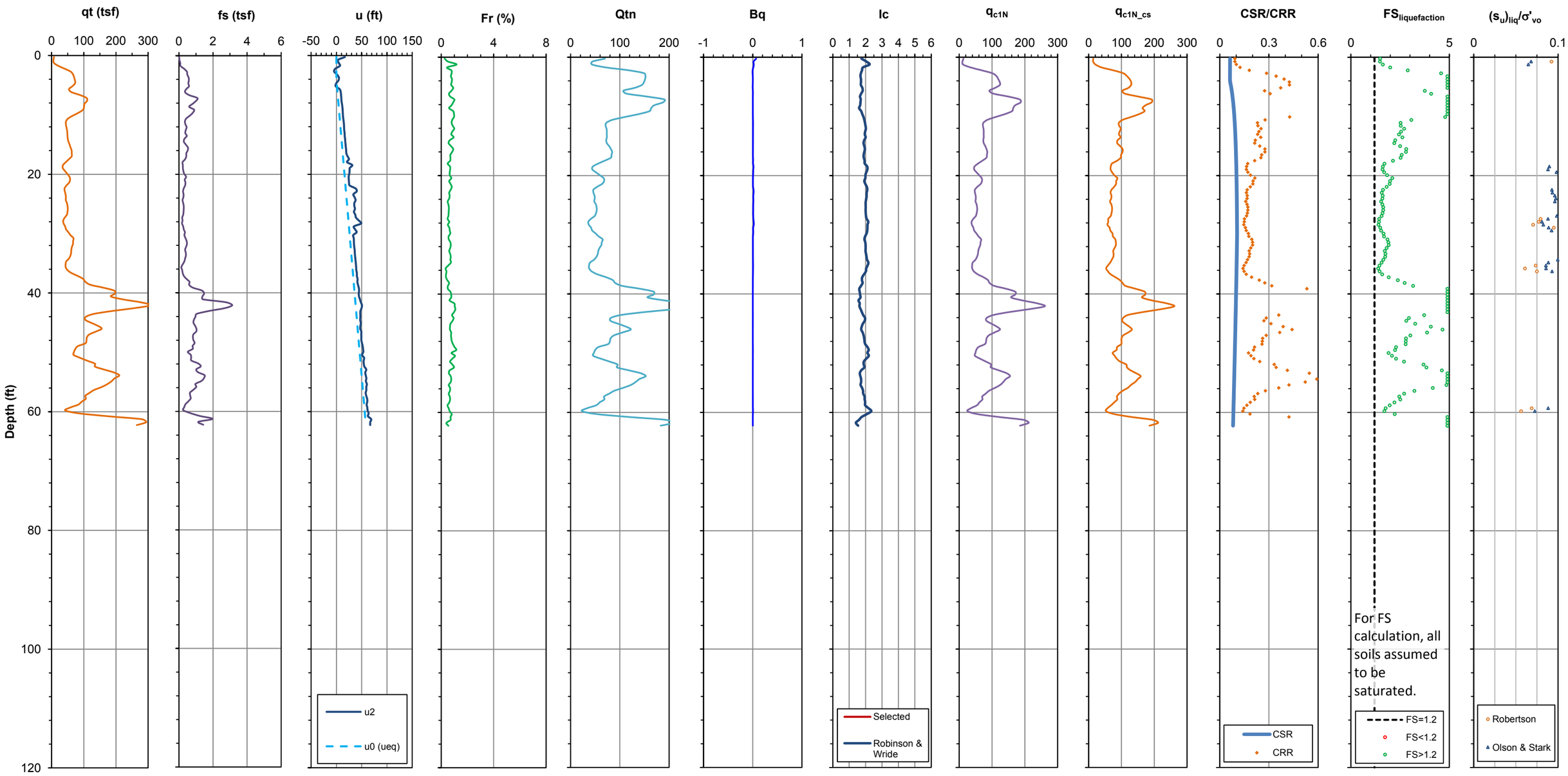
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	4.5 ft	**2% PE in 50 years Seismic Hazard**
Test ID:	CPT-01	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:** 6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:** 0.097 g
		Proj No.:	15263562					
		Termination:	69.1 ft-bgs					

GOLDER



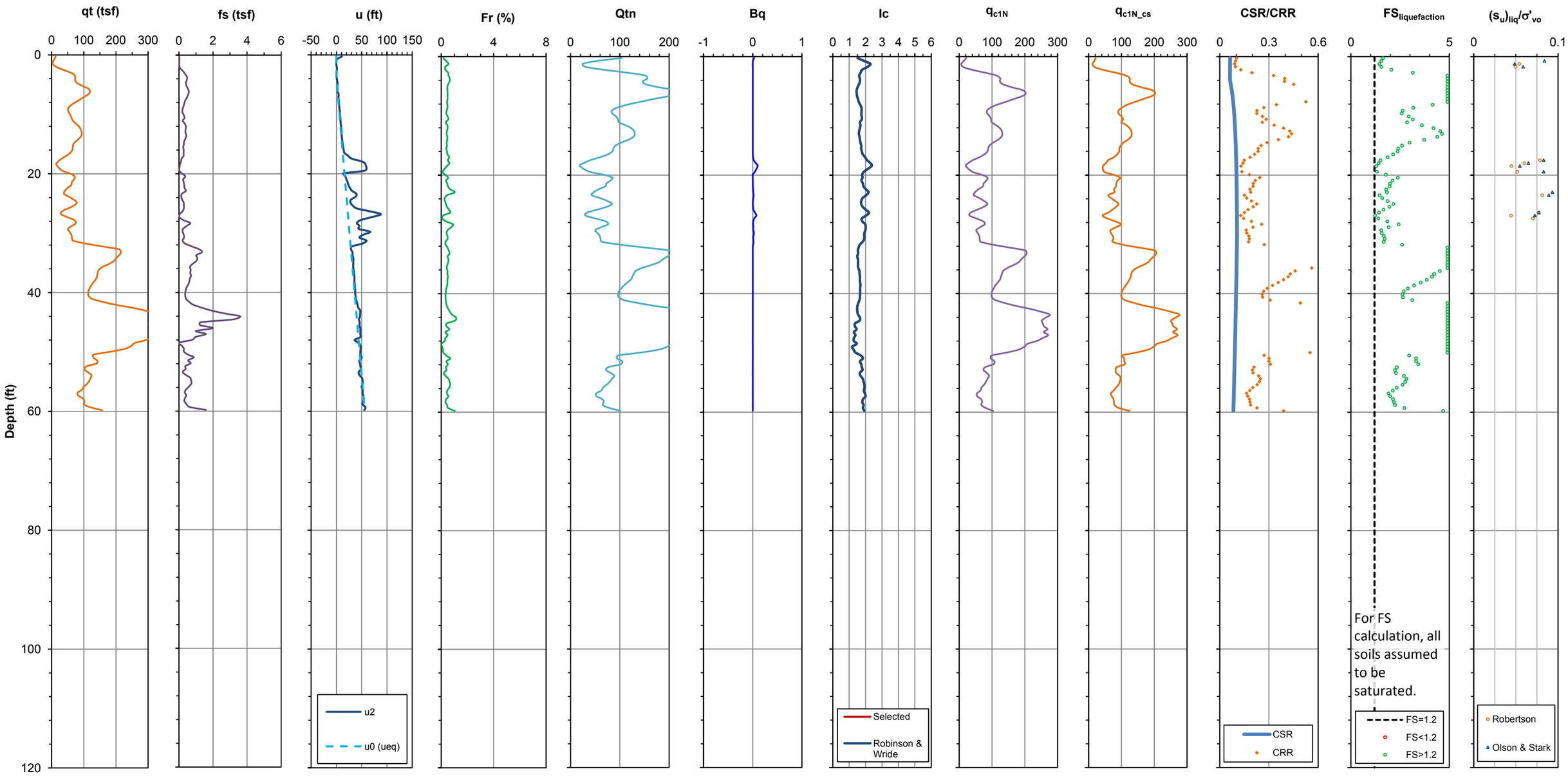
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	4.0 ft	**2% PE in 50 years Seismic Hazard**
Test ID:	CPT-02	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:** 6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:** 0.097 g
		Proj No.:	15263562					
		Termination:	62.3 ft-bgs					

GOLDER



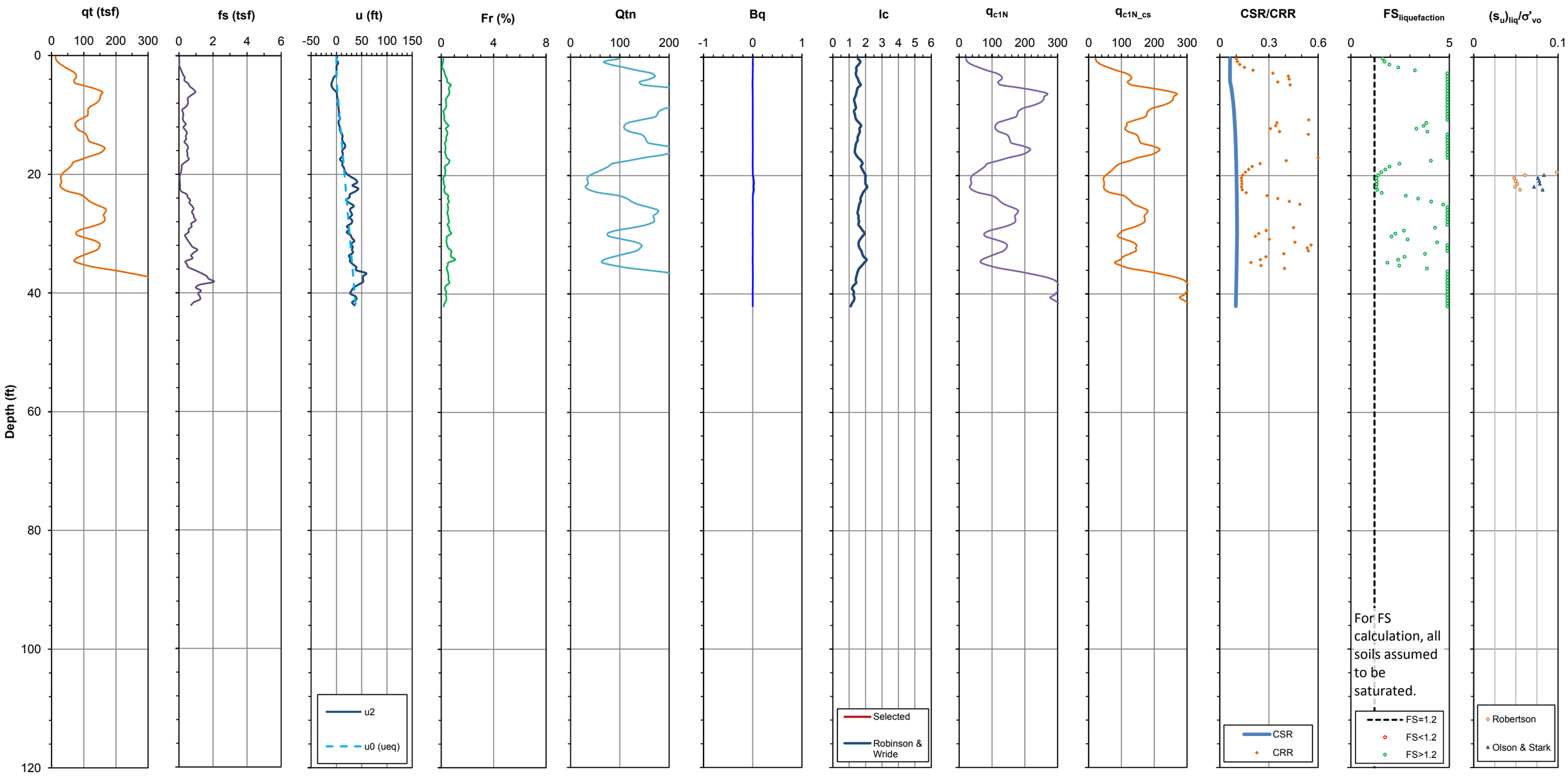
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	4.0 ft	**2% PE in 50 years Seismic Hazard**
Test ID:	CPT-03	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:** 6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:** 0.097 g
		Proj No.:	15263562					
		Termination:	59.8 ft-bgs					

GOLDER



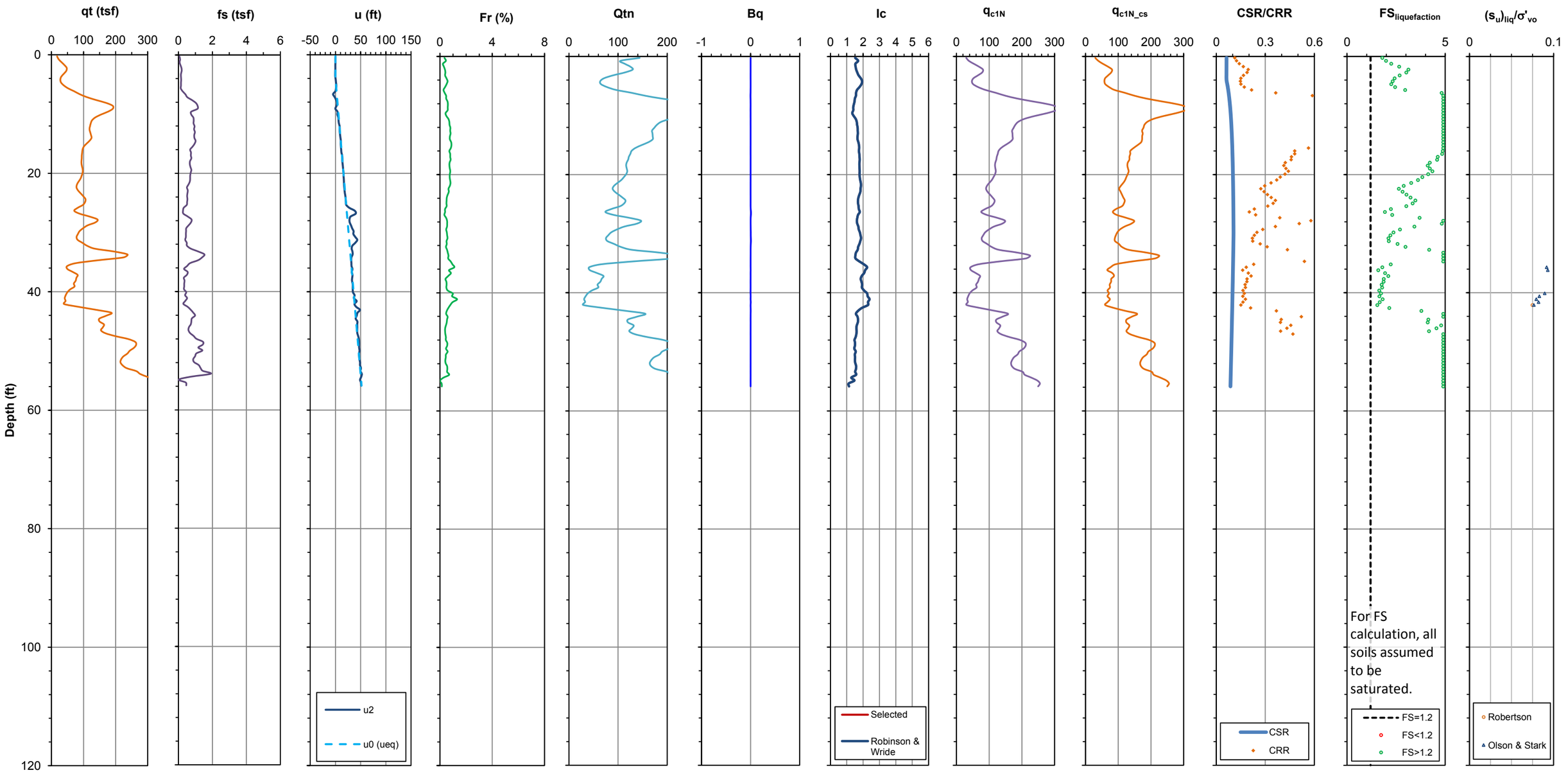
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	4.0 ft	**2% PE in 50 years Seismic Hazard**
Test ID:	CPT-04	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:** 6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:** 0.097 g
		Proj No.:	15263562					
		Termination:	42.1 ft-bgs					

