## Appendix O

## REPORT OF GEOTECHNICAL INVESTIGATION AND EXISTING FILL EVALUATION

## REPORT OF GEOTECHNICAL INVESTIGATION AND EXISTING FILL EVALUATION

San Diego Corporate Center – Development Site Southwest Corner of Del Mar Heights Road and El Camino Real San Diego, California

> **JOB NO. 07-9487** 31 March 2008

> > Prepared for:

Kilroy Realty Corporation





## Geotechnical Exploration, Inc.

SOIL AND FOUNDATION ENGINEERING • GROUNDWATER • ENGINEERING GEOLOGY

31 March 2008

Kilroy Realty Corporation 3611 Valley Centre Drive, Suite 550 San Diego, CA 92130-3318 Attn: Mr. Randy Jackson

Job No. 07-9487

Subject:

Report of Geotechnical Investigation and Existing Fill Evaluation

San Diego Corporate Center - Development Site

Southwest Corner of Del Mar Heights Road and El Camino Real

San Diego, California

#### Gentlemen:

In accordance with your request, and our proposal of November 6, 2007, Geotechnical Exploration, Inc. has performed a geotechnical investigation and an evaluation of the existing fills for the subject property in San Diego, California. The fieldwork was performed during the period of November 27, 2007, to January 17, 2008.

This opportunity to be of service is sincerely appreciated. Should you have any questions concerning the following report, please do not hesitate to contact us. Reference to our Job No. 07-9487 will expedite a response to your inquiries.

Respectfully submitted,

GEOTECHNICAL EXPLORATION, INC.

Wm. D. Hespeler, G.E. 396

Senior Geotechnical Engineer

Lestie D. Reed, President

C.E.G. 999[exp. 3/31/09]/R.G. 3391





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### REPORT OF GEOTECHNICAL INVESTIGATION AND EXISTING FILL EVALUATION

San Diego Corporate Center – Development Site Southwest Corner of Del Mar Heights Road and El Camino Real San Diego, California

#### JOB NO. 07-9487

The following report presents the findings and recommendations of **Geotechnical Exploration**, **Inc.** for the subject property.

#### I. PROJECT SUMMARY AND SCOPE OF SERVICES

The subject property is a 23-acre site located southwest of the intersection of Del Mar Heights Road and El Camino Real in San Diego, California. The vacant property has been previously mass graded into three relatively flat lots that step up in elevation to the north and west. As indicated in our previous feasibility report dated October 30, 2007, no as-built geotechnical documentation is available for the previous mass grading of the property and the permit for the grading remains open. Although it is our understanding that development plans for the site are uncertain at this time, we anticipate that the site may be developed with office/commercial buildings varying from two to six stories in height and two- and three-level parking structures.

Based on the preceding, the scope of work performed for this investigation included research at the City of San Diego archives with respect to as-built documentation, review of documents and plans noted below, a site reconnaissance and subsurface exploration program, laboratory testing of samples retrieved from the exploration work, geotechnical engineering analysis of the research, field, and laboratory testing data, and the preparation of this report. The primary purpose of this investigation was to evaluate the compaction of the site fills and, if satisfactory results were obtained, provide a detailed investigation report for your evaluation of



the property and submittal to the City to serve as an as-built geotechnical report for purposes of satisfying the permit requirements.

Following is a list of the pertinent geotechnical documents and plans provided us for our study and/or obtained from our research:

- William J. Elliott, July 18, 1986, "Project No. 00407, Reconnaissance Geologic Investigation, Proposed Employment Center Development, Unit 2-D, South of Del Mar Heights Road and West of El Camino Real (new alignment), North City West, San Diego, California."
- Benton Engineering, Inc., July 25, 1986, "Project No. 86-6-14F, Preliminary Soils Investigation, North City West, Employment Center Unit 2D, San Diego, California."
- Rick Engineering Company, signed July 24, 1986, titled "Plans for the Grading of Lot 16 of Map No. 10945 and a Portion of Section T.14S, R.3W., SBM," Sheets 23217-8 and 9-D.
- Rick Engineering Company, "A.L.T.A-A.C.S.M. Land Title Survey" dated October 4, 2007.
- Ardent Environmental Group, Inc., "Phase I Environmental Site Assessment, San Diego Corporate Center, San Diego, California, 92130, Contract No. KIL-P1AGR-007," dated November 30, 2007.
- Geocon, Inc, "Final Report of Testing and Observation Services Performed
   During Site Grading, Neorocrine Biosciences, Carmel Valley Campus, Drawing



No. 32429-D, W.O. No. 421274, San Diego, California," dated May 6, 2006 (adjacent property).

#### II. SITE BACKGROUND

Based on our review of the reports and grading plan provided, the site appears to have been originally mass graded after 1986 and before 1990; no as-built geotechnical grading report was provided and we were unable to locate a report at the City of San Diego archives. The enclosed Site Plan, Figure No. I, was provided by Rick Engineering Company by electronically combining a scanned copy of the 1986 grading plan and the 2007 A.L.T.A. plan they prepared. The topography depicted on the 2007 A.L.T.A. plan and the 1986 grading plan depict similar elevations and it appears the site was graded as shown on the 1986 grading plan.

The 1986 soil and geologic reports indicate that prior to grading the site was underlain at variable depths by dense sands of the Torrey Sandstone formation. The sandstone materials were overlain in a large portion of the site by relatively incompetent materials consisting of undocumented fill, alluvium and colluvium. The soil investigation report recommended that the incompetent materials be removed and replaced as properly compacted structural fill and that all structural fill was to be compacted to a minimum degree of compaction of 90 percent based on ASTM D1557. The report also recommended that subdrains be installed in two major drainage areas prior to filling, as indicated on the 1986 grading plan. Based on our review of the 2006 Geocon grading report for the adjacent property to the south, the western of the planned subdrains was encountered during grading of the property immediately south of the site and the subdrain was connected to the storm drain on that property. We were not able to verify the existence of the eastern subdrain system indicated on the grading plan as it was planned to be connected by lug to an existing main storm drain line in El Camino Real. In light of the fact that



we did not encounter groundwater in that portion of the site, or anywhere else on the site, it is our opinion that verification of the eastern subdrain system is not necessary.

#### III. GEOLOGY AND SEISMICITY

Based on our review of the above referenced reports as well as readily available geotechnical literature and our recent field investigation, the cut portion of the site is underlain by formational materials of the Torrey Sandstone. The remainder of the site is underlain by fill soils overlying the Torrey Sandstone. The formational materials encountered on the site consist of dense to very dense, clayey and silty sand (sandstone). The fill soils encountered at the site consist predominantly of medium dense clayey and silty sands.

Based on formation outcrops and our prior work in the vicinity of the subject property, the Torrey Sandstone is essentially flat-lying with no significant geologic structure such as tilting or folding.

Based on our review of some available published information including the City of San Diego Seismic Safety Study, Geologic Hazards and Faults Map (Sheet 38), there are no faults known to pass through the site. The prominent fault zones generally considered having the most potential for earthquake damage in the vicinity of the site are the active Rose Canyon and Coronado Bank fault zones mapped approximately 3 and 16 miles southwest of the site, respectively, and the active Elsinore and San Jacinto fault zones mapped approximately 31 and 54 miles northeast of the site, respectively.



#### IV. FIELD INVESTIGATION

The field investigation consisted of a surface reconnaissance and a subsurface exploration program utilizing a cone penetrometer rig, a truck-mounted continuous flight auger, and a backhoe. Forty-six cone penetrometer (CPT) soundings (attached in Appendix A) and eleven, 8-inch-diameter, continuous flight auger, geotechnical borings were drilled during the period of November 27 to December 4, 2007. In addition, one exploratory test pit was excavated on January 17, 2008, adjacent to Probe 20 and Boring 20. The soils encountered in the borings and test pit were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (Refer to Appendix B). One downhole shear wave velocity measurement was also obtained in CPT 33 (see Appendix A). The locations of the penetrometer soundings, borings, and test pit are shown on Figure No. I. The CPT probe and boring designations are the last two digits of the 2000 series grid points indicated on the plan.

The cone penetrometer soundings were generally located on a 150-foot grid pattern to provide a spatially arbitrary, continuous record of penetration resistance in the fills. The exploratory boring locations were selected to secure samples for laboratory density testing of the in-place fill soils where, in general, lower penetration values were very occasionally measured in the CPT probes. The exploratory test pit was excavated adjacent to CPT 20 and Boring to 20 allow direct visual observation of the fill soils at that location and to perform in-place field density tests in accordance with ASTM D1556 at the location of lower CPT test data. Bulk samples were obtained from the borings and test pit for laboratory maximum density determinations in accordance with ASTM D1557-07.

Standard penetration resistance blow counts were obtained in the borings by driving a 2-inch O.D. split spoon sampler and relatively undisturbed liner samples and bulk



samples of the fill soils were obtained in the borings for laboratory density determinations of the liner samples and laboratory maximum density determinations in accordance with ASTM D1557. This data was obtained for correlation with the CPT data. Standard penetration resistance blow counts were obtained by driving a 2-inch O.D. split spoon sampler with a 140-pound hammer dropping through a 30-inch free fall. The sampler was driven a maximum of 18 inches and the number of blows for each 6-inch interval was recorded. The blows per foot indicated on the boring logs represent the accumulated number of blows that were required to drive the last 12 inches or portion thereof. contained in liners were recovered by driving a 3.0-inch O.D. California sampler 18 inches into the soil using a 140-pound hammer. The samplers were driven a maximum of 18 inches and the number of blows for each 6-inch interval was The blows per foot indicated on the boring logs represent the accumulated number of blows that were required to drive the last 12 inches or portion thereof. All samples were returned to our laboratory for evaluation and testing.

Boring and test pit logs have been prepared on the basis of our observations and laboratory testing results. Logs of the borings and test pit are attached as Figure Nos. II and III, respectively. The following chart provides an in-house correlation between the number of blows and the relative density of the soil for the Standard Penetration Test and Modified California samples.



SOIL	DENSITY DESIGNATION	2-INCH O.D. SAMPLER BLOWS/FOOT	3-INCH O.D. SAMPLER BLOWS/FOOT
Sand and	Very loose	0-4	0-7
Nonplastic Silt	Loose	5-10	8-20
	Medium	11-30	21-53
	Dense	31-50	54-98
	Very Dense	Over 50	Over 98
Clay and	Very soft	0-2	0-2
Plastic Silt	Soft	3-4	3-4
	Firm	5-8	5-9
	Stiff	9-15	10-18
	Very stiff	16-30	19-45
	Hard	31-60	46-90
	Very Hard	Over 60	Over 90

#### V. GROUNDWATER

Free groundwater was not encountered in the penetrometer soundings, exploratory borings or exploratory test pit. It must be noted, however, that fluctuations in the level of groundwater may occur due to variations in ground surface topography, subsurface stratification, rainfall, and other possible factors which may not have been evident at the time of our field investigation.

It should be kept in mind that grading operations can change surface drainage patterns and/or reduce permeabilities due to the densification of compacted soils. Such changes of surface and subsurface hydrologic conditions, plus irrigation of landscaping or significant increases in rainfall, may result in the appearance of surface or near-surface water at locations where none existed previously. The appearance of such water is expected to be localized and cosmetic in nature, if good positive drainage is implemented, as recommended in this report, during and at the completion of construction.



It must be understood that unless discovered during initial site exploration or encountered during site grading operations, it is extremely difficult to predict if or where perched or true groundwater conditions may appear in the future. When site fill or formational soils are fine-grained and of low permeability, water problems may not become apparent for extended periods of time.

Water conditions, where suspected or encountered during construction, should be evaluated and remedied by the project civil and geotechnical consultants. The project developer and property owner, however, must realize that post-construction appearances of groundwater may have to be dealt with on a site-specific basis.

#### VI. LABORATORY TESTS

Twenty-two No. 200 sieve tests (ASTM D1140-00) were performed on selected samples of the subsurface soils to aid in classifying the soils according to the Unified Soil Classification System.

The water content and dry unit weight was determined on 49 relatively undisturbed samples of the existing fill soils retrieved from the borings in liners with the Modified California Sampler. In addition, laboratory, oven dried, moisture determinations were made on samples of the soils encountered in the in-place density tests (ASTM D1556-07) performed in the exploratory test pit.

Six laboratory compaction tests and five compaction test check points (ASTM D1557-07) were performed on representative bulk samples of the existing fill soils retrieved from the borings and test pit.

The purpose of the dry unit weight tests and laboratory compaction tests was to aid in evaluating the compactness of the existing fill soils.



The laboratory test results are shown on the exploratory boring and test pit logs at the appropriate depths.

#### VII. SOIL DESCRIPTION

Existing fill soils comprised of medium dense clayey and silty sands were encountered in all the borings to depths of 12.5 to 35 feet. In Borings 24, 30, and 33, the fill soils were underlain by dense to very dense, natural, clayey and silty sands (formational sandstone) at depths of 12.5 to 27 feet. Existing fill soils comprised of medium dense clayey and silty sands were also encountered in the exploratory test pit to the depth excavated of 12 feet. Based on our laboratory testing and past experience with similar materials, the fill and formational materials encountered in the borings and test pit have a low to very low potential for expansion.

The CPT, exploratory boring and exploratory test pit logs and related information depict subsurface conditions only at the specific locations shown on the site plan and on the particular dates designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these boring locations. Based on the extensive data collected, however, our findings are, in our opinion, representative of existing fill soil conditions.

#### VIII. EVALUATION AND CONCLUSIONS

Although some of the measured degrees of compaction determined from the boring samples and in the exploratory test pit were less than the nominal standard of 90 percent, given the facts that (1) the samples were all selected at the few locations that indicated the lowest cone penetrometer resistance; (2) that the cone penetrometer provides a continuous record of resistance versus an intermittent



sampling of resistance; and 3) that the cone penetrometer soundings predominantly indicate high resistance values indicative of dense soils, it is our opinion that the soil engineering and engineering geologic aspects of the grading are in compliance with the approved geotechnical report and the grading and/or improvement plans (Parcels 1-3, Drawing No. D-23217). Accordingly, it is our opinion that the existing fill soils are, in general, suitable for the support of future buildings and associated improvements.

#### IX. PRELIMINARY RECOMMENDATIONS

#### A. Site Preparation

Due to the effects of weathering and burrowing rodents, we recommend that the existing surface soils (that are not removed by planned cuts) be recompacted to a depth of 2 feet in all areas to receive fill and/or buildings and associated improvements. In addition, with the exception of buildings that are not completely founded on formational sandstone materials, we recommend that the existing fill and/or formational sandstone materials be removed and recompacted in building areas to a depth of 5 feet or equal to the width of the largest footing dimensions, whichever is greater, to minimize the potential for excessive differential settlements. In general, all new fill should be compacted to a minimum degree of compaction of 90 percent.

More detailed earthwork recommendations will be provided when site development plans are finalized.



#### B. Foundations

For preliminary estimating purposes, we anticipate that footings for buildings supported on compacted fill mats (as described above) can be designed for an allowable dead plus live bearing pressure on the order of 4,000 pounds per square foot. Footings for buildings supported completely on formational sandstone materials can be designed for an allowable dead plus live bearing pressure on the order of 8,000 pounds per square foot.

Site-specific seismic design criteria for proposed structures are presented in the following table in accordance with Section 1613 of the 2007 CBC, which incorporates by reference ASCE 7-05 for seismic design. We have determined the mapped spectral acceleration values for the site, based on a latitude of 32.8185 degrees and longitude of -117.1811 degrees, utilizing a program titled "Seismic Hazard Curves, Response Parameters and Design Parameters-v5.0.8," provided by the USGS, which provides a solution for ASCE 7-05 (Section 1613 of the 2007 CBC) utilizing digitized files for the Spectral Acceleration maps. In addition, we have assigned a Site Soil Classification of C.

TABLE I

Mapped Spectral Acceleration Values and Design Parameters

Ss	S <sub>1</sub>	Fa	Fv	Sms	S <sub>m1</sub>	Sds	S <sub>d1</sub>
1.522	0.581	1.0	1.3	1.522	0.755	1.014	0.503

#### X. ADDITIONAL STUDIES

As detailed grading and building plans are developed, we should be retained to develop detailed grading, foundation design, and construction recommendations.



Some additional field exploration and laboratory testing will be required to develop detailed building foundation design and construction criteria.

#### XI. LIMITATIONS

Our services consist of professional opinions and recommendations made in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied.

Our conclusions and recommendations have been based on available data obtained from our research, field investigation and laboratory analysis, as well as our experience with similar soils and formational materials located in this area of San Diego. Of necessity, we must assume a certain degree of continuity between exploratory excavations.

The work performed and recommendations presented herein are the result of an investigation and analysis that meet the contemporary standard of care in our profession within the City of San Diego. No warranty is provided. This report should be considered valid for a period of two (2) years, and is subject to review by our firm following that time.

The firm of **Geotechnical Exploration**, **Inc.** shall not be held responsible for changes to the physical condition of the property, such as addition of fill soils or changing drainage patterns, which occur subsequent to issuance of this report and the changes are made without our observations, testing, and approval.



Thank you for this opportunity to be of service. Should you have any questions concerning this project, please do not hesitate to contact our office. Reference to our **Job No. 07-9487** will help to expedite a response to your inquiries.

Respectfully submitted,

GEOTECHNICAL EXPLORATION, INC.

Wm. D. Hespeler, G.E. 396 Senior Geotechnical Engineer Leslie D. Reed, President

C.E.G. 999[exp. 3/31/09]/R.G. 3391







EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch diameter Boring	12-4-07
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 182.8' Mean Sea Level	Not Encountered	so

()			FIELD DESCRIP AND CLASSIFICATI			E (%)	DRY (pcf)	E (%)	(pdl)	.D.)	(%)	H.	O.D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2 -			CLAYEY AND SILTY SAND fine medium-grained. Medium dense brown.  FILL (Qaf)		SC- SM								
6 -													
8 -		X	<ul><li>Bulk bag sample from 7'-10'.</li><li>36% passing #200 sieve.</li></ul>			In the same and	110.4			88		29	3
10 -			<ul> <li>25% passing #200 sieve.</li> </ul>			13.7 12.3 12.5	109.1			91 87 88		20	3
12 -													
16 -												36	2
18 -		00000000											
20 -			CLAYEY SAND, fine- to medium Medium dense. Moist. Grayish b	-grained. rown.	SC							19	2
22 -	1		Bottom @ 21.5'	NE (Tt)								i i	
	<u></u>		ERCHED WATER TABLE DOSE BAG SAMPLE	JOB NAME San Diego Corposite Location							Dis		
	1 s	DF FII	-PLACE SAMPLE RIVE SAMPLE ELD DENSITY TEST TANDARD PENETRATION TEST	JOB NUMBER  07-9487 FIGURE NUMBER  IIa	ieigh	_	IEWED BY		WDH	LOG	THE PARTY		)



EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch diameter Boring	12-4-07
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 185.2' Mean Sea Level	Not Encountered	so

(leet)			FIELD DESCRIPTION AND CLASSIFICATION		E RE (%)	E DRY (pd)	M RE (%)	M DRY (pcf)	('O'C	(%)	ĒĪ.	O.D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcl)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2 -			CLAYEY AND SILTY SAND fine- to medium-grained. Medium dense. Moist. Grayish brown.	SC- SM								
4			FILL (Qaf) – 22% passing #200 sieve.		7.2 10.3	125.7 112.5			97 90		55	3"
6 -												
8 -												
10 -												
12 -									3			
14 -												
16 -	₩											
18 -	▓											
20 -	▓											
22 -	▓											
24 -	$\bowtie$		41% passing #200 sieve.	100	13.7 13.8	108.0 115.6			86 92		29	3"
26 -			CLAYEY SAND, fine- to medium-grained.  Dense. Moist. Grayish brown.  TORREY SANDSTONE (Tt)	SC							33	2"
28 -			Bottom @ 26'									

JOB NAME ▼ PERCHED WATER TABLE San Diego Corporate Center - Development Site □ LOOSE BAG SAMPLE SW of Del Mar Heights Rd. & El Camino Real, San Diego, CA 1 IN-PLACE SAMPLE LOG No. REVIEWED BY JOB NUMBER WDH **DRIVE SAMPLE B-22** 07-9487 Geotechnical Exploration, inc. S FIELD DENSITY TEST FIGURE NUMBER STANDARD PENETRATION TEST llb

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED			
CME 55 Auger Drill Rig	8-inch diameter Boring	12-3-07			
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY			
± 215.5' Mean Sea Level	Not Encountered	so			

(eel)			FIELD DESCRIPTI AND CLASSIFICATIO			≘ ₹E (%)	E DRY (pd)	M RE (%)	M DRY (pct)	, D.D.)	(%)	IFT.	O.D.
DEPTH (feel)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2 -			CLAYEY AND SILTY SAND fine- medium-grained. Medium dense. grayish brown.  FILL (Qaf)		SC- SM								
8-													
10 -													\.\.
14 -			23% passing #200 sieve.			12.1	110.9			88		38	3
18 -		X	<ul><li>23% passing #200 sieve.</li><li>Bulk bag sample from 18'-21'.</li><li>30% passing #200 sieve.</li></ul>				109.2 111.1	8.7	128.5	87 86		25	3
24 - 26 -			28% passing #200 sieve.				107.2 114.5			85 91		43	3
28 -			Bottom @ 27'								•		
	Ĭ.	LC	ERCHED WATER TABLE DOSE BAG SAMPLE	JOB NAME San Diego Corp SITE LOCATION SW of Del Mar H			1.35				Diego	o, CA	
	1 s	DF	RIVE SAMPLE	JOB NUMBER  07-9487  FIGURE NUMBER  IIC		1	EWED BY		WDH nical ion, inc.	LOG	No. <b>B-</b>	24	Ļ

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED		
CME 55 Auger Drill Rig	8-inch diameter Boring	12-4-07		
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY		
± 200' Mean Sea Level	Not Encountered	SO		