GOLDER



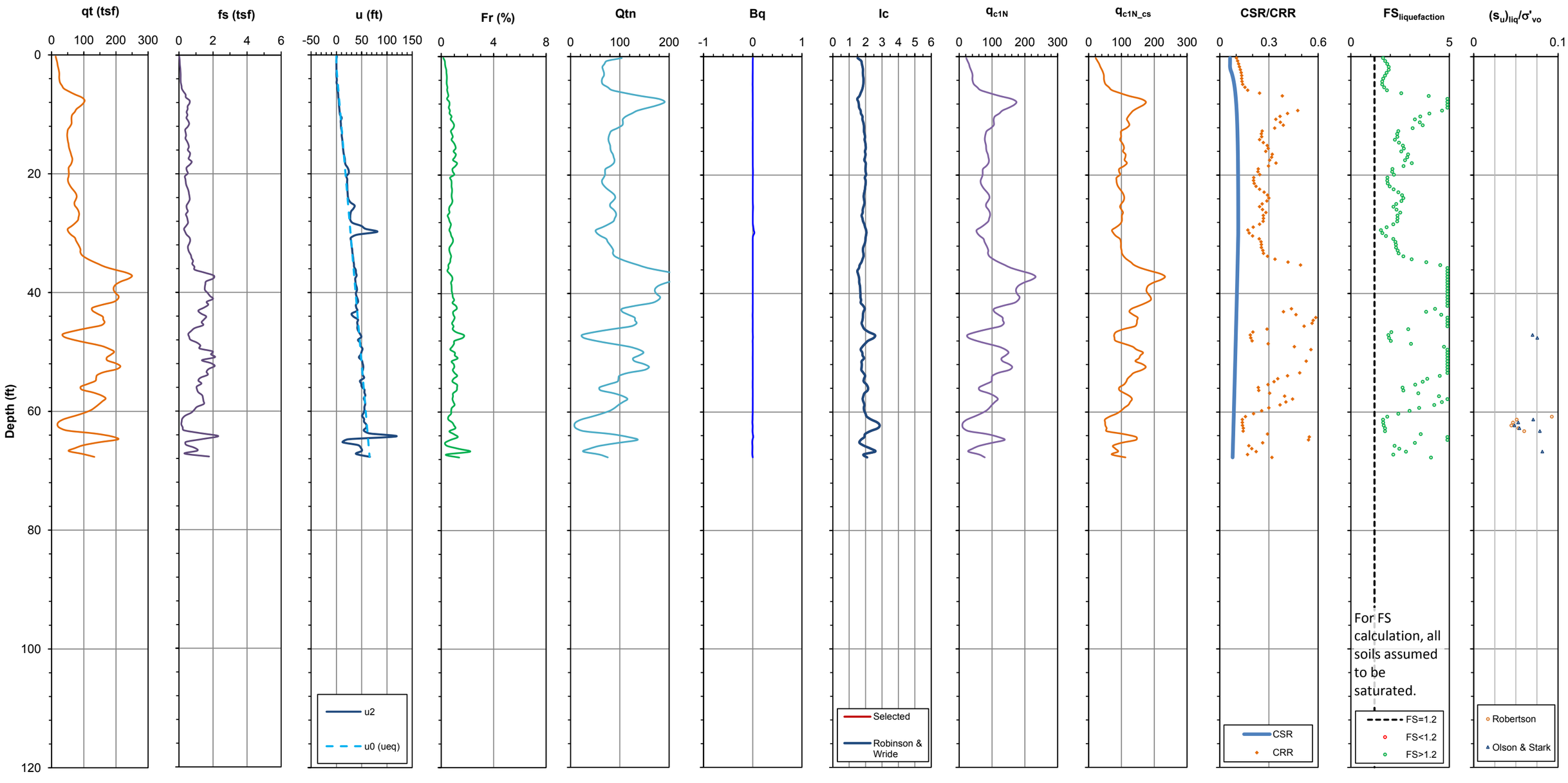
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	4.0 ft	**2% PE in 50 years Seismic Hazard**
Test ID:	CPT-05	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:** 6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:** 0.097 g
		Proj No.:	15263562					
		Termination:	55.9 ft-bgs					

GOLDER



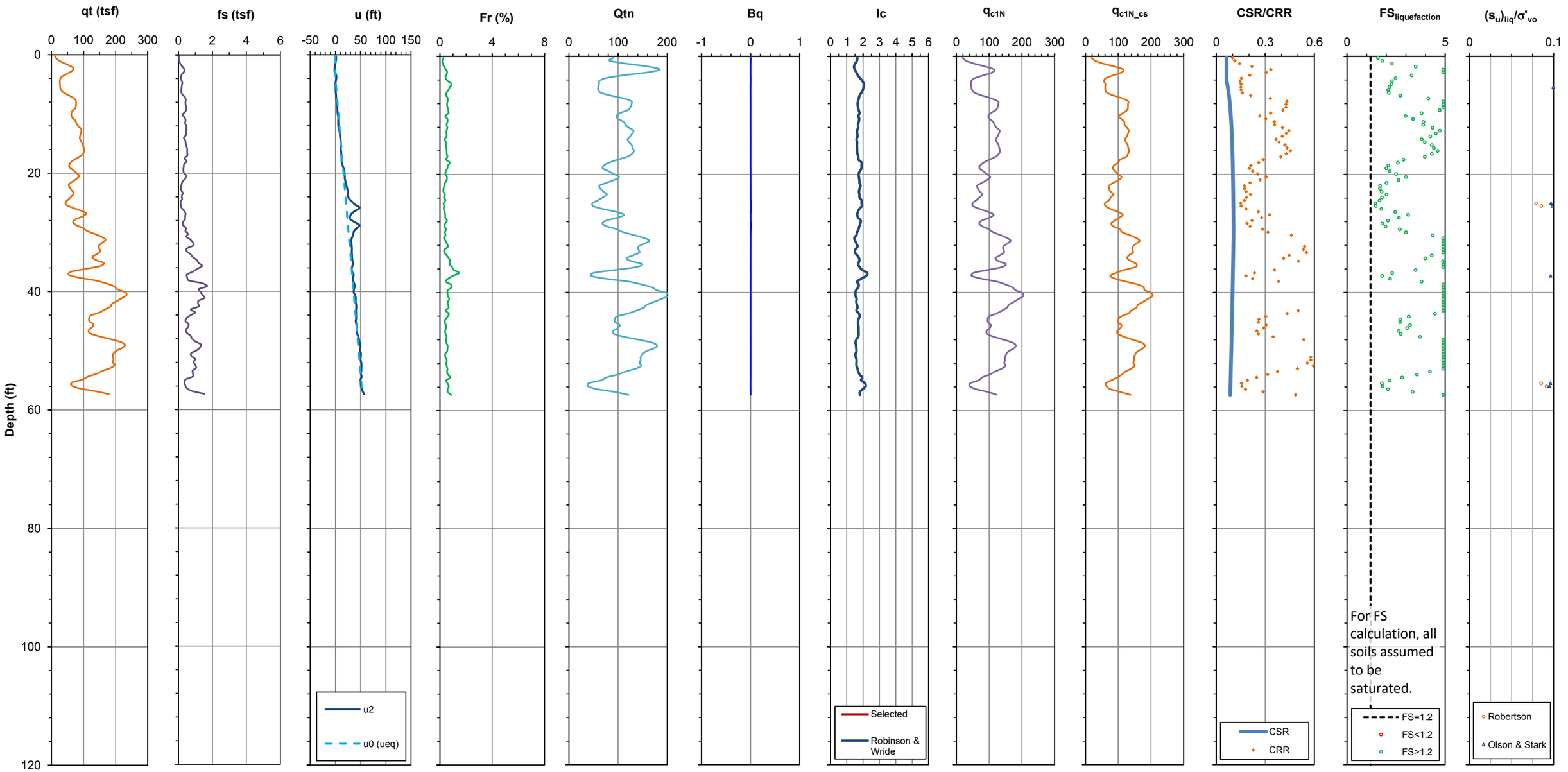
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	2.0 ft	**2% PE in 50 years Seismic Hazard**
Test ID:	CPT-06	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:** 6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:** 0.097 g
		Proj No.:	15263562					
		Termination:	67.7 ft-bgs					

GOLDER



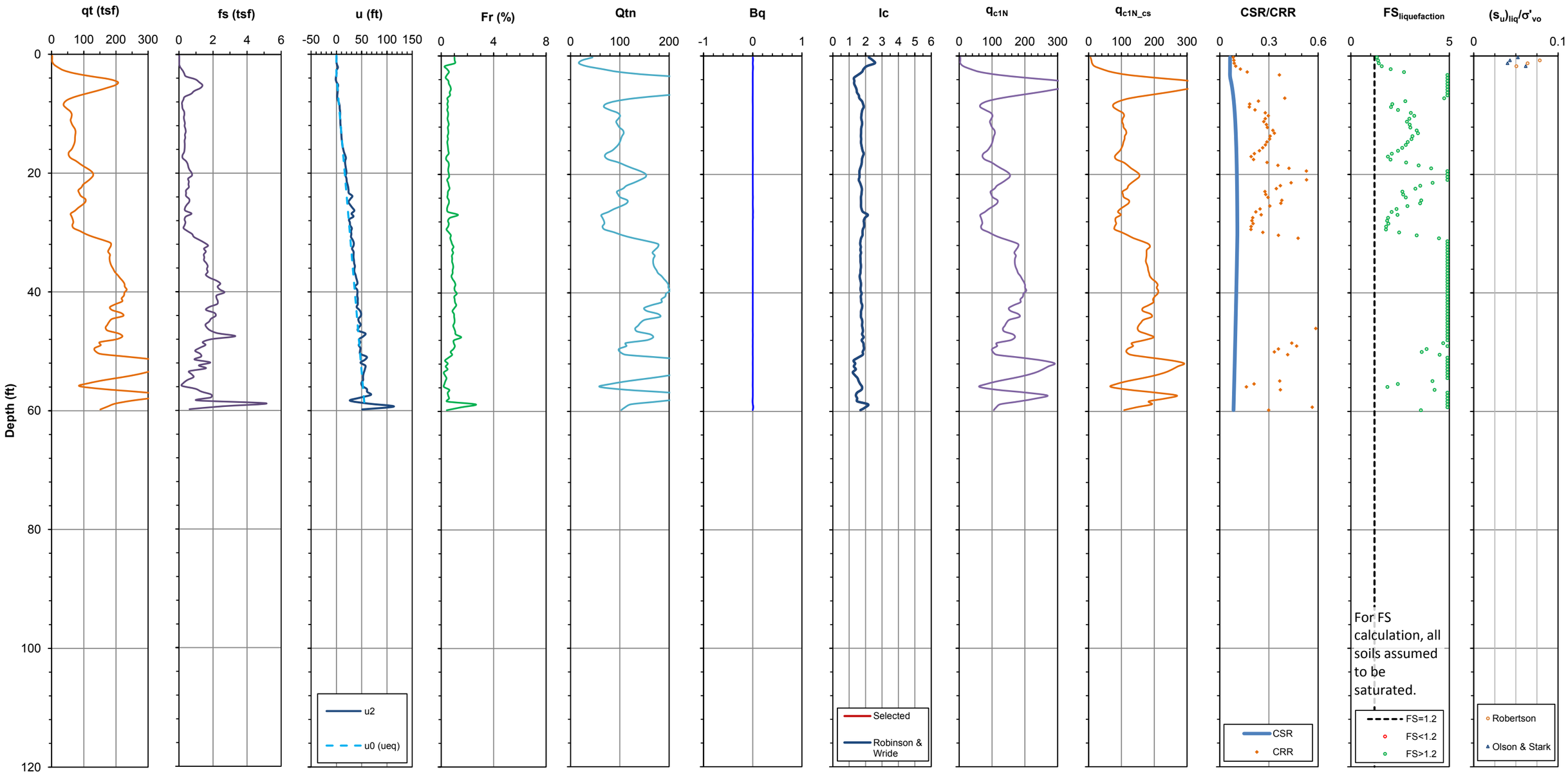
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	4.0 ft	**2% PE in 50 years Seismic Hazard**
Test ID:	CPT-07	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:** 6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:** 0.097 g
		Proj No.:	15263562					
		Termination:	57.3 ft-bgs					