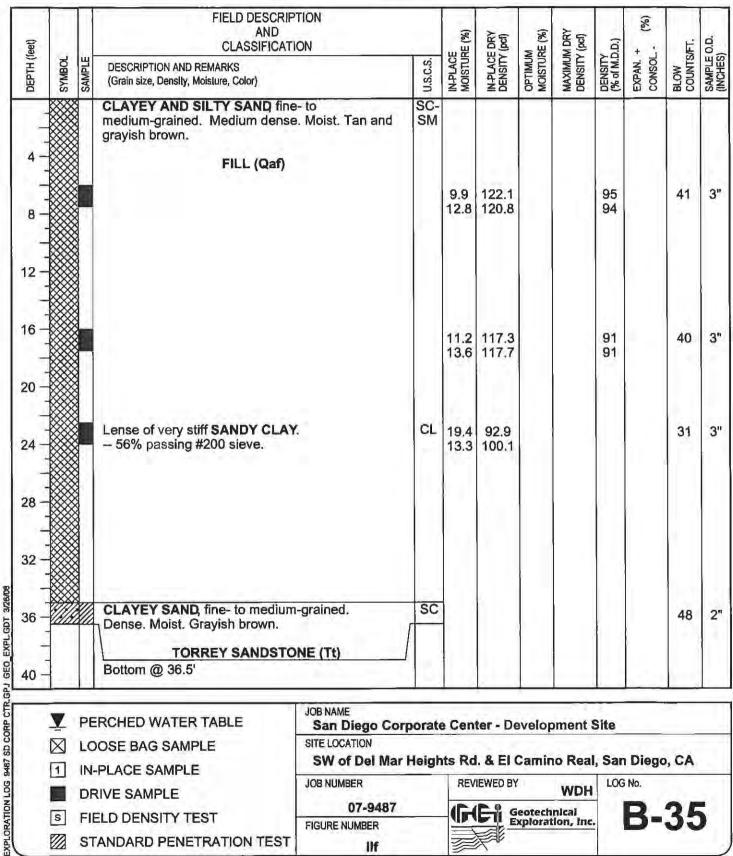
eet)			FIELD DESCRIPTION AND CLASSIFICATION		E (%)	(pd)	A EE (%)	A DRY (pcf)	.D.)	(%)	Ħ.	O.D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2 -			CLAYEY AND SILTY SAND fine- to medium-grained. Medium dense. Moist. Tan and grayish brown.  FILL (Qaf)	SC- SM								
4 -												
8 -					9.9 13.1	117.2 119.0			93 95		48	3
- 0 -		X	Bulk bag sample from 7'-10'.									
2 -			– 26% passing #200 sieve.	l l	13.7 11.3	111.4 104.2			89 83		43	3
4 -			Bottom @ 12.5'						Ü		k.	

JOB NAME ▼ PERCHED WATER TABLE San Diego Corporate Center - Development Site □ LOOSE BAG SAMPLE SW of Del Mar Heights Rd. & El Camino Real, San Diego, CA IN-PLACE SAMPLE REVIEWED BY JOB NUMBER LOG No. WDH DRIVE SAMPLE 07-9487 Geotechnical Exploration, inc. FIELD DENSITY TEST FIGURE NUMBER STANDARD PENETRATION TEST Ild

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch diameter Boring	12-4-07
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 198.2' Mean Sea Level	Not Encountered	WDH

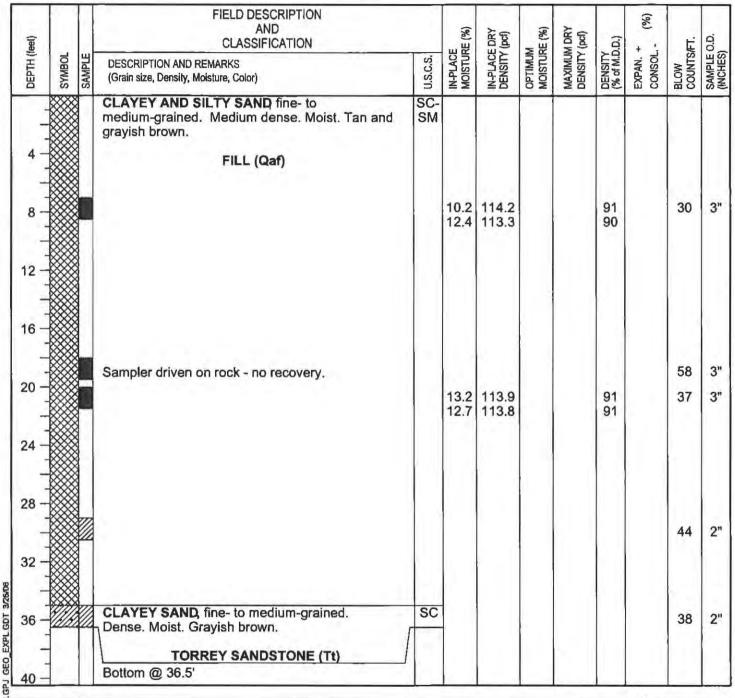
(leet)		200	FIELD DESCRIP AND CLASSIFICATI			E RE (%)	E DRY (pcf)	M RE (%)	M DRY (pdl)	, O.C.)	(%)	JFT.	O.D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcl)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2 -		NACAZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ	CLAYEY AND SILTY SAND fine medium-grained. Medium dense grayish brown.  FILL (Qaf)	e- to e. Moist. Tan and	SC- SM								
6 -													
8 -			Lense of SANDY CLAY.		CL								
12 -	67% passing #200 sieve 37% passing #200 sieve.		67% passing #200 sieve.			9.8 12.7	118.3 118.2	į		92 92		64	3
16 - - 18 -			37% passing #200 sieve.				105.7 111.8			84 89		36	3
20 -			Bottom @ 18.5'										
	Ž.	LO	RCHED WATER TABLE	JOB NAME San Diego Cor SITE LOCATION SW of Del Mar							Diego	, CA	
<ul> <li>IN-PLACE SAMPLE</li> <li>DRIVE SAMPLE</li> <li>FIELD DENSITY TEST</li> <li>STANDARD PENETRATION TEST</li> </ul>				JOB NUMBER  07-9487 FIGURE NUMBER  IIe			EWED BY		WDH nical ion, inc.	LOG	No. <b>B-</b>	33	3

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch diameter Boring	12-4-07
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 215.1' Mean Sea Level	Not Encountered	so



JOB NAME PERCHED WATER TABLE San Diego Corporate Center - Development Site LOOSE BAG SAMPLE SW of Del Mar Heights Rd. & El Camino Real, San Diego, CA **IN-PLACE SAMPLE** JOB NUMBER **REVIEWED BY** LOG No. WDH DRIVE SAMPLE 07-9487 Geotechnical Exploration, inc. B-35 FIELD DENSITY TEST FIGURE NUMBER STANDARD PENETRATION TEST Ilf

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch diameter Boring	12-4-07
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 216.7' Mean Sea Level	Not Encountered	so



JOB NAME ▼ PERCHED WATER TABLE San Diego Corporate Center - Development Site LOOSE BAG SAMPLE SW of Del Mar Heights Rd. & El Camino Real, San Diego, CA IN-PLACE SAMPLE JOB NUMBER **REVIEWED BY** LOG No. WDH DRIVE SAMPLE 07-9487 **B-36** Geotechnical Exploration, inc. s FIELD DENSITY TEST FIGURE NUMBER  $\mathbb{Z}$ STANDARD PENETRATION TEST llg

EXPLORATION LOG 9487 SD CORP

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch diameter Boring	12-4-07
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 202.1' Mean Sea Level	Not Encountered	so

(leet)			FIELD DESCRIP AND CLASSIFICATI	ON		E RE (%)	E DRY (pcf)	M RE (%)	M DRY (pcf)	, O.C.)	(%)	JET.	o.p.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	6	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
4 -			CLAYEY AND SILTY SAND fine medium-grained. Medium dense grayish brown.  FILL (Qaf)	- to Se	C- M				18.9				
8 -			<ul><li>24% passing #200 sieve.</li><li>26% passing #200 sieve.</li></ul>			11.5 11.2	109.8 120.8		Ī	88 96		47	3
12 -						9.1 9.1	118.8 117.6			92 91		68	3
16 -													
20 -													į.
24 -						11.4	117.4			91		38	3
28 -			CLAYEY SAND, fine- to medium Medium dense. Moist. Grayish by TORREY SANDSTO Bottom @ 28.5'	rown.	SC.							24	2
				JOB NAME									_
	⊠ Ā		RCHED WATER TABLE POSE BAG SAMPLE	San Diego Corpor		Jelejek					Dioas	CA	
	1 s	DF FIE	PLACE SAMPLE RIVE SAMPLE ELD DENSITY TEST ANDARD PENETRATION TEST	SW of Del Mar Hei JOB NUMBER 07-9487 FIGURE NUMBER IIh	gn	REV	IEWED BY		WDH	LOG			3

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch diameter Boring	12-3-07
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 200.1' Mean Sea Level	Not Encountered	WDH

(leel)			FIELD DESCRIPTION AND CLASSIFICATION		₹ (%)	E DRY (pcf)	M ₹E (%)	M DRY (pcf)	,D.)	(%)	FT.	O.D.
DEPTH (leel)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pct)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2 -			CLAYEY AND SILTY SAND fine- to medium-grained. Medium dense. Moist. Tan and grayish brown.  FILL (Qaf)	SC- SM								
4 -									6			
6 -			20% passing #200 sieve. 24% passing #200 sieve.		10.6 10.3 10.7	104.5 108.4 110.2			83 86 88		19	3"
8 -			17% passing #200 sieve.		8.7 10.1	112.6 115.2			89 89		44	3"
10 -					<b>\</b>							
12 -												
14 <del>-</del> -		M										ķ
16 -		$\bigvee$	- 20% passing #200 sieve.				8.5	129.0				
18 -			CLAYEY SAND, fine- to medium-grained. Medium dense. Moist. Grayish brown.  TORREY SANDSTONE (Tt)	SC				e e			29	2'
20 -			Bottom @ 18.5'									

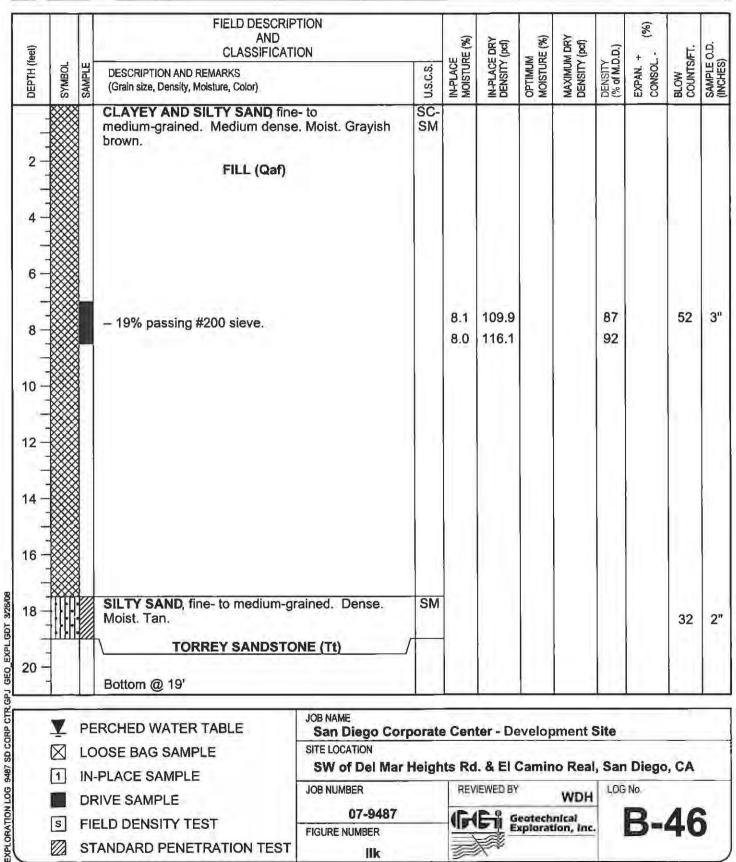
JOB NAME ▼ PERCHED WATER TABLE San Diego Corporate Center - Development Site SW of Del Mar Heights Rd. & El Camino Real, San Diego, CA IN-PLACE SAMPLE JOB NUMBER REVIEWED BY LOG No. WDH **DRIVE SAMPLE** 07-9487 Geotechnical Exploration, Inc. FIELD DENSITY TEST FIGURE NUMBER STANDARD PENETRATION TEST Ili

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch diameter Boring	12-3-07
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 202.6' Mean Sea Level	Not Encountered	WDH

(leel)			FIELD DESCRIPTION AND CLASSIFICATION		E (%)	E DRY (pd)	M ₹E (%)	M DRY (pcf)	('0')	(%)	FT.	0.D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2 -			CLAYEY AND SILTY SAND fine- to medium-grained. Medium dense, Moist, Tan and grayish brown.  FILL (Qaf)	SC- SM								
4 -		$\bigvee$	- 16% passing #200 sieve.	1			8.0	126.5				
6 -			17% passing #200 sieve.		10.5 11.9	112.8 115.5			89 91		29	3"
8 -							- 8					
10 -												Į.
12 -												
14 –								1				
16 -												
18 -		M					100.0					
20 -		$\bigvee$	- 21% passing #200 sieve.  SILTY SAND, fine- to medium-grained. Dense.	SM			11.0	125.5				
22 -			Moist. Grayish brown.  TORREY SANDSTONE (Tt)	-	-						40	2"
			Bottom @ 21.5'									

JOB NAME ▼ PERCHED WATER TABLE San Diego Corporate Center - Development Site SW of Del Mar Heights Rd. & El Camino Real, San Diego, CA 1 IN-PLACE SAMPLE JOB NUMBER REVIEWED BY LOG No. WDH DRIVE SAMPLE 07-9487 Geotechnical Exploration, inc. S FIELD DENSITY TEST FIGURE NUMBER STANDARD PENETRATION TEST

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch diameter Boring	12-4-07
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 214' Mean Sea Level	Not Encountered	so



JOB NAME ▼ PERCHED WATER TABLE San Diego Corporate Center - Development Site LOOSE BAG SAMPLE SW of Del Mar Heights Rd. & El Camino Real, San Diego, CA IN-PLACE SAMPLE REVIEWED BY LOG No. JOB NUMBER WDH **DRIVE SAMPLE** 07-9487 Geotechnical Exploration, inc. FIELD DENSITY TEST FIGURE NUMBER STANDARD PENETRATION TEST llk

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
Rubber-tire Backhoe	2' X 10' X 12' Test Pit	1-17-08
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
	Not Encountered	WDH

(jeet)			FIELD DESCRIP AND CLASSIFICATI			E (%)	DRY (pcf)	# E (%)	A DRY (pcf)	(D.)	(%)	E.	o.b.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2 -	-		CLAYEY AND SILTY SAND fine medium-grained. Medium dense brown.  FILL (Qaf)		SC- SM								
4 -	-	1				10.4	111.8		125.0	89		X	
6 -		2				12.4	119.4		126.0	95			
8 -		3					114.0		123.5	92 95			
10 -		5				13.9	105.7		128.5	82		X.	
12 -		7				13.6 8.1	112.9 110.3		124.5 126.0	91 88			
	-		* Indicates maximum density esti point.	imated from check									
	▼ ⊠	LO	ERCHED WATER TABLE DOSE BAG SAMPLE	JOB NAME San Diego Corp SITE LOCATION SW of Del Mar H							Diego	CA	
	1   s	DF FIE	PLACE SAMPLE RIVE SAMPLE ELD DENSITY TEST ANDARD PENETRATION TEST	JOB NUMBER  07-9487 FIGURE NUMBER	161911	REV	EWED BY	1	WDH nical tion, inc.	LOG	No.	)-1	

# APPENDIX A CPT LOGS



## Flide Early

#### **Geotechnical Exploration**

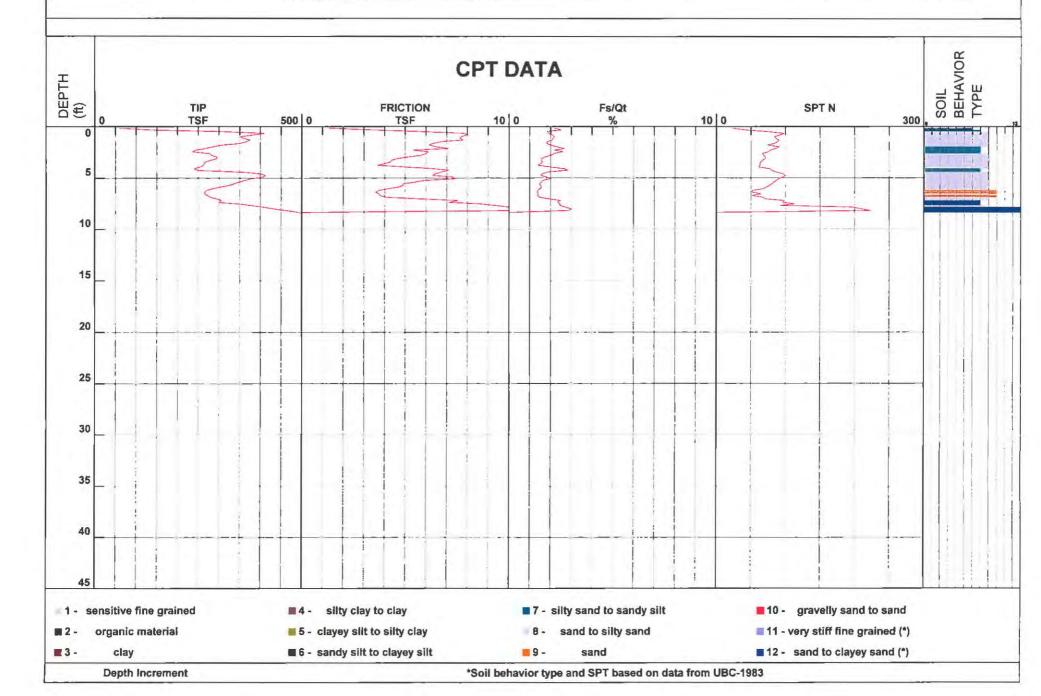
Location
Job Number
Hole Number
Water Table Depth

| Del Mar Heights | | ber | 07-9487 | | ber | CPT-02 Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 4:13:56 PM Filename SDF(437).cpt

GPS

Maximum Depth 8.53 ft

Elevation 217.7



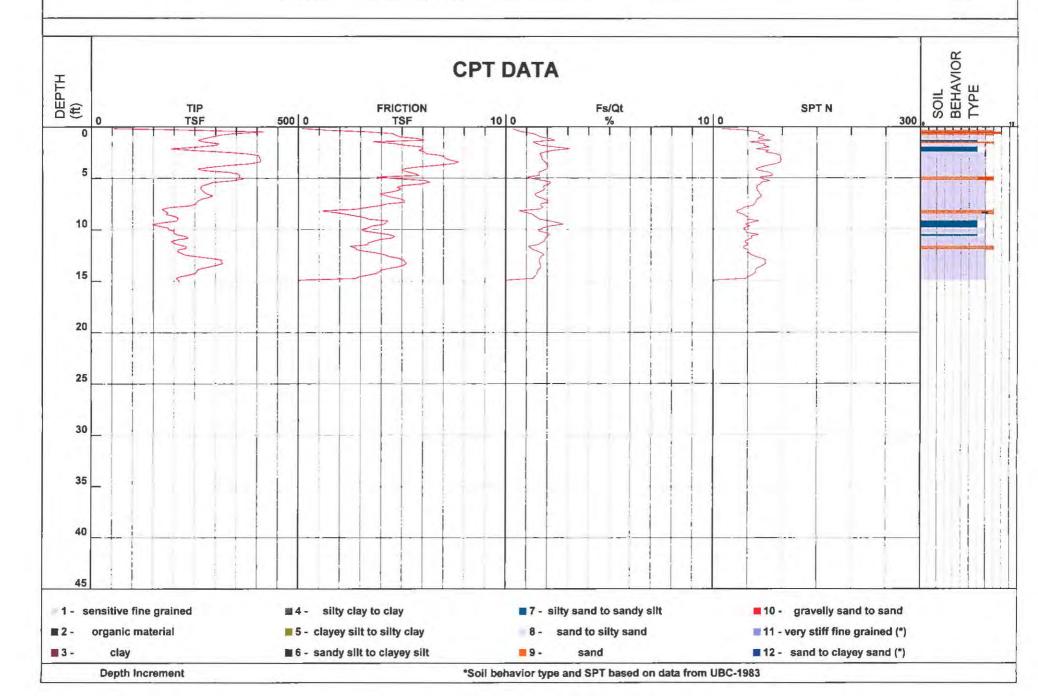


#### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-03

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/30/2007 8:59:59 AM Filename SDF(440).cpt
GPS
Maximum Depth 15.09 ft
Elevation 215.3





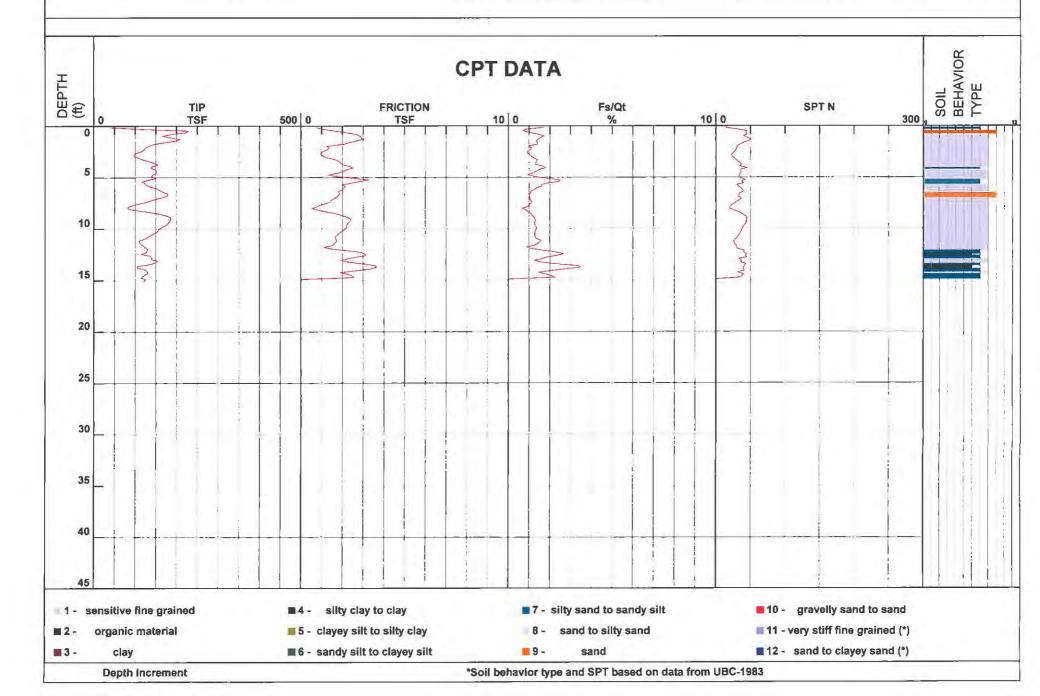
#### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-04