GOLDER



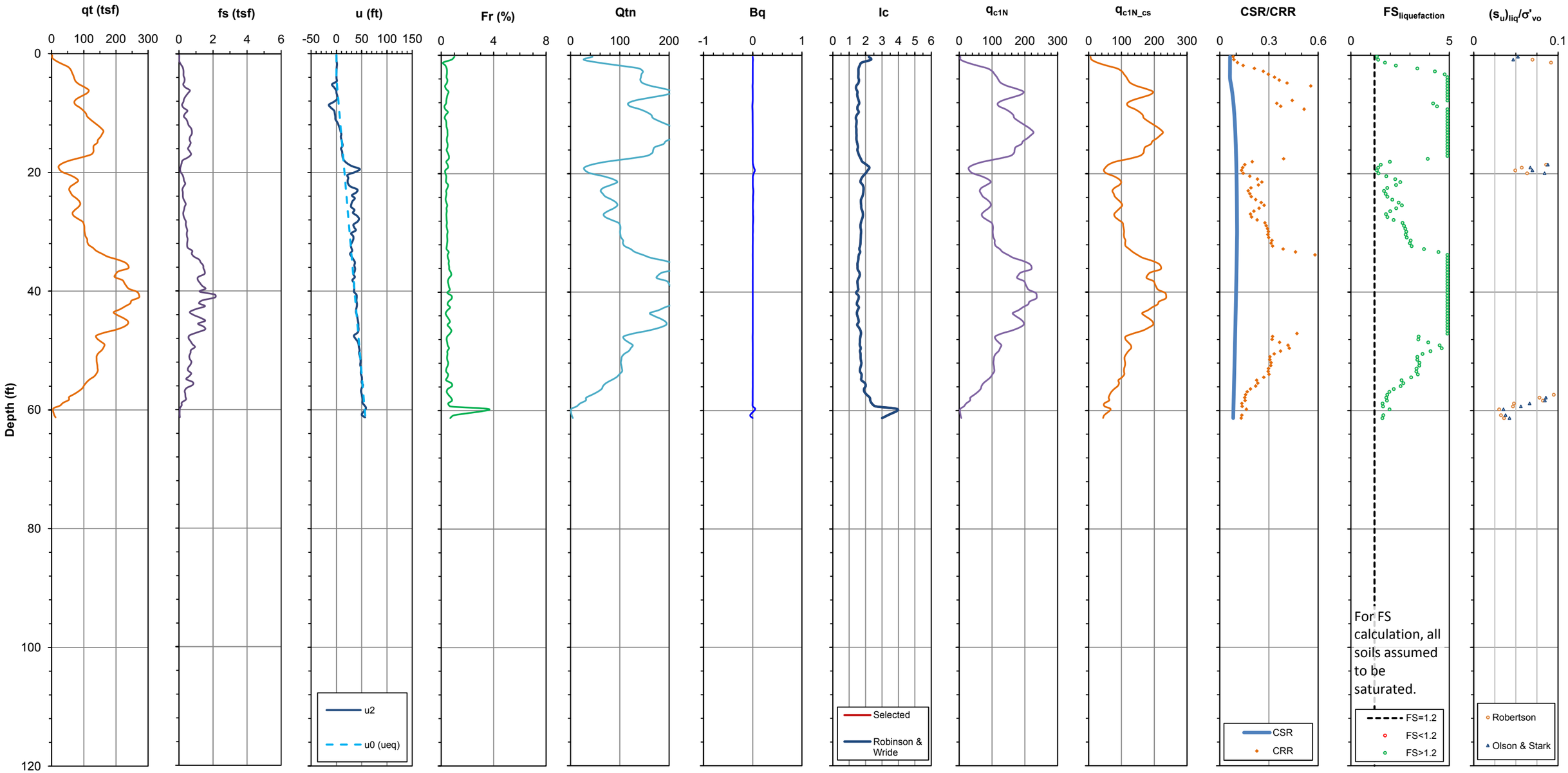
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	3.5 ft	**2% PE in 50 years Seismic Hazard**
Test ID:	CPT-08	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:** 6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:** 0.097 g
		Proj No.:	15263562					
		Termination:	59.8 ft-bgs					

GOLDER



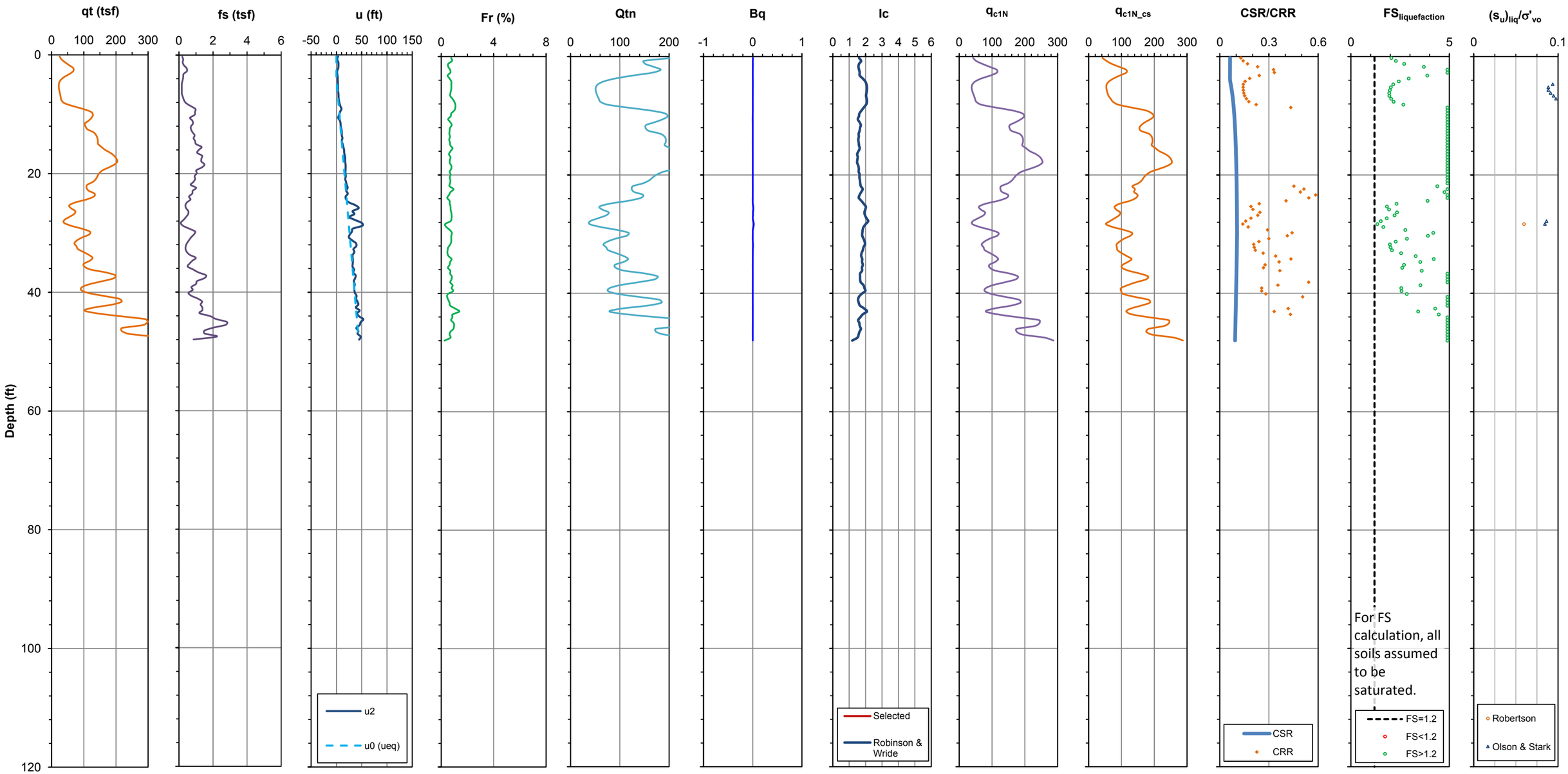
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	4.0 ft	**2% PE in 50 years Seismic Hazard**
Test ID:	CPT-09	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:** 6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:** 0.097 g
		Proj No.:	15263562					
		Termination:	61.3 ft-bgs					

GOLDER



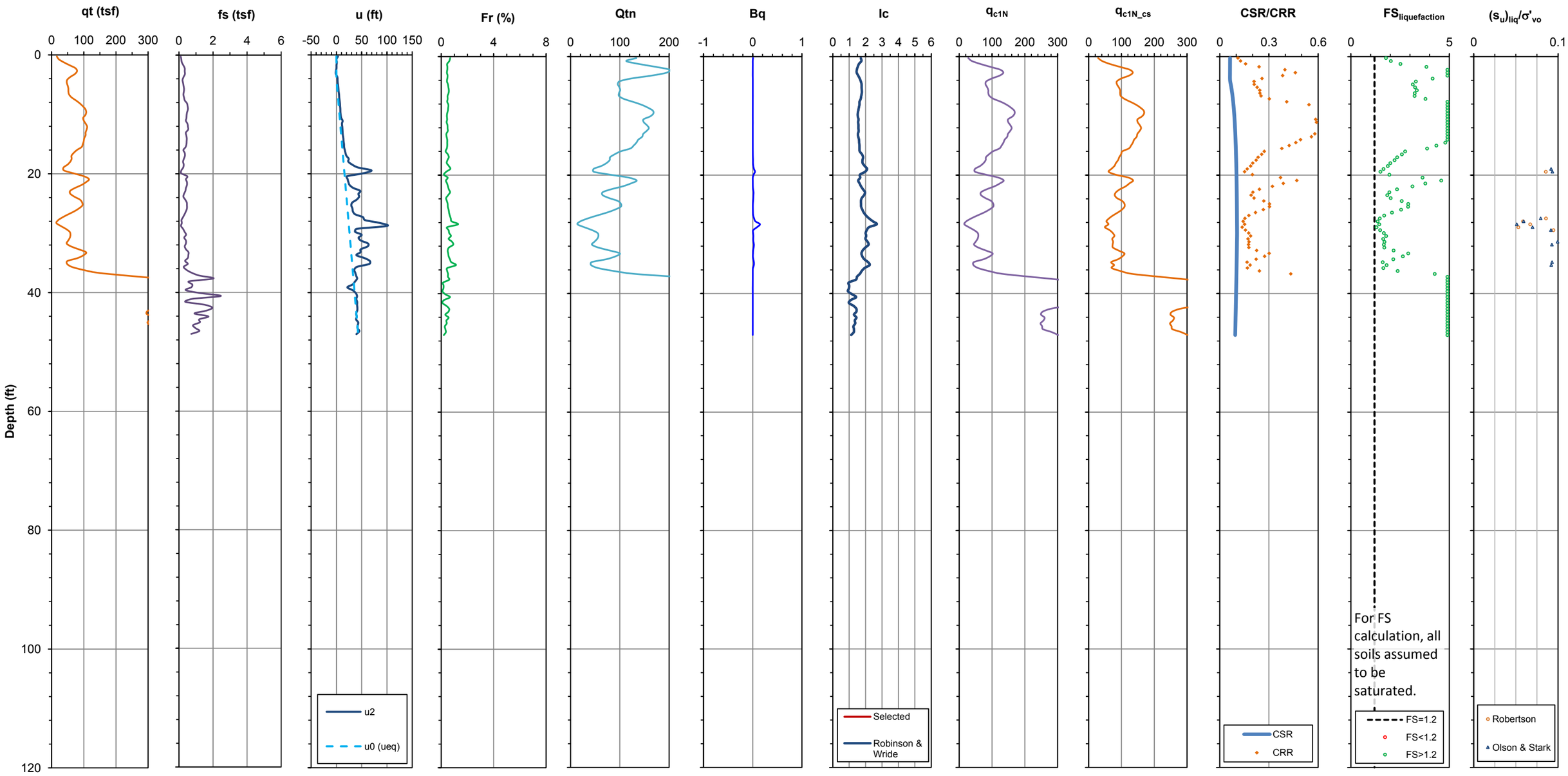
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	4.0 ft	**2% PE in 50 years Seismic Hazard**	
Test ID:	CPT-10	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:**	6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:**	0.097 g
		Proj No.:	15263562						
		Termination:	48.0 ft-bgs						

GOLDER



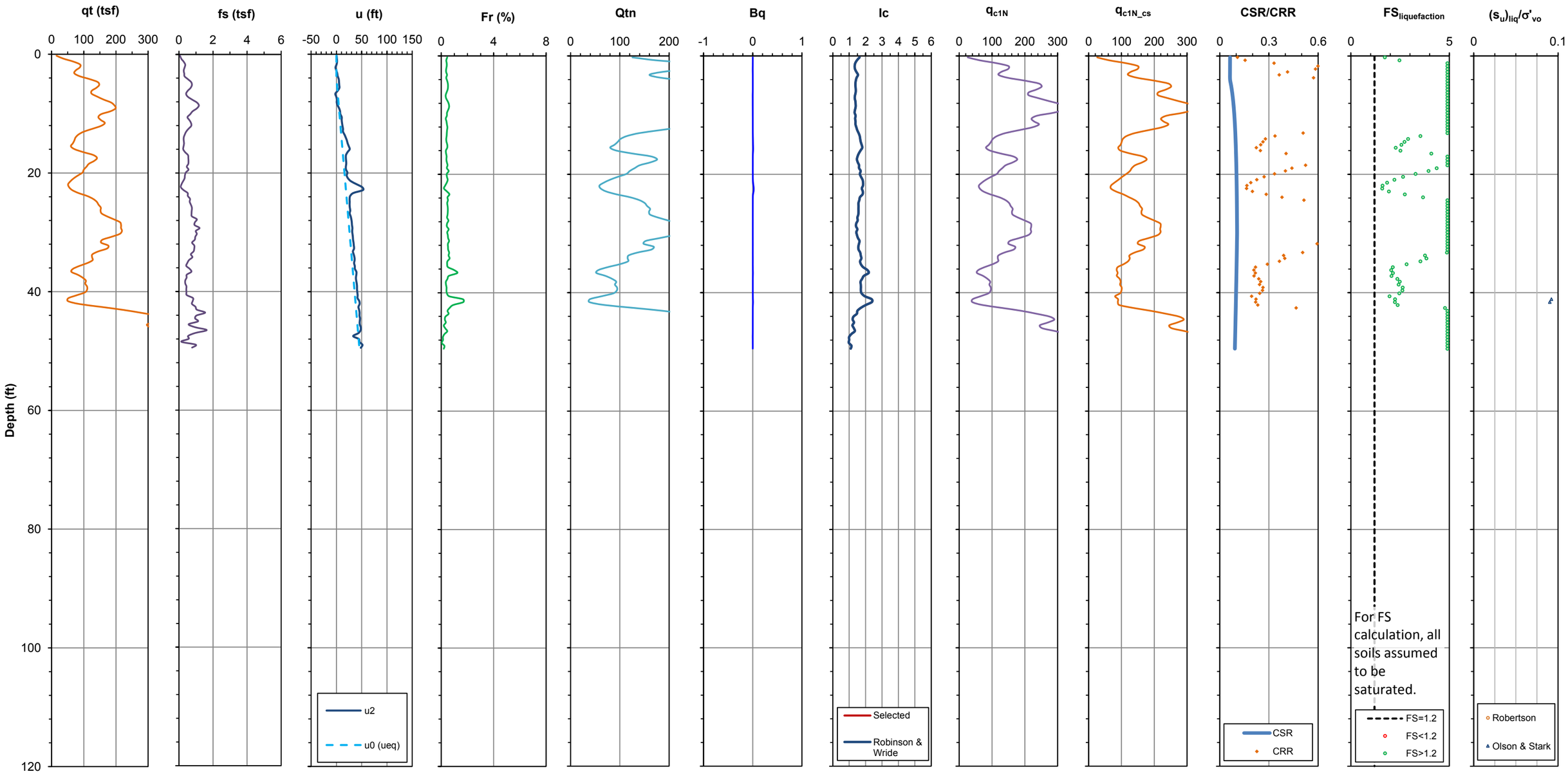
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	4.0 ft	**2% PE in 50 years Seismic Hazard**
Test ID:	CPT-11	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:** 6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:** 0.097 g
		Proj No.:	15263562					
		Termination:	47.0 ft-bgs					