Operator
Cone Number
Date and Time
0.00 ft

ML/CW DSG1023 11/29/2007 3:56:43 PM Filename GPS Maximum Depth Elevation SDF(436).cpt 15.09 ft 216.9



#### Middle Earth Grants-instalke

#### **Geotechnical Exploration**

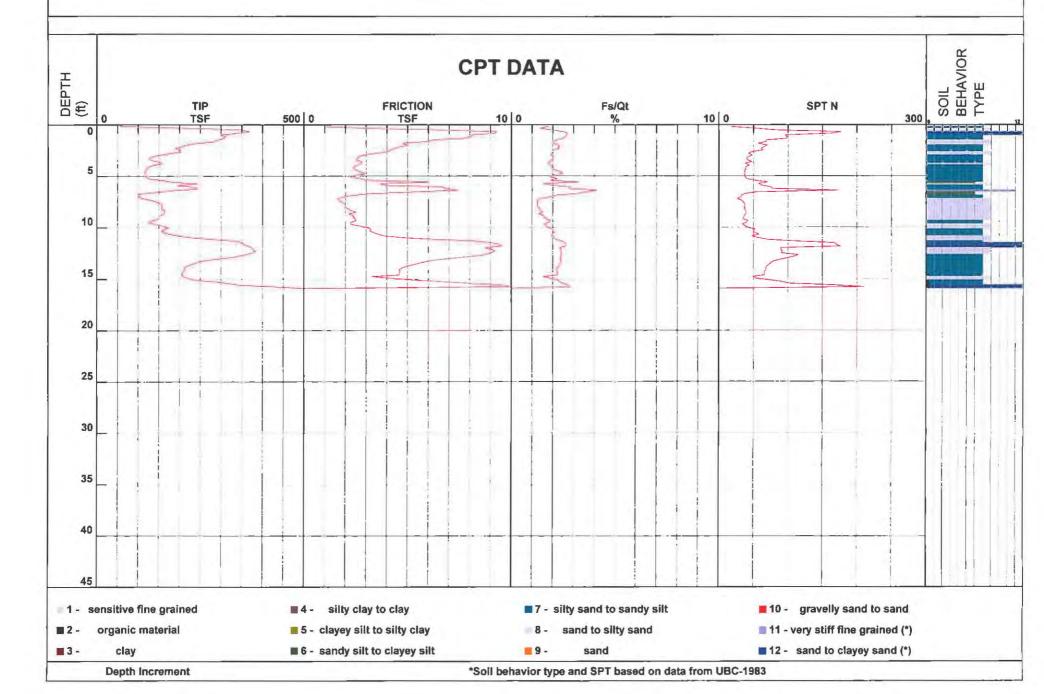
 Location
 Del Mar Heights

 Job Number
 07-9487

 Hole Number
 CPT-05

 Water Table Depth

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 12:13:06 PM Filename SDF(416).cpt
GPS
Maximum Depth 16.08 ft
Elevation 218.6



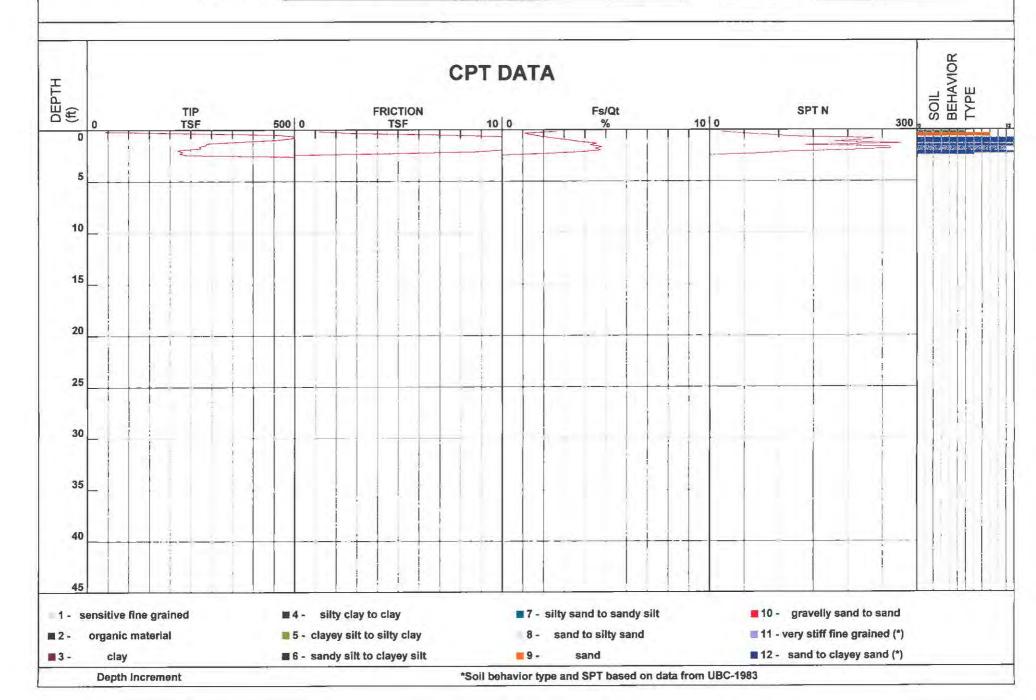


#### **Geotechnical Exploration**

Location \_ Job Number \_ Hole Number

Water Table Depth

Del Mar Heights 07-9487 CPT-06 Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 11:53:12 AM Filename GPS Maximum Depth Elevation 2.62 ft 218.5



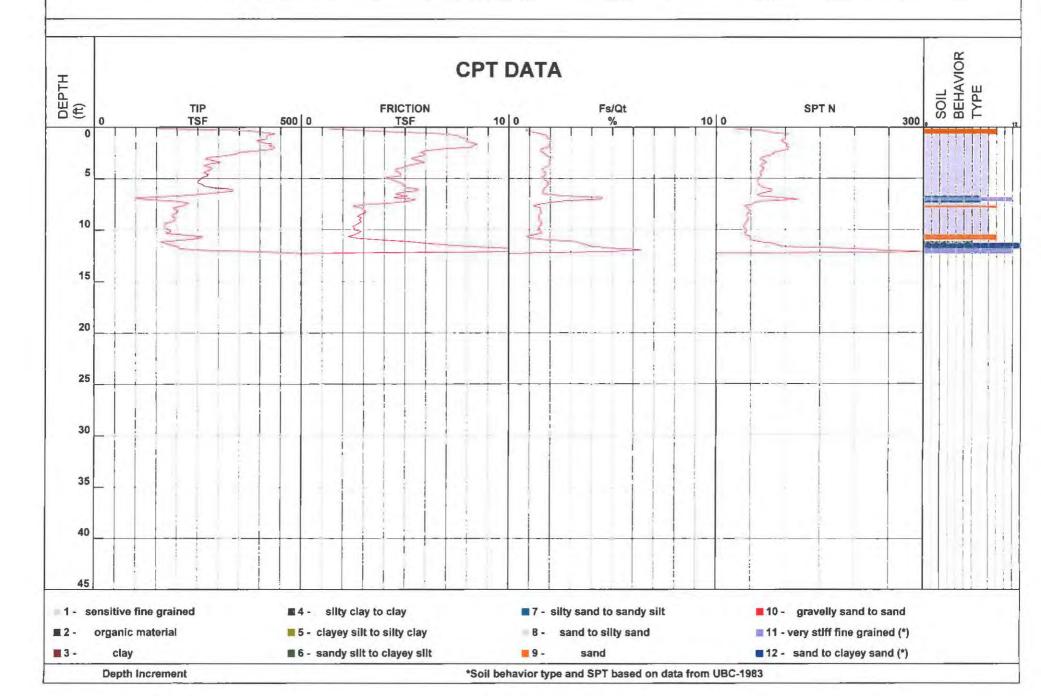
## Gra te han his

#### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-07

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 3:40:19 PM Filename GPS Maximum Depth Elevation SDF(435).cpt 12.47 ft 216.8

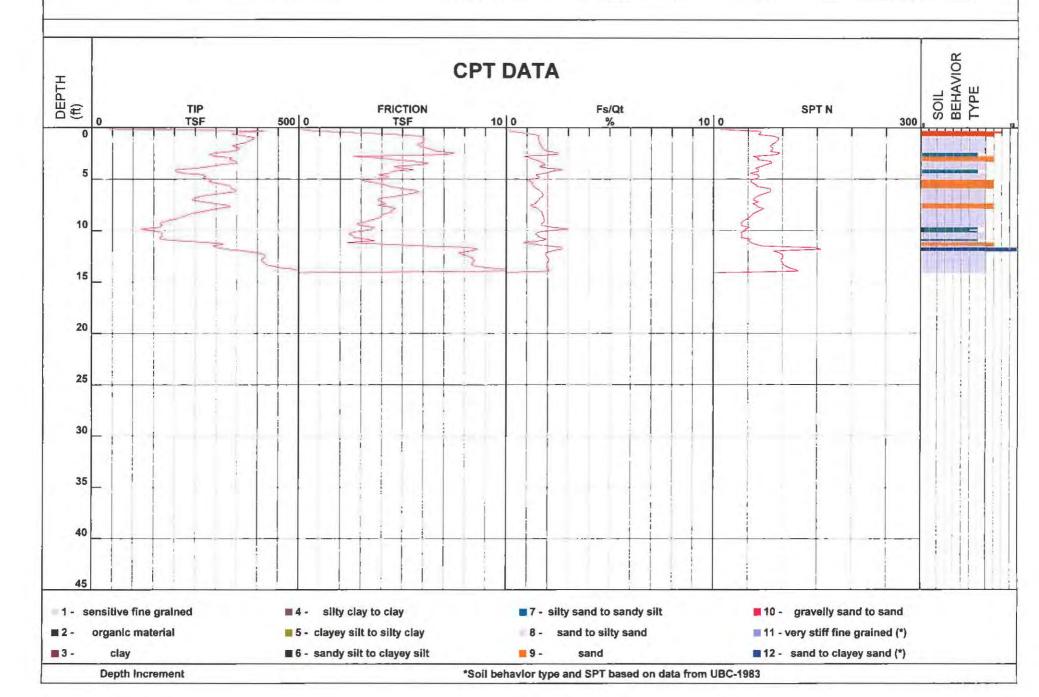


0.00 ft

Location Job Number **Hole Number** Water Table Depth

Del Mar Heights Operator 07-9487 Cone Number CPT-08 **Date and Time** 

ML/CW DSG1023 11/30/2007 9:17:19 AM Filename SDF(441).cpt **GPS** Maximum Depth 14.27 ft Elevation 215.2