GOLDER



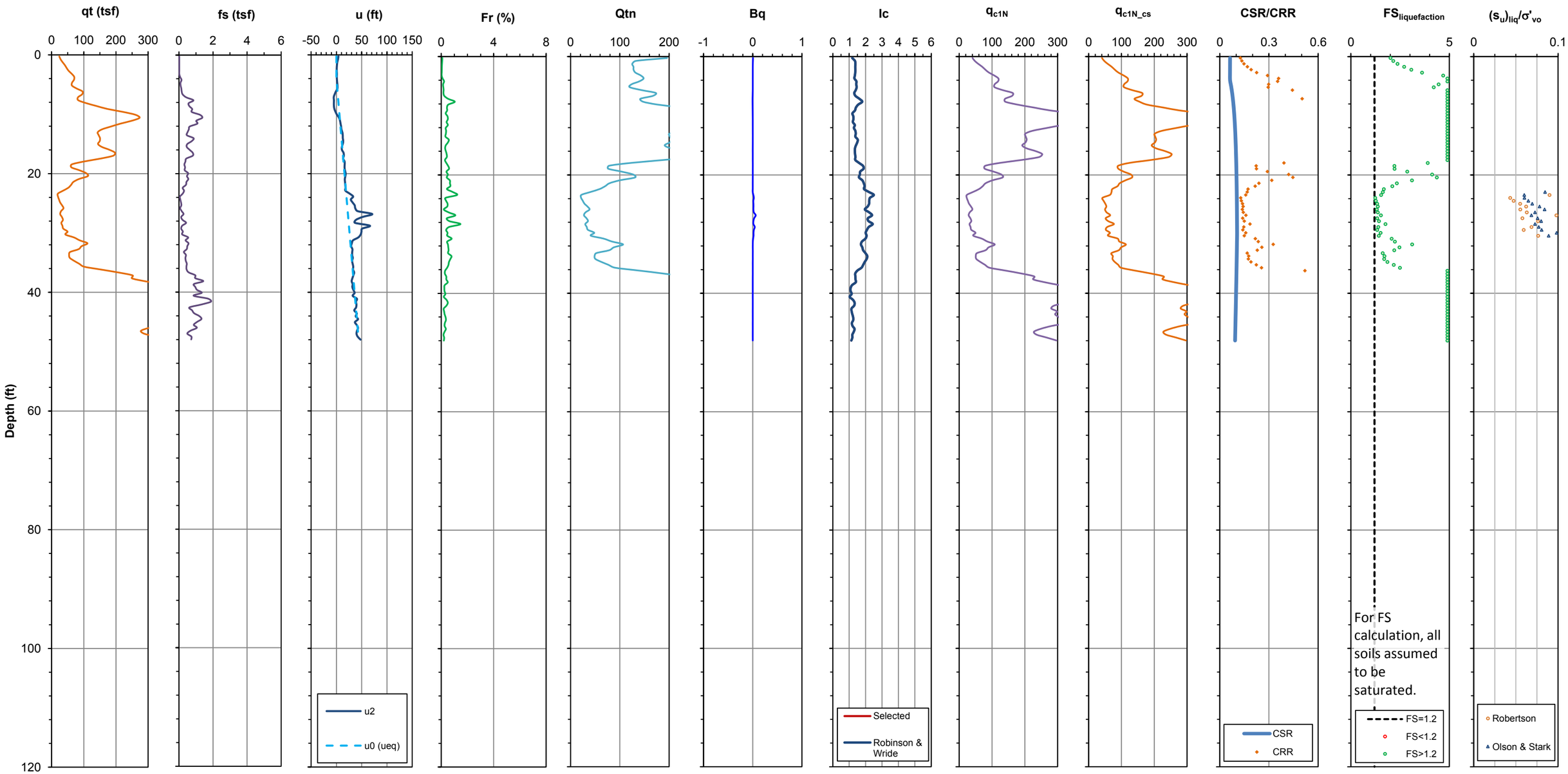
Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	4.0 ft	**2% PE in 50 years Seismic Hazard**	
Test ID:	CPT-12	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:**	6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:**	0.097 g
		Proj No.:	15263562						
		Termination:	49.5 ft-bgs						

GOLDER



Test Date:	June 2003	**Project:**	SJRPP	**Test Type:**	CPTU	**Water Table:**	4.0 ft	**2% PE in 50 years Seismic Hazard**
Test ID:	CPT-13	**Location:**	Jackson, FL			**Made:**	SSS	**Magnitude:** 6.4
		Client:	SJRPP	**Standard:**	ASTM D5778	**Checked:**	JGM	**a_{max}:** 0.097 g
		Proj No.:	15263562					
		Termination:	48.0 ft-bgs					

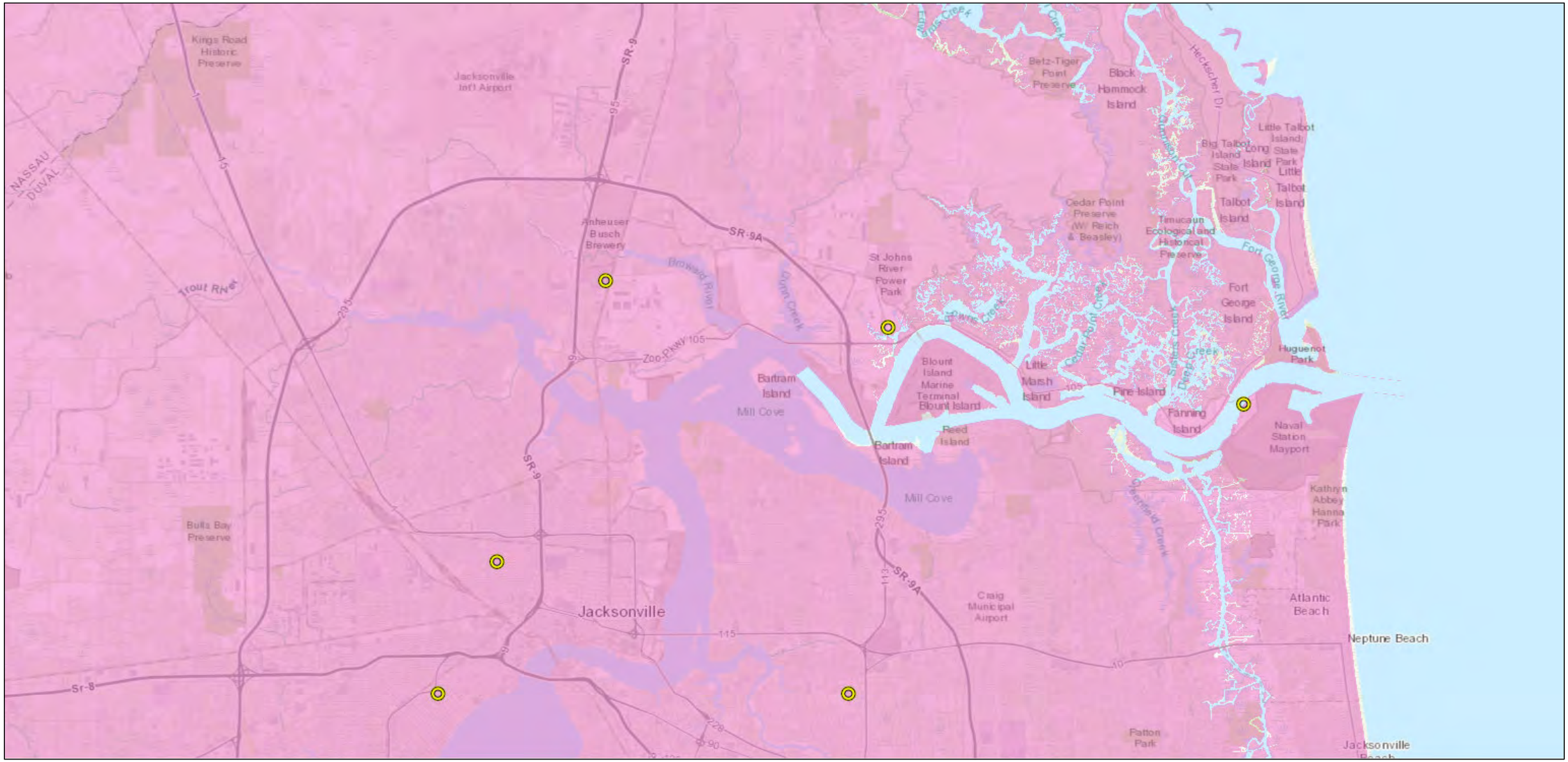
GOLDER



APPENDIX C

Sinkhole Database

Subsidence Incident Reports Map- SJRPP



August 27, 2018

Subsidence Incident Reports

FGS Swallets

Area IV

Sinkhole Types

Area I

Area II

Area III

1:144,448

0 1.75 3.5 7 mi

0 2.75 5.5 11 km

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Map created by Map Direct, powered by ESRI.

Florida Department of Environmental Protecon

Map Direct AIR (Area of Interest Report)
BSA-B Subsidence Incident Reports Map

Point of Interest: 30°26'55.8450" x -81°32'17.0577" 30.44884584529957 x -81.53807158330376 Search Radius: 5 miles Report Created on Mon Aug 27 2018 at 09:15:53	Township/Range/Section: 1S28E40 Jacksonville, Duval County 32226 FDEP Regulatory District: Northeast District Water Management District: SJRWMD FL House District 11 :: FL Senate District 4 US Congressional District 4 HUC Basin Area: Lower St. Johns Waterbody ID: 2188 State Land DM ID:

Search Result Summary

Features Found	*Data Layer*	*Metadata*	*Spreadsheet*
1	Florida Subsidence Incident Reports	Layer Information	Download as Spreadsheet
0	Florida Geologic Survey (FGS)-Swallets	Layer Information	--
259	Florida Sinkhole Types	Layer Information	Download as Spreadsheet

Search Result Details

Florida Subsidence Incident Reports: 1 Found.

#1 of 1 from Florida Subsidence Incident

Reports

OBJECTID	2941
REF NUM	72-503
DATE REV	10/29/2015
EVENT DATE	10/10/1984
TRUE SINK	
LONGDD	-81.551386
LATDD	30.416661
COUNTY	DUVAL
TWNSHP	1
TWNSHP D	S
RANGE	27
RANGE D	E
SECTION	13
QTRSECT1	
QTRSECT2	
ACCURACY	QTR1
RPT SOURCE	
OCITY	JACKSONVILLE
OZIP	32226
SIZDIM	E
SINSHAPE	E
SINLNGTH	2
SINWIDTH	8
SINDEPTH	
SLOPE	
WATSIN	U
WATBLS	
LIMVIS	U
CAVVIS	U
SUBRATE	R
PROPDAM	Y
REPAIR S	Repaired
DRAINSTR	
SOILTYPE	MARSH
COMMENTS	HURRICANE 9/17/84, IN ST. JOHN'S RIVER FLOOD PLAIN. INDUSTRIAL RISK INSURERS CLAIM 7-0436-88. COST $239,769.19. . . . .
COMMENTS 2	Did not move, in locaon of la t/long and TSR, Power Park owns both parcels of land
DOCUMENT LINK	

Florida Sinkhole Types: 259 Found.

#1 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.

#2 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.

PERIMETER	587.404
OBJECTID	8886
SHAPE.AREA	11348.867188
SHAPE.LEN	587.403781
DEP SINKHOLE TYPES AREA	11348.867
DEP SINKHOLE TYPES FID	7936

PERIMETER	421.339
OBJECTID	3207
SHAPE.AREA	10466.410156
SHAPE.LEN	421.338521
DEP SINKHOLE TYPES AREA	10466.41
DEP SINKHOLE TYPES FID	7969

#3 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	404.589
OBJECTID	3205
SHAPE.AREA	3970.677734
SHAPE.LEN	404.588929
DEP SINKHOLE TYPES AREA	3970.678
DEP SINKHOLE TYPES FID	7967

#4 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	71.673
OBJECTID	8920
SHAPE.AREA	301.826172
SHAPE.LEN	71.672987
DEP SINKHOLE TYPES AREA	301.826
DEP SINKHOLE TYPES FID	7953

#5 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	821.94
OBJECTID	8895
SHAPE.AREA	24223.849609
SHAPE.LEN	821.940081
DEP SINKHOLE TYPES AREA	24223.85
DEP SINKHOLE TYPES FID	7855

#6 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	214.266
OBJECTID	8910
SHAPE.AREA	2710.714844
SHAPE.LEN	214.265741
DEP SINKHOLE TYPES AREA	2710.715
DEP SINKHOLE TYPES FID	7870

#7 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	78.188
OBJECTID	8330
SHAPE.AREA	372.273438
SHAPE.LEN	78.187841

#8 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	492.92
OBJECTID	8149
SHAPE.AREA	10085.701172
SHAPE.LEN	492.920253

DEP SINKHOLE TYPES AREA	372.273
DEP SINKHOLE TYPES FID	7800

DEP SINKHOLE TYPES AREA	10085.701
DEP SINKHOLE TYPES FID	7889

#9 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	40.616
OBJECTID	8867
SHAPE.AREA	96.486328
SHAPE.LEN	40.616401
DEP SINKHOLE TYPES AREA	96.486
DEP SINKHOLE TYPES FID	7849

#10 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	133.694
OBJECTID	8445
SHAPE.AREA	526.314453
SHAPE.LEN	133.694198
DEP SINKHOLE TYPES AREA	526.314
DEP SINKHOLE TYPES FID	7842

#11 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	115.927
OBJECTID	8872
SHAPE.AREA	602.535156
SHAPE.LEN	115.926899
DEP SINKHOLE TYPES AREA	602.535
DEP SINKHOLE TYPES FID	7854

#12 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	153.673
OBJECTID	6550
SHAPE.AREA	1001.833984
SHAPE.LEN	153.672576
DEP SINKHOLE TYPES AREA	1001.834
DEP SINKHOLE TYPES FID	7741

#13 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	607.609
OBJECTID	6548
SHAPE.AREA	16047.361328
SHAPE.LEN	607.608888
DEP SINKHOLE TYPES AREA	16047.361
DEP	7739

#14 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	44.174
OBJECTID	8438
SHAPE.AREA	119.878906
SHAPE.LEN	44.174014
DEP SINKHOLE TYPES AREA	119.879
DEP	7835

SINKHOLE TYPES FID	

SINKHOLE TYPES FID	

#15 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	3436.166
OBJECTID	8840
SHAPE.AREA	187038.507813
SHAPE.LEN	3436.166145
DEP SINKHOLE TYPES AREA	187038.508
DEP SINKHOLE TYPES FID	7911

#16 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	93.746
OBJECTID	6439
SHAPE.AREA	305.886719
SHAPE.LEN	93.746491
DEP SINKHOLE TYPES AREA	305.887
DEP SINKHOLE TYPES FID	7675

#17 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	84.057
OBJECTID	7199
SHAPE.AREA	465.841797
SHAPE.LEN	84.057262
DEP SINKHOLE TYPES AREA	465.842
DEP SINKHOLE TYPES FID	7695

#18 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	183.29
OBJECTID	7203
SHAPE.AREA	1757.988281
SHAPE.LEN	183.289633
DEP SINKHOLE TYPES AREA	1757.988
DEP SINKHOLE TYPES FID	7699

#19 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	172.77
OBJECTID	6552
SHAPE.AREA	1494.685547
SHAPE.LEN	172.770232
DEP SINKHOLE TYPES AREA	1494.686
DEP SINKHOLE TYPES FID	7743

#20 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	68.324
OBJECTID	8153
SHAPE.AREA	221.931641
SHAPE.LEN	68.323651
DEP SINKHOLE TYPES AREA	221.932
DEP SINKHOLE TYPES FID	7893

#21 of 259 from Florida Sinkhole Types

#22 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	38.755
OBJECTID	8907
SHAPE.AREA	53.619141
SHAPE.LEN	38.754942
DEP SINKHOLE TYPES AREA	53.619
DEP SINKHOLE TYPES FID	7867

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	45.532
OBJECTID	3641
SHAPE.AREA	118.259766
SHAPE.LEN	45.532494
DEP SINKHOLE TYPES AREA	118.26
DEP SINKHOLE TYPES FID	8021

#23 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	141.261
OBJECTID	6551
SHAPE.AREA	1102.582031
SHAPE.LEN	141.261092
DEP SINKHOLE TYPES AREA	1102.582
DEP SINKHOLE TYPES FID	7742

#24 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	187.87
OBJECTID	3217
SHAPE.AREA	1658.949219
SHAPE.LEN	187.870472
DEP SINKHOLE TYPES AREA	1658.949
DEP SINKHOLE TYPES FID	7979

#25 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	449.797
OBJECTID	5842
SHAPE.AREA	5034.988281
SHAPE.LEN	449.797421
DEP SINKHOLE TYPES AREA	5034.988
DEP SINKHOLE TYPES FID	8097

#26 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	281.693
OBJECTID	5237
SHAPE.AREA	2830.328125
SHAPE.LEN	281.693265
DEP SINKHOLE TYPES AREA	2830.328
DEP SINKHOLE TYPES FID	8050

#27 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes

#28 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes

	are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	220.553
OBJECTID	7071
SHAPE.AREA	2625.960938
SHAPE.LEN	220.552503
DEP SINKHOLE TYPES AREA	2625.961
DEP SINKHOLE TYPES FID	7617

	are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1423.947
OBJECTID	8444
SHAPE.AREA	62928.521484
SHAPE.LEN	1423.94682
DEP SINKHOLE TYPES AREA	62928.522
DEP SINKHOLE TYPES FID	7841

#29 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	203.978
OBJECTID	8156
SHAPE.AREA	1551.824219
SHAPE.LEN	203.978267
DEP SINKHOLE TYPES AREA	1551.824
DEP SINKHOLE TYPES FID	7896

#30 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	180.401
OBJECTID	8139
SHAPE.AREA	1447.685547
SHAPE.LEN	180.401401
DEP SINKHOLE TYPES AREA	1447.686
DEP SINKHOLE TYPES FID	7879

#31 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	50.827
OBJECTID	8136
SHAPE.AREA	146.666016
SHAPE.LEN	50.827149
DEP SINKHOLE TYPES AREA	146.666
DEP SINKHOLE TYPES FID	7876

#32 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1501.983
OBJECTID	8324
SHAPE.AREA	40511.988281
SHAPE.LEN	1501.983111
DEP SINKHOLE TYPES AREA	40511.988
DEP SINKHOLE TYPES FID	7794

#33 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	136.693

#34 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	246.203

OBJECTID	3213
SHAPE.AREA	608.587891
SHAPE.LEN	136.693147
DEP SINKHOLE TYPES AREA	608.588
DEP SINKHOLE TYPES FID	7975

OBJECTID	5243
SHAPE.AREA	3806.679688
SHAPE.LEN	246.20302
DEP SINKHOLE TYPES AREA	3806.68
DEP SINKHOLE TYPES FID	8056

#35 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	52.969
OBJECTID	8901
SHAPE.AREA	157.300781
SHAPE.LEN	52.968634
DEP SINKHOLE TYPES AREA	157.301
DEP SINKHOLE TYPES FID	7861

#36 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	566.997
OBJECTID	8109
SHAPE.AREA	14191.767578
SHAPE.LEN	566.996902
DEP SINKHOLE TYPES AREA	14191.768
DEP SINKHOLE TYPES FID	7594

#37 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	193.79
OBJECTID	8143
SHAPE.AREA	2133.857422
SHAPE.LEN	193.790265
DEP SINKHOLE TYPES AREA	2133.857
DEP SINKHOLE TYPES FID	7883

#38 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1238.639
OBJECTID	6584
SHAPE.AREA	23462.53125
SHAPE.LEN	1238.638907
DEP SINKHOLE TYPES AREA	23462.531
DEP SINKHOLE TYPES FID	7775

#39 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	47.855
OBJECTID	8150
SHAPE.AREA	120.441406
SHAPE.LEN	47.854671
DEP	120.441

#40 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	268.767
OBJECTID	6581
SHAPE.AREA	2195.458984
SHAPE.LEN	268.766658
DEP	2195.459

SINKHOLE TYPES AREA	
DEP SINKHOLE TYPES FID	7890

SINKHOLE TYPES AREA	
DEP SINKHOLE TYPES FID	7772

#41 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	211.361
OBJECTID	8147
SHAPE.AREA	2044.560547
SHAPE.LEN	211.361414
DEP SINKHOLE TYPES AREA	2044.561
DEP SINKHOLE TYPES FID	7887

#42 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	215.123
OBJECTID	8864
SHAPE.AREA	1913.267578
SHAPE.LEN	215.123168
DEP SINKHOLE TYPES AREA	1913.268
DEP SINKHOLE TYPES FID	7846

#43 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	50.801
OBJECTID	6574
SHAPE.AREA	129.087891
SHAPE.LEN	50.800598
DEP SINKHOLE TYPES AREA	129.088
DEP SINKHOLE TYPES FID	7765

#44 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	545.219
OBJECTID	5751
SHAPE.AREA	13482.902344
SHAPE.LEN	545.219215
DEP SINKHOLE TYPES AREA	13482.902
DEP SINKHOLE TYPES FID	8083

#45 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	46.551
OBJECTID	8437
SHAPE.AREA	107.804688
SHAPE.LEN	46.551001
DEP SINKHOLE TYPES AREA	107.805
DEP SINKHOLE TYPES FID	7834

#46 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	129.526
OBJECTID	3646
SHAPE.AREA	959.125
SHAPE.LEN	129.52641
DEP SINKHOLE TYPES AREA	959.125
DEP SINKHOLE TYPES FID	8026

#47 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	105.776
OBJECTID	3288
SHAPE.AREA	511.011719
SHAPE.LEN	105.775891
DEP SINKHOLE TYPES AREA	511.012
DEP SINKHOLE TYPES FID	7994

#48 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	108.986
OBJECTID	6577
SHAPE.AREA	518.886719
SHAPE.LEN	108.985979
DEP SINKHOLE TYPES AREA	518.887
DEP SINKHOLE TYPES FID	7768

#49 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1520.282
OBJECTID	6565
SHAPE.AREA	42309.330078
SHAPE.LEN	1520.281618
DEP SINKHOLE TYPES AREA	42309.33
DEP SINKHOLE TYPES FID	7756

#50 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	33.235
OBJECTID	6572
SHAPE.AREA	59.917969
SHAPE.LEN	33.234608
DEP SINKHOLE TYPES AREA	59.918
DEP SINKHOLE TYPES FID	7763

#51 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	39.355
OBJECTID	8905
SHAPE.AREA	61.105469
SHAPE.LEN	39.355435
DEP SINKHOLE TYPES AREA	61.105
DEP SINKHOLE TYPES FID	7865

#52 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	61.91
OBJECTID	7216
SHAPE.AREA	165.117188
SHAPE.LEN	61.909779
DEP SINKHOLE TYPES AREA	165.117
DEP SINKHOLE TYPES FID	7712

#53 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick

#54 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick

DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	4925.629
OBJECTID	8879
SHAPE.AREA	225782.265625
SHAPE.LEN	4925.629131
DEP SINKHOLE TYPES AREA	225782.266
DEP SINKHOLE TYPES FID	7929

DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	78.504
OBJECTID	7197
SHAPE.AREA	358.572266
SHAPE.LEN	78.5045
DEP SINKHOLE TYPES AREA	358.572
DEP SINKHOLE TYPES FID	7693

#55 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	124.759
OBJECTID	7312
SHAPE.AREA	834.958984
SHAPE.LEN	124.759034
DEP SINKHOLE TYPES AREA	834.959
DEP SINKHOLE TYPES FID	7724

#56 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	145.641
OBJECTID	8918
SHAPE.AREA	1434.300781
SHAPE.LEN	145.6411
DEP SINKHOLE TYPES AREA	1434.301
DEP SINKHOLE TYPES FID	7951

#57 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	15154.026
OBJECTID	3226
SHAPE.AREA	6347143.291016
SHAPE.LEN	15154.026084
DEP SINKHOLE TYPES AREA	6347143.291
DEP SINKHOLE TYPES FID	7988

#58 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	224.689
OBJECTID	3304
SHAPE.AREA	2907.373047
SHAPE.LEN	224.689289
DEP SINKHOLE TYPES AREA	2907.373
DEP SINKHOLE TYPES FID	8010

#59 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.

#60 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.

PERIMETER	2577.694
OBJECTID	8915
SHAPE.AREA	167839.242188
SHAPE.LEN	2577.694425
DEP SINKHOLE TYPES AREA	167839.242
DEP SINKHOLE TYPES FID	7948

PERIMETER	166.16
OBJECTID	8107
SHAPE.AREA	1385.716797
SHAPE.LEN	166.160476
DEP SINKHOLE TYPES AREA	1385.717
DEP SINKHOLE TYPES FID	7592

#61 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	65.487
OBJECTID	3294
SHAPE.AREA	192.490234
SHAPE.LEN	65.487465
DEP SINKHOLE TYPES AREA	192.49
DEP SINKHOLE TYPES FID	8000

#62 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	131.441
OBJECTID	8896
SHAPE.AREA	751.683594
SHAPE.LEN	131.440536
DEP SINKHOLE TYPES AREA	751.684
DEP SINKHOLE TYPES FID	7856

#63 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	74.482
OBJECTID	6539
SHAPE.AREA	382.808594
SHAPE.LEN	74.482353
DEP SINKHOLE TYPES AREA	382.809
DEP SINKHOLE TYPES FID	7730

#64 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	485.749
OBJECTID	8120
SHAPE.AREA	9885.646484
SHAPE.LEN	485.748789
DEP SINKHOLE TYPES AREA	9885.646
DEP SINKHOLE TYPES FID	7605

#65 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	26.586
OBJECTID	8367
SHAPE.AREA	20.939453
SHAPE.LEN	26.585948

#66 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	37.636
OBJECTID	8391
SHAPE.AREA	70.292969
SHAPE.LEN	37.635591

DEP SINKHOLE TYPES AREA	20.939
DEP SINKHOLE TYPES FID	7809

DEP SINKHOLE TYPES AREA	70.293
DEP SINKHOLE TYPES FID	7833

#67 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	116.08
OBJECTID	6638
SHAPE.AREA	592.058594
SHAPE.LEN	116.080128
DEP SINKHOLE TYPES AREA	592.059
DEP SINKHOLE TYPES FID	7778

#68 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	128.13
OBJECTID	5235
SHAPE.AREA	997.761719
SHAPE.LEN	128.129932
DEP SINKHOLE TYPES AREA	997.762
DEP SINKHOLE TYPES FID	8048

#69 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	3040.661
OBJECTID	8025
SHAPE.AREA	492315.195313
SHAPE.LEN	3040.661383
DEP SINKHOLE TYPES AREA	492315.195
DEP SINKHOLE TYPES FID	7589

#70 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	343.677
OBJECTID	6540
SHAPE.AREA	3314.482422
SHAPE.LEN	343.676929
DEP SINKHOLE TYPES AREA	3314.482
DEP SINKHOLE TYPES FID	7731

#71 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	304.862
OBJECTID	8146
SHAPE.AREA	4381.677734
SHAPE.LEN	304.861701
DEP SINKHOLE TYPES AREA	4381.678
DEP	7886