## Fliddle Earth

## **Geotechnical Exploration**

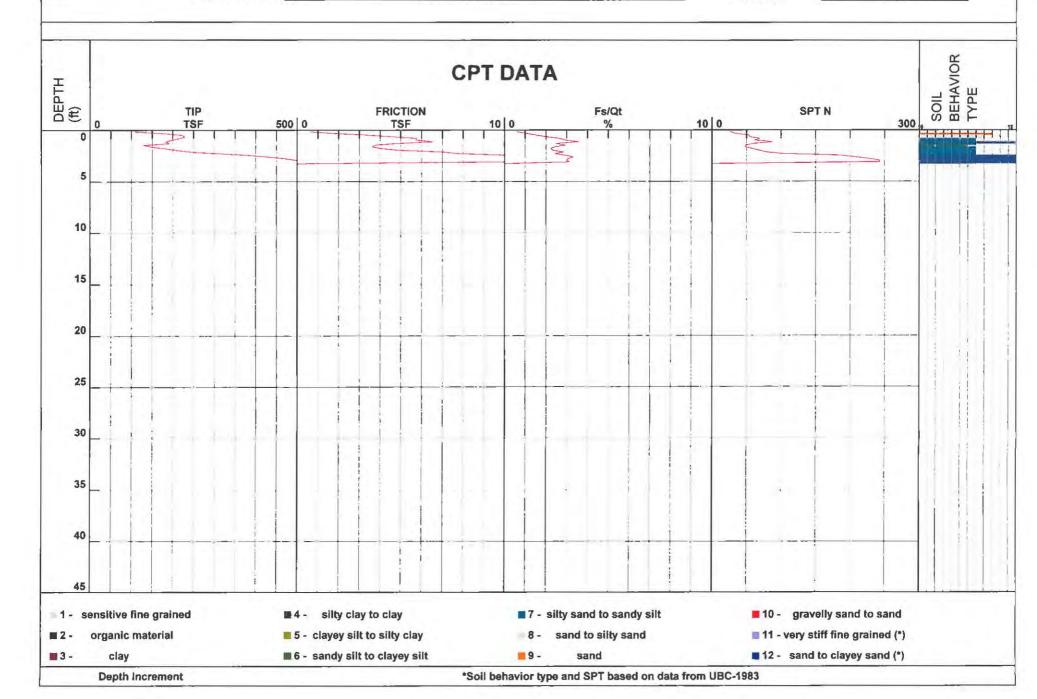
Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-10 Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 3:01:11 PM Filename SDF(419).cpt

GPS

Maximum Depth 3.44 ft

Elevation 186.9





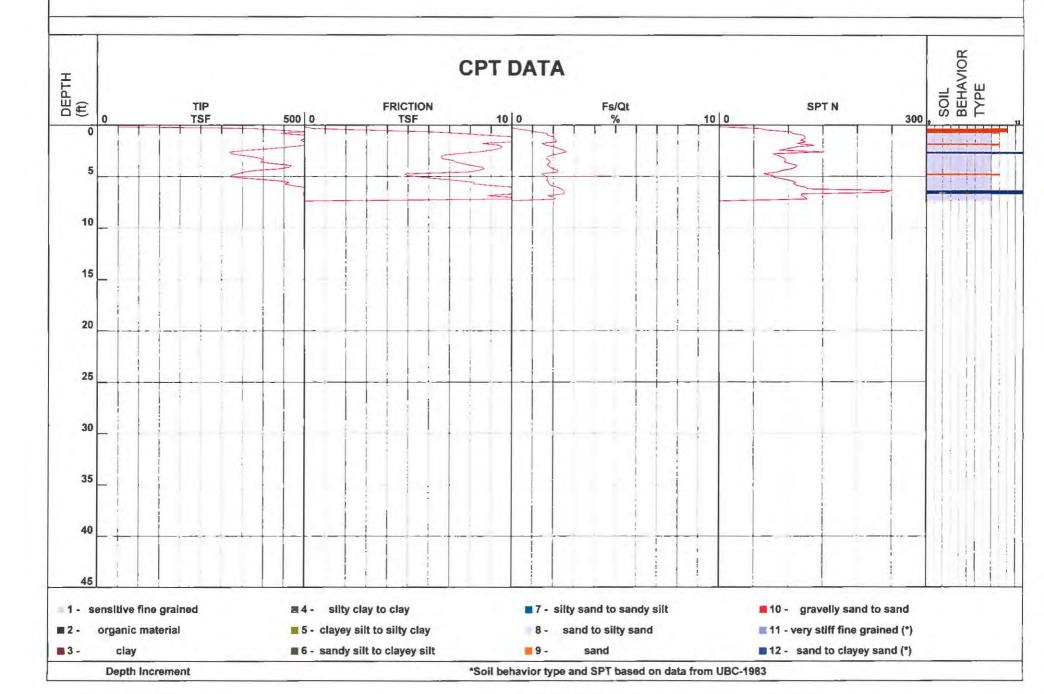
Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-11 Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/30/2007 9:33:56 AM Filename SDF(442).cpt

GPS

Maximum Depth 7.55 ft

Elevation 212.9

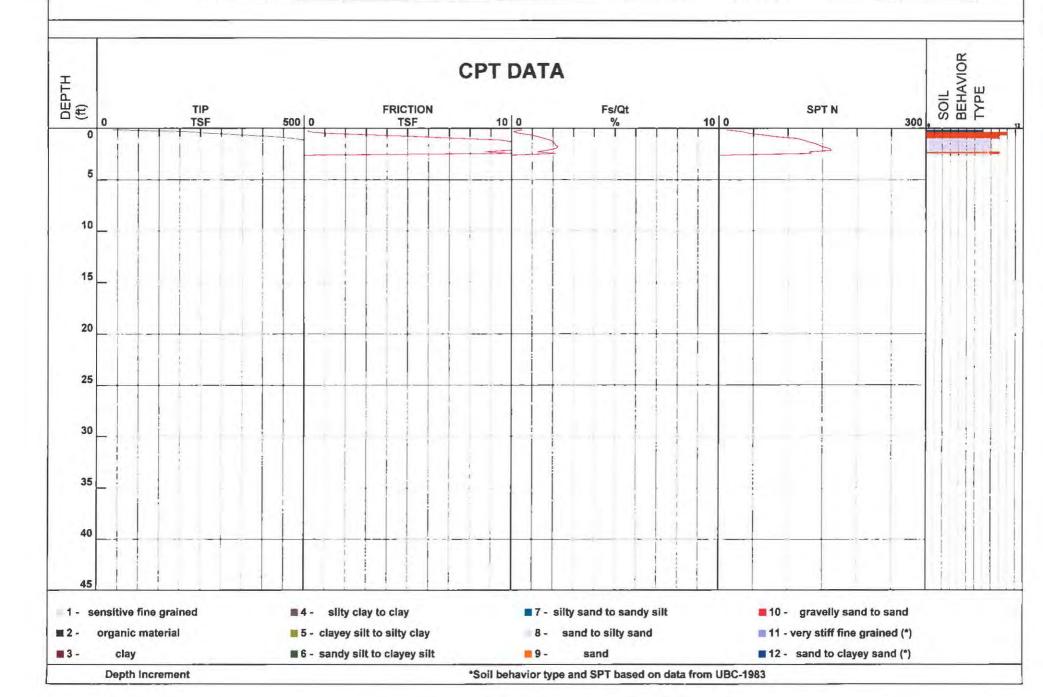




Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-12 Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/30/2007 9:52:31 AM Filename
GPS
Maximum Depth
Elevation

SDF(443).cpt 2.79 ft 215.1





Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights
Der 07-9487
Der CPT-13

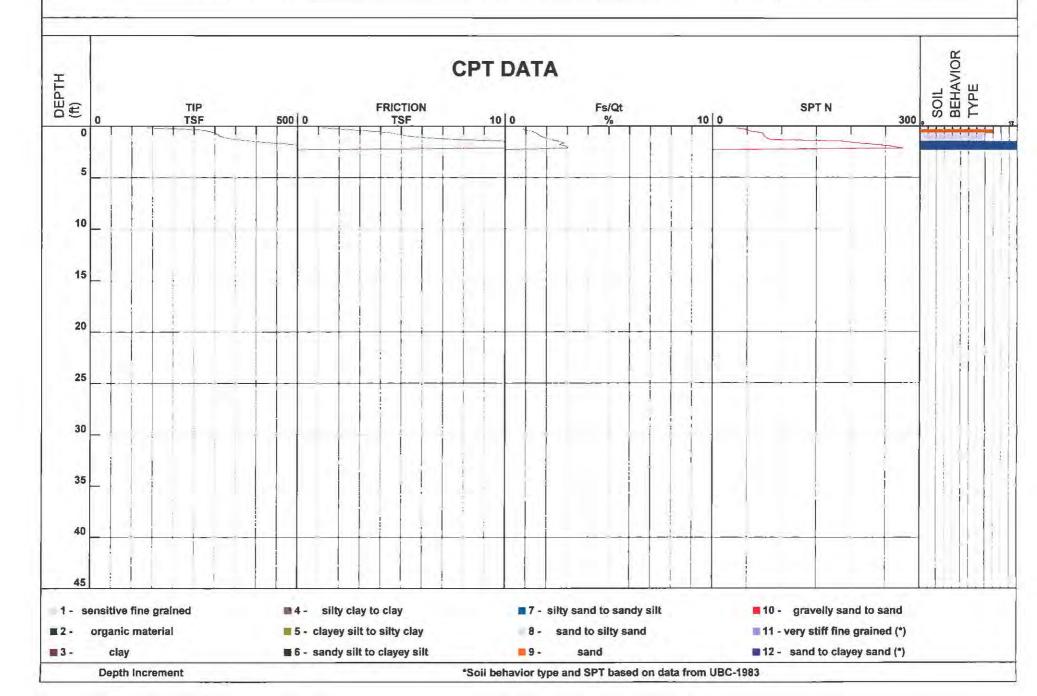
Operator
Cone Number
Date and Time
0.00 ft