#72 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1358.288
OBJECTID	8837
SHAPE.AREA	37904.341797
SHAPE.LEN	1358.288478
DEP SINKHOLE TYPES AREA	37904.342
DEP	7908

SINKHOLE TYPES FID	

SINKHOLE TYPES FID	

#73 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	101.866
OBJECTID	8863
SHAPE.AREA	491.939453
SHAPE.LEN	101.866463
DEP SINKHOLE TYPES AREA	491.939
DEP SINKHOLE TYPES FID	7845

#74 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	80.048
OBJECTID	7314
SHAPE.AREA	334.240234
SHAPE.LEN	80.048215
DEP SINKHOLE TYPES AREA	334.24
DEP SINKHOLE TYPES FID	7726

#75 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	145.532
OBJECTID	6443
SHAPE.AREA	933.875
SHAPE.LEN	145.531623
DEP SINKHOLE TYPES AREA	933.875
DEP SINKHOLE TYPES FID	7679

#76 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	64.177
OBJECTID	7192
SHAPE.AREA	249.75
SHAPE.LEN	64.176792
DEP SINKHOLE TYPES AREA	249.75
DEP SINKHOLE TYPES FID	7658

#77 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	92.674
OBJECTID	6446
SHAPE.AREA	528.833984
SHAPE.LEN	92.673509
DEP SINKHOLE TYPES AREA	528.834
DEP SINKHOLE TYPES FID	7682

#78 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	170.014
OBJECTID	7210
SHAPE.AREA	1277.482422
SHAPE.LEN	170.014003
DEP SINKHOLE TYPES AREA	1277.482
DEP SINKHOLE TYPES FID	7706

#79 of 259 from Florida Sinkhole Types

#80 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	401.426
OBJECTID	7303
SHAPE.AREA	6866.722656
SHAPE.LEN	401.425514
DEP SINKHOLE TYPES AREA	6866.723
DEP SINKHOLE TYPES FID	7715

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	199.757
OBJECTID	7204
SHAPE.AREA	2282.880859
SHAPE.LEN	199.756544
DEP SINKHOLE TYPES AREA	2282.881
DEP SINKHOLE TYPES FID	7700

#81 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	152.798
OBJECTID	8370
SHAPE.AREA	1103.65625
SHAPE.LEN	152.7981
DEP SINKHOLE TYPES AREA	1103.656
DEP SINKHOLE TYPES FID	7812

#82 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	85.074
OBJECTID	7205
SHAPE.AREA	446.230469
SHAPE.LEN	85.074165
DEP SINKHOLE TYPES AREA	446.23
DEP SINKHOLE TYPES FID	7701

#83 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	712.251
OBJECTID	6554
SHAPE.AREA	25189.785156
SHAPE.LEN	712.250792
DEP SINKHOLE TYPES AREA	25189.785
DEP SINKHOLE TYPES FID	7745

#84 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	89.588
OBJECTID	8383
SHAPE.AREA	534.914063
SHAPE.LEN	89.588182
DEP SINKHOLE TYPES AREA	534.914
DEP SINKHOLE TYPES FID	7825

#85 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes

#86 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes

	are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	160.976
OBJECTID	6553
SHAPE.AREA	1420.84375
SHAPE.LEN	160.97555
DEP SINKHOLE TYPES AREA	1420.844
DEP SINKHOLE TYPES FID	7744

	are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	302.322
OBJECTID	8878
SHAPE.AREA	2919.890625
SHAPE.LEN	302.322094
DEP SINKHOLE TYPES AREA	2919.891
DEP SINKHOLE TYPES FID	7928

#87 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	845.297
OBJECTID	6643
SHAPE.AREA	20058.904297
SHAPE.LEN	845.297307
DEP SINKHOLE TYPES AREA	20058.904
DEP SINKHOLE TYPES FID	7783

#88 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1254.447
OBJECTID	3639
SHAPE.AREA	31749.289063
SHAPE.LEN	1254.447418
DEP SINKHOLE TYPES AREA	31749.289
DEP SINKHOLE TYPES FID	8019

#89 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	155.105
OBJECTID	6542
SHAPE.AREA	1578.003906
SHAPE.LEN	155.105476
DEP SINKHOLE TYPES AREA	1578.004
DEP SINKHOLE TYPES FID	7733

#90 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1210783.57
OBJECTID	6456
SHAPE.AREA	8252395166.04469
SHAPE.LEN	1210783.570406
DEP SINKHOLE TYPES AREA	8252395166.231
DEP SINKHOLE TYPES FID	7015

#91 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	16879.375

#92 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	48.287

OBJECTID	8909
SHAPE.AREA	894763.494141
SHAPE.LEN	16879.374541
DEP SINKHOLE TYPES AREA	894763.494
DEP SINKHOLE TYPES FID	7869

OBJECTID	8808
SHAPE.AREA	135.914063
SHAPE.LEN	48.287124
DEP SINKHOLE TYPES AREA	135.914
DEP SINKHOLE TYPES FID	7904

#93 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	986.497
OBJECTID	8122
SHAPE.AREA	41769.066406
SHAPE.LEN	986.496724
DEP SINKHOLE TYPES AREA	41769.066
DEP SINKHOLE TYPES FID	7607

#94 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	333.211
OBJECTID	8809
SHAPE.AREA	3733.595703
SHAPE.LEN	333.21056
DEP SINKHOLE TYPES AREA	3733.596
DEP SINKHOLE TYPES FID	7905

#95 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	63.332
OBJECTID	8382
SHAPE.AREA	167.007813
SHAPE.LEN	63.332001
DEP SINKHOLE TYPES AREA	167.008
DEP SINKHOLE TYPES FID	7824

#96 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	42.444
OBJECTID	8439
SHAPE.AREA	100.949219
SHAPE.LEN	42.444139
DEP SINKHOLE TYPES AREA	100.949
DEP SINKHOLE TYPES FID	7836

#97 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	152.115
OBJECTID	5742
SHAPE.AREA	1120.111328
SHAPE.LEN	152.114714
DEP	1120.111

#98 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	124.842
OBJECTID	3655
SHAPE.AREA	911.919922
SHAPE.LEN	124.841984
DEP	911.92

SINKHOLE TYPES AREA	
DEP SINKHOLE TYPES FID	8074

SINKHOLE TYPES AREA	
DEP SINKHOLE TYPES FID	8035

#99 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	100.069
OBJECTID	8916
SHAPE.AREA	529.789063
SHAPE.LEN	100.069458
DEP SINKHOLE TYPES AREA	529.789
DEP SINKHOLE TYPES FID	7949

#100 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	33.141
OBJECTID	8142
SHAPE.AREA	55.556641
SHAPE.LEN	33.140516
DEP SINKHOLE TYPES AREA	55.557
DEP SINKHOLE TYPES FID	7882

#101 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	25.948
OBJECTID	8326
SHAPE.AREA	38.742188
SHAPE.LEN	25.948476
DEP SINKHOLE TYPES AREA	38.742
DEP SINKHOLE TYPES FID	7796

#102 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	98.302
OBJECTID	8316
SHAPE.AREA	524.162109
SHAPE.LEN	98.302052
DEP SINKHOLE TYPES AREA	524.162
DEP SINKHOLE TYPES FID	7786

#103 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	25.63
OBJECTID	6568
SHAPE.AREA	30.023438
SHAPE.LEN	25.630051
DEP SINKHOLE TYPES AREA	30.023
DEP SINKHOLE TYPES FID	7759

#104 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	123.44
OBJECTID	8836
SHAPE.AREA	1001.417969
SHAPE.LEN	123.439709
DEP SINKHOLE TYPES AREA	1001.418
DEP SINKHOLE TYPES FID	7907

#105 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1148.271
OBJECTID	6544
SHAPE.AREA	37225.849609
SHAPE.LEN	1148.27145
DEP SINKHOLE TYPES AREA	37225.85
DEP SINKHOLE TYPES FID	7735

#106 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	2464.17
OBJECTID	6547
SHAPE.AREA	231621.125
SHAPE.LEN	2464.170155
DEP SINKHOLE TYPES AREA	231621.125
DEP SINKHOLE TYPES FID	7738

#107 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	153.982
OBJECTID	8892
SHAPE.AREA	1370.595703
SHAPE.LEN	153.981761
DEP SINKHOLE TYPES AREA	1370.596
DEP SINKHOLE TYPES FID	7942

#108 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	431.013
OBJECTID	8913
SHAPE.AREA	7967.085938
SHAPE.LEN	431.013126
DEP SINKHOLE TYPES AREA	7967.086
DEP SINKHOLE TYPES FID	7946

#109 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	107.031
OBJECTID	6564
SHAPE.AREA	449.503906
SHAPE.LEN	107.031315
DEP SINKHOLE TYPES AREA	449.504
DEP SINKHOLE TYPES FID	7755

#110 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	47.619
OBJECTID	6569
SHAPE.AREA	131.222656
SHAPE.LEN	47.61934
DEP SINKHOLE TYPES AREA	131.223
DEP SINKHOLE TYPES FID	7760

#111 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick

#112 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick

DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	43.444
OBJECTID	8899
SHAPE.AREA	119.679688
SHAPE.LEN	43.444106
DEP SINKHOLE TYPES AREA	119.68
DEP SINKHOLE TYPES FID	7859

DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	67.456
OBJECTID	7187
SHAPE.AREA	214.808594
SHAPE.LEN	67.455936
DEP SINKHOLE TYPES AREA	214.809
DEP SINKHOLE TYPES FID	7653

#113 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	159.741
OBJECTID	6441
SHAPE.AREA	1110.322266
SHAPE.LEN	159.741439
DEP SINKHOLE TYPES AREA	1110.322
DEP SINKHOLE TYPES FID	7677

#114 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	71.198
OBJECTID	7274
SHAPE.AREA	221.804688
SHAPE.LEN	71.198113
DEP SINKHOLE TYPES AREA	221.805
DEP SINKHOLE TYPES FID	7660

#115 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	74.308
OBJECTID	6438
SHAPE.AREA	311.113281
SHAPE.LEN	74.308423
DEP SINKHOLE TYPES AREA	311.113
DEP SINKHOLE TYPES FID	7674

#116 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	442.583
OBJECTID	7217
SHAPE.AREA	5428.587891
SHAPE.LEN	442.583087
DEP SINKHOLE TYPES AREA	5428.588
DEP SINKHOLE TYPES FID	7713

#117 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.

#118 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.

PERIMETER	127.838
OBJECTID	7309
SHAPE.AREA	933.898438
SHAPE.LEN	127.838498
DEP SINKHOLE TYPES AREA	933.898
DEP SINKHOLE TYPES FID	7721

PERIMETER	193.265
OBJECTID	7209
SHAPE.AREA	1723.648438
SHAPE.LEN	193.264587
DEP SINKHOLE TYPES AREA	1723.648
DEP SINKHOLE TYPES FID	7705

#119 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	853.296
OBJECTID	6449
SHAPE.AREA	15244.816406
SHAPE.LEN	853.295626
DEP SINKHOLE TYPES AREA	15244.816
DEP SINKHOLE TYPES FID	7685

#120 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	143.76
OBJECTID	8114
SHAPE.AREA	1357.794922
SHAPE.LEN	143.760381
DEP SINKHOLE TYPES AREA	1357.795
DEP SINKHOLE TYPES FID	7599

#121 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1766.345
OBJECTID	8923
SHAPE.AREA	67948.939453
SHAPE.LEN	1766.345111
DEP SINKHOLE TYPES AREA	67948.939
DEP SINKHOLE TYPES FID	7956

#122 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	43802.933
OBJECTID	6579
SHAPE.AREA	2274348.894531
SHAPE.LEN	43802.932515
DEP SINKHOLE TYPES AREA	2274348.895
DEP SINKHOLE TYPES FID	7770

#123 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	35933.929
OBJECTID	8013
SHAPE.AREA	12392683.115234
SHAPE.LEN	35933.928535

#124 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	89.224
OBJECTID	8334
SHAPE.AREA	504.376953
SHAPE.LEN	89.224127

DEP SINKHOLE TYPES AREA	12392683.115
DEP SINKHOLE TYPES FID	7577

DEP SINKHOLE TYPES AREA	504.377
DEP SINKHOLE TYPES FID	7804

#125 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	388.752
OBJECTID	8119
SHAPE.AREA	9603.330078
SHAPE.LEN	388.751874
DEP SINKHOLE TYPES AREA	9603.33
DEP SINKHOLE TYPES FID	7604

#126 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	91.495
OBJECTID	8839
SHAPE.AREA	515.828125
SHAPE.LEN	91.494733
DEP SINKHOLE TYPES AREA	515.828
DEP SINKHOLE TYPES FID	7910

#127 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	101.518
OBJECTID	6645
SHAPE.AREA	635.431641
SHAPE.LEN	101.517691
DEP SINKHOLE TYPES AREA	635.432
DEP SINKHOLE TYPES FID	7785

#128 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	39.129
OBJECTID	8327
SHAPE.AREA	72.3125
SHAPE.LEN	39.129352
DEP SINKHOLE TYPES AREA	72.313
DEP SINKHOLE TYPES FID	7797

#129 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	649.381
OBJECTID	6563
SHAPE.AREA	8205.773438
SHAPE.LEN	649.38119
DEP SINKHOLE TYPES AREA	8205.773
DEP	7754

#130 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	514.129
OBJECTID	6576
SHAPE.AREA	6678.275391
SHAPE.LEN	514.128937
DEP SINKHOLE TYPES AREA	6678.275
DEP	7767

SINKHOLE TYPES FID	

SINKHOLE TYPES FID	

#131 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	211.156
OBJECTID	8893
SHAPE.AREA	2341.580078
SHAPE.LEN	211.156404
DEP SINKHOLE TYPES AREA	2341.58
DEP SINKHOLE TYPES FID	7943

#132 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	78.886
OBJECTID	8868
SHAPE.AREA	360.259766
SHAPE.LEN	78.886375
DEP SINKHOLE TYPES AREA	360.26
DEP SINKHOLE TYPES FID	7850

#133 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	282.666
OBJECTID	8847
SHAPE.AREA	2911.580078
SHAPE.LEN	282.666416
DEP SINKHOLE TYPES AREA	2911.58
DEP SINKHOLE TYPES FID	7918

#134 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	155.665
OBJECTID	6538
SHAPE.AREA	971.125
SHAPE.LEN	155.664586
DEP SINKHOLE TYPES AREA	971.125
DEP SINKHOLE TYPES FID	7729

#135 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	61.877
OBJECTID	6580
SHAPE.AREA	188.292969
SHAPE.LEN	61.876675
DEP SINKHOLE TYPES AREA	188.293
DEP SINKHOLE TYPES FID	7771

#136 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	66.007
OBJECTID	8317
SHAPE.AREA	257.220703
SHAPE.LEN	66.007183
DEP SINKHOLE TYPES AREA	257.221
DEP SINKHOLE TYPES FID	7787

#137 of 259 from Florida Sinkhole Types

#138 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	34.126
OBJECTID	8328
SHAPE.AREA	70.787109
SHAPE.LEN	34.126155
DEP SINKHOLE TYPES AREA	70.787
DEP SINKHOLE TYPES FID	7798

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	3042.52
OBJECTID	8846
SHAPE.AREA	145928.070313
SHAPE.LEN	3042.519986
DEP SINKHOLE TYPES AREA	145928.07
DEP SINKHOLE TYPES FID	7917

#139 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	739.225
OBJECTID	8882
SHAPE.AREA	18279.84375
SHAPE.LEN	739.224708
DEP SINKHOLE TYPES AREA	18279.844
DEP SINKHOLE TYPES FID	7932

#140 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	32.367
OBJECTID	8141
SHAPE.AREA	45.060547
SHAPE.LEN	32.367057
DEP SINKHOLE TYPES AREA	45.061
DEP SINKHOLE TYPES FID	7881

#141 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	371.181
OBJECTID	4798
SHAPE.AREA	7268.212891
SHAPE.LEN	371.180667
DEP SINKHOLE TYPES AREA	7268.213
DEP SINKHOLE TYPES FID	7963

#142 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	417.796
OBJECTID	8849
SHAPE.AREA	7985.974609
SHAPE.LEN	417.795993
DEP SINKHOLE TYPES AREA	7985.975
DEP SINKHOLE TYPES FID	7920

#143 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes

#144 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes

	are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	74.7
OBJECTID	7211
SHAPE.AREA	272.548828
SHAPE.LEN	74.699657
DEP SINKHOLE TYPES AREA	272.549
DEP SINKHOLE TYPES FID	7707

	are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	306.176
OBJECTID	6447
SHAPE.AREA	4222.199219
SHAPE.LEN	306.175697
DEP SINKHOLE TYPES AREA	4222.199
DEP SINKHOLE TYPES FID	7683

#145 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	133.112
OBJECTID	6545
SHAPE.AREA	744.5
SHAPE.LEN	133.111673
DEP SINKHOLE TYPES AREA	744.5
DEP SINKHOLE TYPES FID	7736

#146 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	74793.908
OBJECTID	8145
SHAPE.AREA	6767976.517578
SHAPE.LEN	74793.907773
DEP SINKHOLE TYPES AREA	6767976.517
DEP SINKHOLE TYPES FID	7885

#147 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	109.039
OBJECTID	8845
SHAPE.AREA	685.980469
SHAPE.LEN	109.038771
DEP SINKHOLE TYPES AREA	685.98
DEP SINKHOLE TYPES FID	7916

#148 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	112.877
OBJECTID	3224
SHAPE.AREA	883.443359
SHAPE.LEN	112.877281
DEP SINKHOLE TYPES AREA	883.443
DEP SINKHOLE TYPES FID	7986

#149 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	123.363

#150 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	106.354

OBJECTID	3295
SHAPE.AREA	863.748047
SHAPE.LEN	123.363001
DEP SINKHOLE TYPES AREA	863.748
DEP SINKHOLE TYPES FID	8001

OBJECTID	5752
SHAPE.AREA	643.021484
SHAPE.LEN	106.353821
DEP SINKHOLE TYPES AREA	643.021
DEP SINKHOLE TYPES FID	8084

#151 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	177.566
OBJECTID	8897
SHAPE.AREA	1517.222656
SHAPE.LEN	177.566175
DEP SINKHOLE TYPES AREA	1517.223
DEP SINKHOLE TYPES FID	7857

#152 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	89.145
OBJECTID	6561
SHAPE.AREA	486.609375
SHAPE.LEN	89.145315
DEP SINKHOLE TYPES AREA	486.609
DEP SINKHOLE TYPES FID	7752

#153 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	424.153
OBJECTID	6560
SHAPE.AREA	7272.025391
SHAPE.LEN	424.152957
DEP SINKHOLE TYPES AREA	7272.025
DEP SINKHOLE TYPES FID	7751

#154 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1033.029
OBJECTID	5943
SHAPE.AREA	38820.320313
SHAPE.LEN	1033.028627
DEP SINKHOLE TYPES AREA	38820.32
DEP SINKHOLE TYPES FID	8124

#155 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	185.11
OBJECTID	8380
SHAPE.AREA	1819.208984
SHAPE.LEN	185.109614
DEP	1819.209

#156 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	345.413
OBJECTID	8446
SHAPE.AREA	2919.542969
SHAPE.LEN	345.412845
DEP	2919.543

SINKHOLE TYPES AREA	
DEP SINKHOLE TYPES FID	7822

SINKHOLE TYPES AREA	
DEP SINKHOLE TYPES FID	7843

#157 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	52.269
OBJECTID	8389
SHAPE.AREA	84.136719
SHAPE.LEN	52.269082
DEP SINKHOLE TYPES AREA	84.137
DEP SINKHOLE TYPES FID	7831

#158 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	29.065
OBJECTID	8331
SHAPE.AREA	50.650391
SHAPE.LEN	29.06545
DEP SINKHOLE TYPES AREA	50.65
DEP SINKHOLE TYPES FID	7801

#159 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	515.081
OBJECTID	8917
SHAPE.AREA	10914.580078
SHAPE.LEN	515.080665
DEP SINKHOLE TYPES AREA	10914.58
DEP SINKHOLE TYPES FID	7950

#160 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	508.235
OBJECTID	3310
SHAPE.AREA	11729.833984
SHAPE.LEN	508.234847
DEP SINKHOLE TYPES AREA	11729.834
DEP SINKHOLE TYPES FID	8016

#161 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	73.731
OBJECTID	3218
SHAPE.AREA	207.886719
SHAPE.LEN	73.731165
DEP SINKHOLE TYPES AREA	207.887
DEP SINKHOLE TYPES FID	7980

#162 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	38.901
OBJECTID	8133
SHAPE.AREA	93.628906
SHAPE.LEN	38.901237
DEP SINKHOLE TYPES AREA	93.629
DEP SINKHOLE TYPES FID	7873

#163 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	928.485
OBJECTID	8911
SHAPE.AREA	20448.716797
SHAPE.LEN	928.485045
DEP SINKHOLE TYPES AREA	20448.717
DEP SINKHOLE TYPES FID	7871

#164 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	385.082
OBJECTID	8841
SHAPE.AREA	7894.332031
SHAPE.LEN	385.082318
DEP SINKHOLE TYPES AREA	7894.332
DEP SINKHOLE TYPES FID	7912

#165 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	125.176
OBJECTID	6642
SHAPE.AREA	855.289063
SHAPE.LEN	125.176338
DEP SINKHOLE TYPES AREA	855.289
DEP SINKHOLE TYPES FID	7782

#166 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	33.495
OBJECTID	8908
SHAPE.AREA	40.685547
SHAPE.LEN	33.494785
DEP SINKHOLE TYPES AREA	40.686
DEP SINKHOLE TYPES FID	7868

#167 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	127.589
OBJECTID	8132
SHAPE.AREA	591.416016
SHAPE.LEN	127.588946
DEP SINKHOLE TYPES AREA	591.416
DEP SINKHOLE TYPES FID	7872

#168 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	48.084
OBJECTID	8144
SHAPE.AREA	135.529297
SHAPE.LEN	48.08421
DEP SINKHOLE TYPES AREA	135.529
DEP SINKHOLE TYPES FID	7884

#169 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick

#170 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick

DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	85.141
OBJECTID	6573
SHAPE.AREA	377.810547
SHAPE.LEN	85.140989
DEP SINKHOLE TYPES AREA	377.811
DEP SINKHOLE TYPES FID	7764

DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	114.788
OBJECTID	8440
SHAPE.AREA	502.933594
SHAPE.LEN	114.787591
DEP SINKHOLE TYPES AREA	502.934
DEP SINKHOLE TYPES FID	7837

#171 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	86.76
OBJECTID	6644
SHAPE.AREA	429.1875
SHAPE.LEN	86.759749
DEP SINKHOLE TYPES AREA	429.187
DEP SINKHOLE TYPES FID	7784

#172 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	468.388
OBJECTID	6549
SHAPE.AREA	11210.292969
SHAPE.LEN	468.388171
DEP SINKHOLE TYPES AREA	11210.293
DEP SINKHOLE TYPES FID	7740

#173 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1867.684
OBJECTID	7194
SHAPE.AREA	80207.808594
SHAPE.LEN	1867.683845
DEP SINKHOLE TYPES AREA	80207.809
DEP SINKHOLE TYPES FID	7690

#174 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	563.492
OBJECTID	8894
SHAPE.AREA	18519.535156
SHAPE.LEN	563.492326
DEP SINKHOLE TYPES AREA	18519.535
DEP SINKHOLE TYPES FID	7944

#175 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.

#176 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.

PERIMETER	155.818
OBJECTID	7214
SHAPE.AREA	1227.878906
SHAPE.LEN	155.818363
DEP SINKHOLE TYPES AREA	1227.879
DEP SINKHOLE TYPES FID	7710

PERIMETER	59.779
OBJECTID	6450
SHAPE.AREA	165.644531
SHAPE.LEN	59.779199
DEP SINKHOLE TYPES AREA	165.645
DEP SINKHOLE TYPES FID	7686

#177 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	48.043
OBJECTID	6444
SHAPE.AREA	92.335938
SHAPE.LEN	48.042523
DEP SINKHOLE TYPES AREA	92.336
DEP SINKHOLE TYPES FID	7680

#178 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	119.715
OBJECTID	7212
SHAPE.AREA	586.757813
SHAPE.LEN	119.715498
DEP SINKHOLE TYPES AREA	586.758
DEP SINKHOLE TYPES FID	7708

#179 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	115.255
OBJECTID	7213
SHAPE.AREA	558.515625
SHAPE.LEN	115.254724
DEP SINKHOLE TYPES AREA	558.516
DEP SINKHOLE TYPES FID	7709

#180 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	396.463
OBJECTID	7308
SHAPE.AREA	5159.078125
SHAPE.LEN	396.462643
DEP SINKHOLE TYPES AREA	5159.078
DEP SINKHOLE TYPES FID	7720

#181 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	172.54
OBJECTID	7313
SHAPE.AREA	1611.978516
SHAPE.LEN	172.540078

#182 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	513.414
OBJECTID	7202
SHAPE.AREA	11268.392578
SHAPE.LEN	513.414222

DEP SINKHOLE TYPES AREA	1611.979
DEP SINKHOLE TYPES FID	7725

DEP SINKHOLE TYPES AREA	11268.393
DEP SINKHOLE TYPES FID	7698

#183 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	217.905
OBJECTID	6448
SHAPE.AREA	2359.306641
SHAPE.LEN	217.905429
DEP SINKHOLE TYPES AREA	2359.307
DEP SINKHOLE TYPES FID	7684

#184 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1440.176
OBJECTID	7208
SHAPE.AREA	44133.910156
SHAPE.LEN	1440.175887
DEP SINKHOLE TYPES AREA	44133.91
DEP SINKHOLE TYPES FID	7704

#185 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	902.291
OBJECTID	8891
SHAPE.AREA	26540.894531
SHAPE.LEN	902.291473
DEP SINKHOLE TYPES AREA	26540.895
DEP SINKHOLE TYPES FID	7941

#186 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	71.043
OBJECTID	8118
SHAPE.AREA	358.585938
SHAPE.LEN	71.043123
DEP SINKHOLE TYPES AREA	358.586
DEP SINKHOLE TYPES FID	7603

#187 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	81.262
OBJECTID	8874
SHAPE.AREA	277.779297
SHAPE.LEN	81.261984
DEP SINKHOLE TYPES AREA	277.779
DEP	7924

#188 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	40.986
OBJECTID	8372
SHAPE.AREA	37.484375
SHAPE.LEN	40.985762
DEP SINKHOLE TYPES AREA	37.484
DEP	7814

SINKHOLE TYPES FID	

SINKHOLE TYPES FID	

#189 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	78.56
OBJECTID	5748
SHAPE.AREA	286.970703
SHAPE.LEN	78.560253
DEP SINKHOLE TYPES AREA	286.971
DEP SINKHOLE TYPES FID	8080

#190 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	61.672
OBJECTID	5223
SHAPE.AREA	193.259766
SHAPE.LEN	61.672258
DEP SINKHOLE TYPES AREA	193.26
DEP SINKHOLE TYPES FID	8036

#191 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	307.779
OBJECTID	8320
SHAPE.AREA	2946.421875
SHAPE.LEN	307.778823
DEP SINKHOLE TYPES AREA	2946.422
DEP SINKHOLE TYPES FID	7790

#192 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	133.249
OBJECTID	8368
SHAPE.AREA	970.794922
SHAPE.LEN	133.249282
DEP SINKHOLE TYPES AREA	970.795
DEP SINKHOLE TYPES FID	7810

#193 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	238.254
OBJECTID	8323
SHAPE.AREA	3384.191406
SHAPE.LEN	238.253597
DEP SINKHOLE TYPES AREA	3384.191
DEP SINKHOLE TYPES FID	7793

#194 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	74.659
OBJECTID	6641
SHAPE.AREA	306.283203
SHAPE.LEN	74.659053
DEP SINKHOLE TYPES AREA	306.283
DEP SINKHOLE TYPES FID	7781

#195 of 259 from Florida Sinkhole Types

#196 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	124.982
OBJECTID	8807
SHAPE.AREA	1023.416016
SHAPE.LEN	124.981752
DEP SINKHOLE TYPES AREA	1023.416
DEP SINKHOLE TYPES FID	7903

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	4559.291
OBJECTID	8842
SHAPE.AREA	245245.421875
SHAPE.LEN	4559.290511
DEP SINKHOLE TYPES AREA	245245.422
DEP SINKHOLE TYPES FID	7913

#197 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	42.378
OBJECTID	8866
SHAPE.AREA	101.558594
SHAPE.LEN	42.378436
DEP SINKHOLE TYPES AREA	101.559
DEP SINKHOLE TYPES FID	7848