ML/CW DSG1023 11/29/2007 3:31:02 PM Filename SDF(434).cpt

GPS

Maximum Depth 2.46 ft

Elevation 216.5



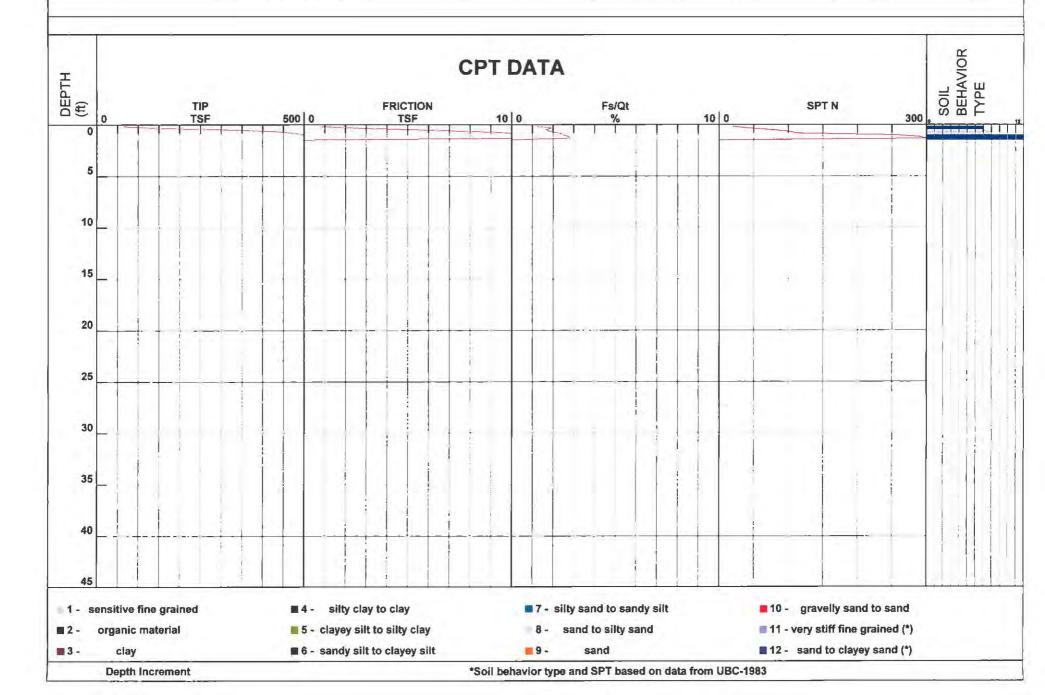
Location Job Number **Hole Number Water Table Depth** 

**Del Mar Heights** 07-9487 CPT-14

Operator Cone Number **Date and Time** 0.00 ft

ML/CW DSG1023 11/28/2007 11:42:37 AM Filename GPS **Maximum Depth** 1.64 ft Elevation 217.8

SDF(414).cpt

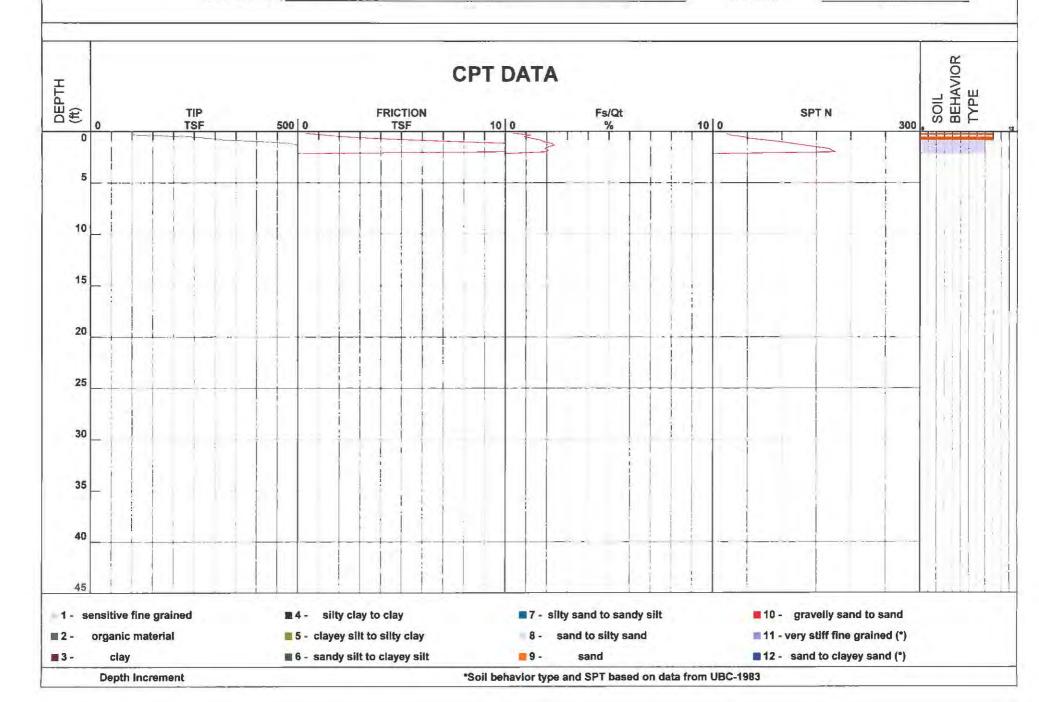




Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-15 Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 11:33:24 AM Filename
GPS
MaxImum Depth
Elevation

SDF(413).cpt 2.30 ft 217.3



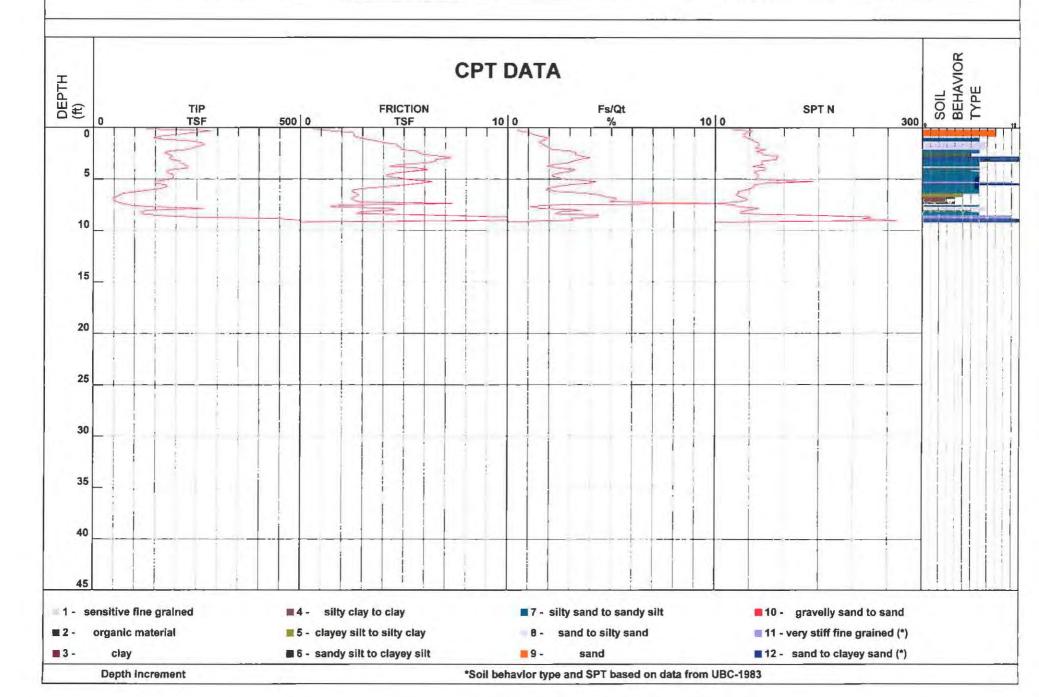
## Middle Earth

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights
07-9487
CPT-16

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 3:18:04 PM Filename GPS Maximum Depth Elevation 9.35 ft 216.7





Location
Job Number
Hole Number
Water Table Depth

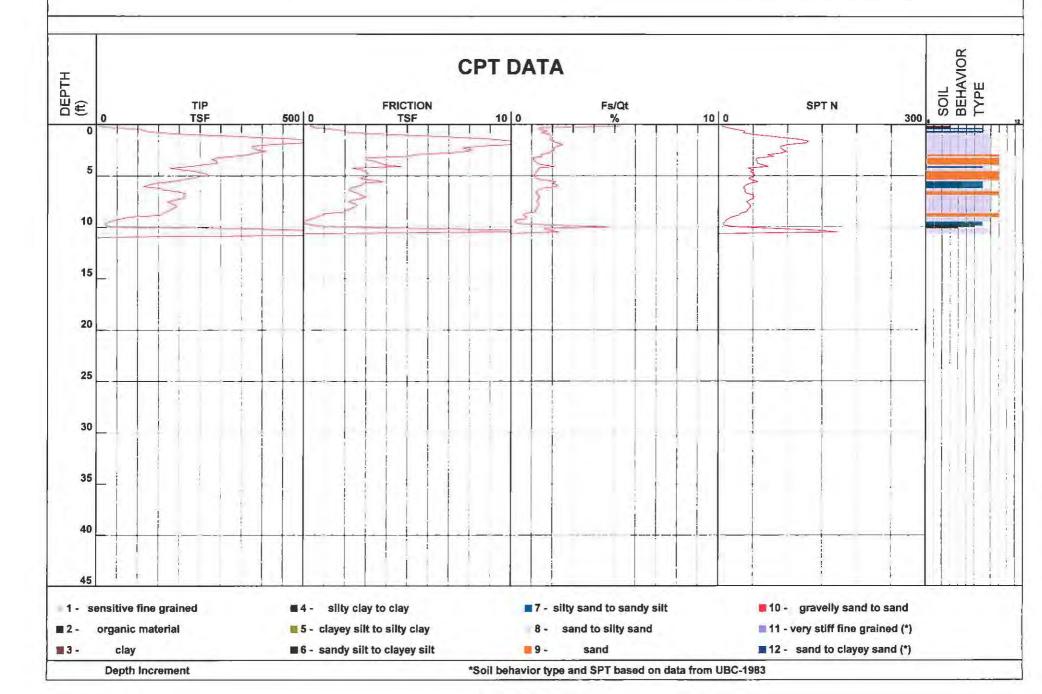
on Del Mar Heights
mber 07-9487
umber CPT-17

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/30/2007 10:19:32 AM Filename SDF(444).cpt

GPS

Maximum Depth 11.15 ft

Elevation 214.7

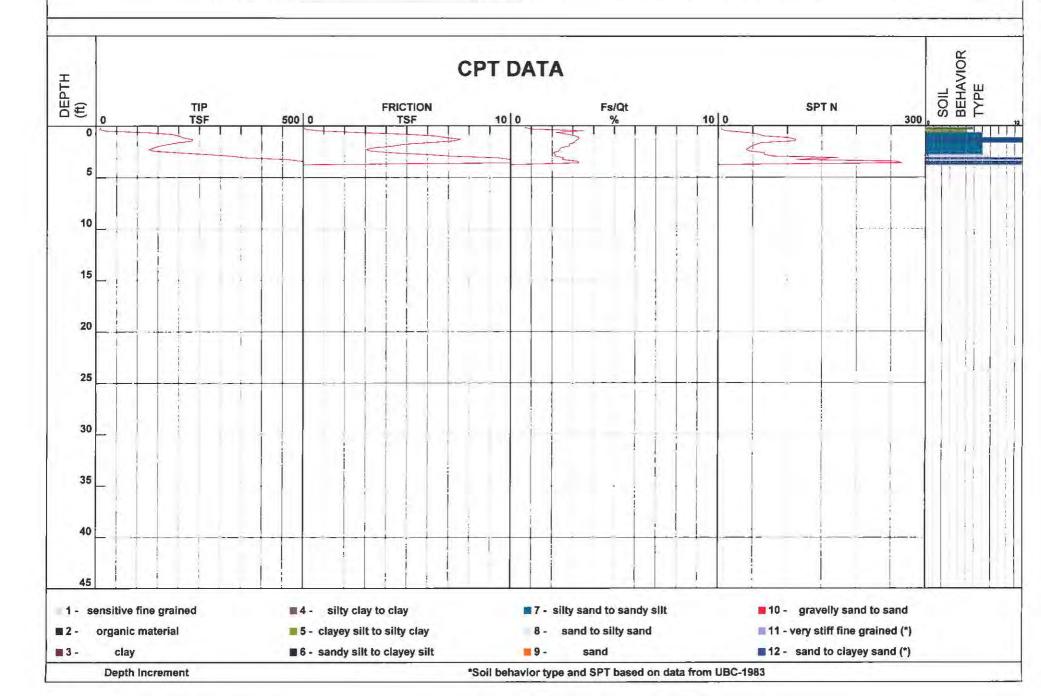




Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-18

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 7:58:18 AM Filename GPS Maximum Depth Elevation SDF(424).cpt 3.94 ft 187.8