#198 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	163.642
OBJECTID	8387
SHAPE.AREA	1534.373047
SHAPE.LEN	163.641546
DEP SINKHOLE TYPES AREA	1534.373
DEP SINKHOLE TYPES FID	7829

#199 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	258.963
OBJECTID	3222
SHAPE.AREA	3409.496094
SHAPE.LEN	258.963158
DEP SINKHOLE TYPES AREA	3409.496
DEP SINKHOLE TYPES FID	7984

#200 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	23428.833
OBJECTID	8017
SHAPE.AREA	5502651.580078
SHAPE.LEN	23428.832825
DEP SINKHOLE TYPES AREA	5502651.58
DEP SINKHOLE TYPES FID	7581

#201 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes

#202 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes

	are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	165.03
OBJECTID	8898
SHAPE.AREA	1150.914063
SHAPE.LEN	165.02994
DEP SINKHOLE TYPES AREA	1150.914
DEP SINKHOLE TYPES FID	7858

	are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	75.879
OBJECTID	8904
SHAPE.AREA	244.039063
SHAPE.LEN	75.87868
DEP SINKHOLE TYPES AREA	244.039
DEP SINKHOLE TYPES FID	7864

#203 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	146.203
OBJECTID	8390
SHAPE.AREA	966.498047
SHAPE.LEN	146.20258
DEP SINKHOLE TYPES AREA	966.498
DEP SINKHOLE TYPES FID	7832

#204 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	52.845
OBJECTID	6559
SHAPE.AREA	138.941406
SHAPE.LEN	52.845413
DEP SINKHOLE TYPES AREA	138.941
DEP SINKHOLE TYPES FID	7750

#205 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	76.902
OBJECTID	7316
SHAPE.AREA	321.878906
SHAPE.LEN	76.901538
DEP SINKHOLE TYPES AREA	321.879
DEP SINKHOLE TYPES FID	7728

#206 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	23.652
OBJECTID	6566
SHAPE.AREA	21.164063
SHAPE.LEN	23.652437
DEP SINKHOLE TYPES AREA	21.164
DEP SINKHOLE TYPES FID	7757

#207 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	46.82

#208 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	59.663

OBJECTID	8333
SHAPE.AREA	141.583984
SHAPE.LEN	46.819673
DEP SINKHOLE TYPES AREA	141.584
DEP SINKHOLE TYPES FID	7803

OBJECTID	8870
SHAPE.AREA	148.277344
SHAPE.LEN	59.662911
DEP SINKHOLE TYPES AREA	148.277
DEP SINKHOLE TYPES FID	7852

#209 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	2372.858
OBJECTID	6583
SHAPE.AREA	47588.085938
SHAPE.LEN	2372.857712
DEP SINKHOLE TYPES AREA	47588.086
DEP SINKHOLE TYPES FID	7774

#210 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	107.103
OBJECTID	8369
SHAPE.AREA	584.441406
SHAPE.LEN	107.102525
DEP SINKHOLE TYPES AREA	584.441
DEP SINKHOLE TYPES FID	7811

#211 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	72.824
OBJECTID	8388
SHAPE.AREA	160.101563
SHAPE.LEN	72.824415
DEP SINKHOLE TYPES AREA	160.102
DEP SINKHOLE TYPES FID	7830

#212 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	96.344
OBJECTID	7200
SHAPE.AREA	571.224609
SHAPE.LEN	96.344166
DEP SINKHOLE TYPES AREA	571.225
DEP SINKHOLE TYPES FID	7696

#213 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	68.663
OBJECTID	7198
SHAPE.AREA	281.224609
SHAPE.LEN	68.662784
DEP	281.225

#214 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	307.746
OBJECTID	6440
SHAPE.AREA	3843.826172
SHAPE.LEN	307.745598
DEP	3843.826

SINKHOLE TYPES AREA	
DEP SINKHOLE TYPES FID	7694

SINKHOLE TYPES AREA	
DEP SINKHOLE TYPES FID	7676

#215 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	64.926
OBJECTID	7315
SHAPE.AREA	257.181641
SHAPE.LEN	64.925642
DEP SINKHOLE TYPES AREA	257.182
DEP SINKHOLE TYPES FID	7727

#216 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	62.891
OBJECTID	7206
SHAPE.AREA	163.919922
SHAPE.LEN	62.890994
DEP SINKHOLE TYPES AREA	163.92
DEP SINKHOLE TYPES FID	7702

#217 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	126.676
OBJECTID	7207
SHAPE.AREA	767.841797
SHAPE.LEN	126.676195
DEP SINKHOLE TYPES AREA	767.842
DEP SINKHOLE TYPES FID	7703

#218 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	971.944
OBJECTID	3215
SHAPE.AREA	44882.738281
SHAPE.LEN	971.943635
DEP SINKHOLE TYPES AREA	44882.738
DEP SINKHOLE TYPES FID	7977

#219 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	11141.072
OBJECTID	8848
SHAPE.AREA	1135024.296875
SHAPE.LEN	11141.072356
DEP SINKHOLE TYPES AREA	1135024.297
DEP SINKHOLE TYPES FID	7919

#220 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	51.019
OBJECTID	8336
SHAPE.AREA	125.265625
SHAPE.LEN	51.018714
DEP SINKHOLE TYPES AREA	125.266
DEP SINKHOLE TYPES FID	7806

#221 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	68.416
OBJECTID	8154
SHAPE.AREA	300.425781
SHAPE.LEN	68.416126
DEP SINKHOLE TYPES AREA	300.426
DEP SINKHOLE TYPES FID	7894

#222 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	35.104
OBJECTID	8876
SHAPE.AREA	59.541016
SHAPE.LEN	35.103571
DEP SINKHOLE TYPES AREA	59.541
DEP SINKHOLE TYPES FID	7926

#223 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	343.084
OBJECTID	6558
SHAPE.AREA	4808.736328
SHAPE.LEN	343.084408
DEP SINKHOLE TYPES AREA	4808.736
DEP SINKHOLE TYPES FID	7749

#224 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	47.737
OBJECTID	8871
SHAPE.AREA	88.757813
SHAPE.LEN	47.736522
DEP SINKHOLE TYPES AREA	88.758
DEP SINKHOLE TYPES FID	7853

#225 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	96.252
OBJECTID	3209
SHAPE.AREA	614.431641
SHAPE.LEN	96.25202
DEP SINKHOLE TYPES AREA	614.432
DEP SINKHOLE TYPES FID	7971

#226 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	40.988
OBJECTID	8443
SHAPE.AREA	56.875
SHAPE.LEN	40.988392
DEP SINKHOLE TYPES AREA	56.875
DEP SINKHOLE TYPES FID	7840

#227 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick

#228 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick

DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1008.669
OBJECTID	8806
SHAPE.AREA	29968.892578
SHAPE.LEN	1008.669422
DEP SINKHOLE TYPES AREA	29968.893
DEP SINKHOLE TYPES FID	7902

DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	205.301
OBJECTID	8377
SHAPE.AREA	2638.833984
SHAPE.LEN	205.301162
DEP SINKHOLE TYPES AREA	2638.834
DEP SINKHOLE TYPES FID	7819

#229 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	71.352
OBJECTID	6582
SHAPE.AREA	178.642578
SHAPE.LEN	71.352206
DEP SINKHOLE TYPES AREA	178.643
DEP SINKHOLE TYPES FID	7773

#230 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	184.411
OBJECTID	8111
SHAPE.AREA	1275.615234
SHAPE.LEN	184.410501
DEP SINKHOLE TYPES AREA	1275.615
DEP SINKHOLE TYPES FID	7596

#231 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	53.664
OBJECTID	8862
SHAPE.AREA	159.90625
SHAPE.LEN	53.663508
DEP SINKHOLE TYPES AREA	159.906
DEP SINKHOLE TYPES FID	7844

#232 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	90.639
OBJECTID	8410
SHAPE.AREA	474.054688
SHAPE.LEN	90.63851
DEP SINKHOLE TYPES AREA	474.055
DEP SINKHOLE TYPES FID	7901

#233 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.

#234 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.

PERIMETER	65.787
OBJECTID	6562
SHAPE.AREA	231.003906
SHAPE.LEN	65.786507
DEP SINKHOLE TYPES AREA	231.004
DEP SINKHOLE TYPES FID	7753

PERIMETER	145.287
OBJECTID	8902
SHAPE.AREA	891.767578
SHAPE.LEN	145.287408
DEP SINKHOLE TYPES AREA	891.768
DEP SINKHOLE TYPES FID	7862

#235 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	101.084
OBJECTID	6575
SHAPE.AREA	631.996094
SHAPE.LEN	101.083812
DEP SINKHOLE TYPES AREA	631.996
DEP SINKHOLE TYPES FID	7766

#236 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	45.638
OBJECTID	8321
SHAPE.AREA	104.789063
SHAPE.LEN	45.638323
DEP SINKHOLE TYPES AREA	104.789
DEP SINKHOLE TYPES FID	7791

#237 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	75.434
OBJECTID	8318
SHAPE.AREA	296.328125
SHAPE.LEN	75.433776
DEP SINKHOLE TYPES AREA	296.328
DEP SINKHOLE TYPES FID	7788

#238 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	192.094
OBJECTID	6571
SHAPE.AREA	1933.923828
SHAPE.LEN	192.093884
DEP SINKHOLE TYPES AREA	1933.924
DEP SINKHOLE TYPES FID	7762

#239 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	48.36
OBJECTID	8903
SHAPE.AREA	110.488281
SHAPE.LEN	48.359894

#240 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	349.795
OBJECTID	8138
SHAPE.AREA	3607.470703
SHAPE.LEN	349.794726

DEP SINKHOLE TYPES AREA	110.488
DEP SINKHOLE TYPES FID	7863

DEP SINKHOLE TYPES AREA	3607.471
DEP SINKHOLE TYPES FID	7878

#241 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	22892.278
OBJECTID	8374
SHAPE.AREA	1932880.207031
SHAPE.LEN	22892.278246
DEP SINKHOLE TYPES AREA	1932880.207
DEP SINKHOLE TYPES FID	7816

#242 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	829.508
OBJECTID	8379
SHAPE.AREA	12384.755859
SHAPE.LEN	829.508356
DEP SINKHOLE TYPES AREA	12384.756
DEP SINKHOLE TYPES FID	7821

#243 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	449.129
OBJECTID	3649
SHAPE.AREA	5177.535156
SHAPE.LEN	449.128737
DEP SINKHOLE TYPES AREA	5177.535
DEP SINKHOLE TYPES FID	8029

#244 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	1095.739
OBJECTID	5226
SHAPE.AREA	35040.3125
SHAPE.LEN	1095.739265
DEP SINKHOLE TYPES AREA	35040.312
DEP SINKHOLE TYPES FID	8039

#245 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	55.404
OBJECTID	6567
SHAPE.AREA	158.300781
SHAPE.LEN	55.403826
DEP SINKHOLE TYPES AREA	158.301
DEP	7758

#246 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	473.837
OBJECTID	3637
SHAPE.AREA	11586.943359
SHAPE.LEN	473.836504
DEP SINKHOLE TYPES AREA	11586.943
DEP	8017

SINKHOLE TYPES FID	

SINKHOLE TYPES FID	

#247 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	385.966
OBJECTID	8441
SHAPE.AREA	2959.955078
SHAPE.LEN	385.96616
DEP SINKHOLE TYPES AREA	2959.955
DEP SINKHOLE TYPES FID	7838

#248 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	17926.135
OBJECTID	6585
SHAPE.AREA	655203.972656
SHAPE.LEN	17926.134745
DEP SINKHOLE TYPES AREA	655203.973
DEP SINKHOLE TYPES FID	7776

#249 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	202.531
OBJECTID	8865
SHAPE.AREA	1444.642578
SHAPE.LEN	202.53115
DEP SINKHOLE TYPES AREA	1444.643
DEP SINKHOLE TYPES FID	7847

#250 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	324.884
OBJECTID	8373
SHAPE.AREA	3721.304688
SHAPE.LEN	324.884246
DEP SINKHOLE TYPES AREA	3721.305
DEP SINKHOLE TYPES FID	7815

#251 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	53.544
OBJECTID	7195
SHAPE.AREA	104.871094
SHAPE.LEN	53.543897
DEP SINKHOLE TYPES AREA	104.871
DEP SINKHOLE TYPES FID	7691

#252 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	221.67
OBJECTID	6452
SHAPE.AREA	2390.007813
SHAPE.LEN	221.670112
DEP SINKHOLE TYPES AREA	2390.008
DEP SINKHOLE TYPES FID	7688

#253 of 259 from Florida Sinkhole Types

#254 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	122.979
OBJECTID	6453
SHAPE.AREA	612.236328
SHAPE.LEN	122.978693
DEP SINKHOLE TYPES AREA	612.236
DEP SINKHOLE TYPES FID	7689

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	692.732
OBJECTID	8322
SHAPE.AREA	31538.914063
SHAPE.LEN	692.731553
DEP SINKHOLE TYPES AREA	31538.914
DEP SINKHOLE TYPES FID	7792

#255 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	38.331
OBJECTID	8134
SHAPE.AREA	38.144531
SHAPE.LEN	38.330796
DEP SINKHOLE TYPES AREA	38.145
DEP SINKHOLE TYPES FID	7874

#256 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	85.275
OBJECTID	8442
SHAPE.AREA	280.029297
SHAPE.LEN	85.275405
DEP SINKHOLE TYPES AREA	280.029
DEP SINKHOLE TYPES FID	7839

#257 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	37.304
OBJECTID	8851
SHAPE.AREA	88.091797
SHAPE.LEN	37.304325
DEP SINKHOLE TYPES AREA	88.092
DEP SINKHOLE TYPES FID	7922

#258 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	54.436
OBJECTID	8914
SHAPE.AREA	165.970703
SHAPE.LEN	54.436298
DEP SINKHOLE TYPES AREA	165.971
DEP SINKHOLE TYPES FID	7947

#259 of 259 from Florida Sinkhole Types

AREA DESC	Area IV
DESC 1	Cover is more than 200' thick
DESC 2	Consists of cohesive sediments interlayed with disconnuous c arbonate beds. Sinkholes

	are very few, but several large diamete, deep sinkholes occur. Cover-collapse sinkholes dominate.
PERIMETER	59.124
OBJECTID	6546
SHAPE.AREA	204.816406
SHAPE.LEN	59.123601
DEP SINKHOLE TYPES AREA	204.816
DEP SINKHOLE TYPES FID	7737

No Results Found:
Florida Geologic Survey (FGS)-Swallets

*** END OF REPORT ***

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