 Location
 Del Mar Heights

 Job Number
 07-9487

 Hole Number
 CPT-19

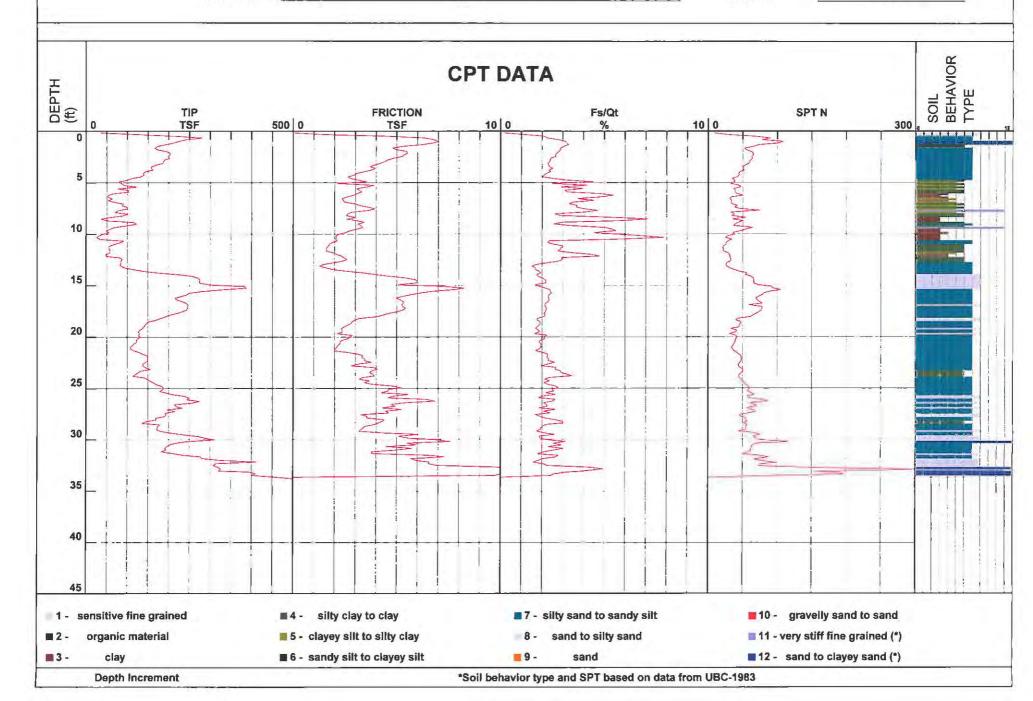
 Water Table Depth

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 2:23:34 PM Filename SDF(418).cpt

GPS

Maximum Depth 33.79 ft

Elevation 186.0



## Middle Earth

## **Geotechnical Exploration**

 Location
 Del Mar Heights

 Job Number
 07-9487

 Hole Number
 CPT-20

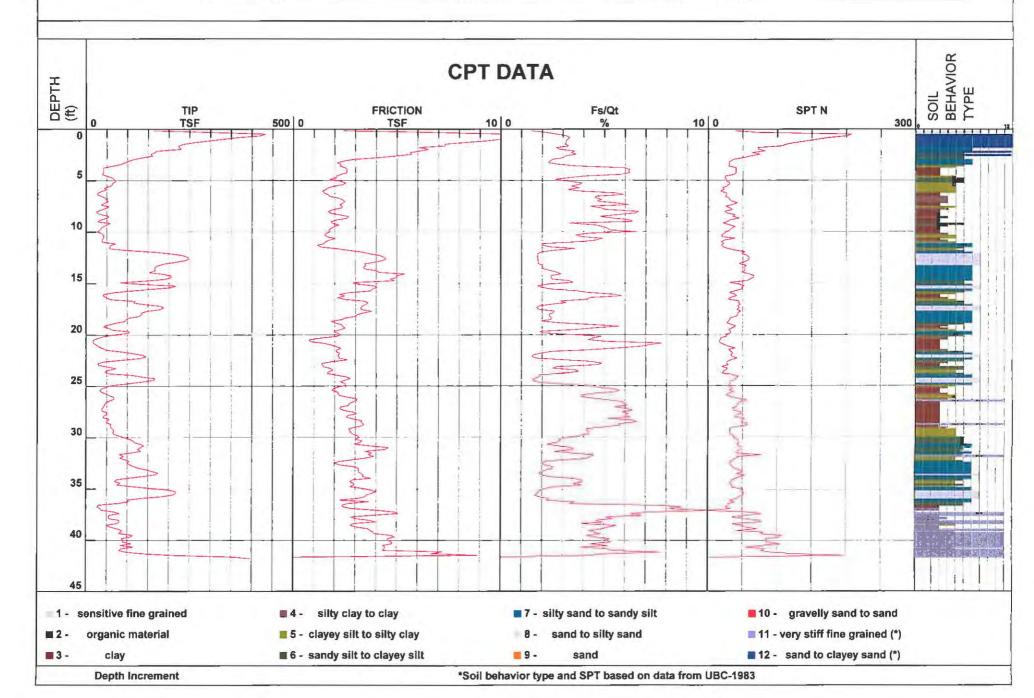
 Water Table Depth

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 3:56:57 PM Filename SDF(422).cpt

GPS

Maximum Depth 41.83 ft

Elevation 182.8



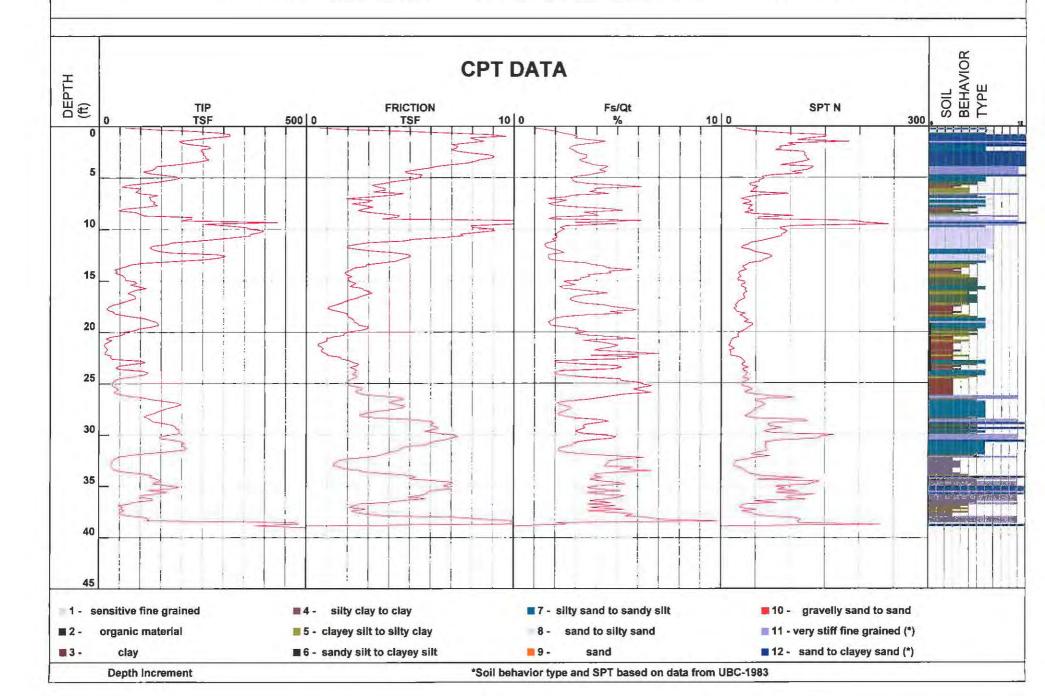
#### Middle Earth 61 on Sunspec

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-21

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 8:16:34 AM Filename GPS Maximum Depth Elevation SDF(425).cpt 39.04 ft 184.1



## Mindle Early Geo resumpling

## **Geotechnical Exploration**

 Location
 Del Mar Heights

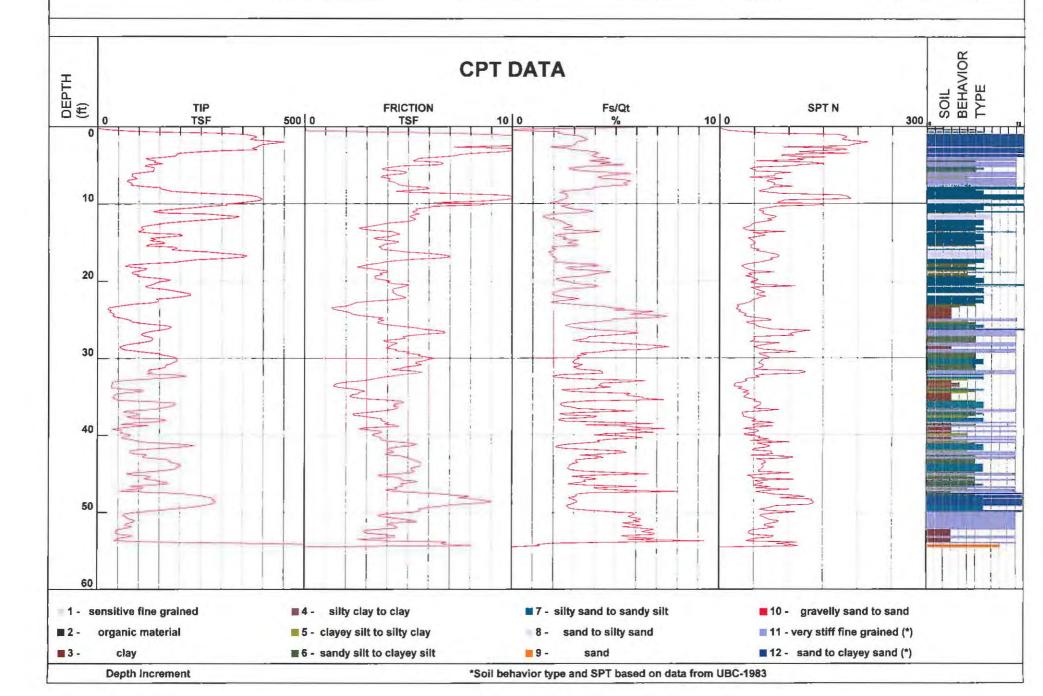
 Job Number
 07-9487

 Hole Number
 CPT-22

 Water Table Depth

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 1:19:54 PM Filename S
GPS
Maximum Depth
Elevation

SDF(417).cpt 54.63 ft 185.



## Middle Earth

## **Geotechnical Exploration**

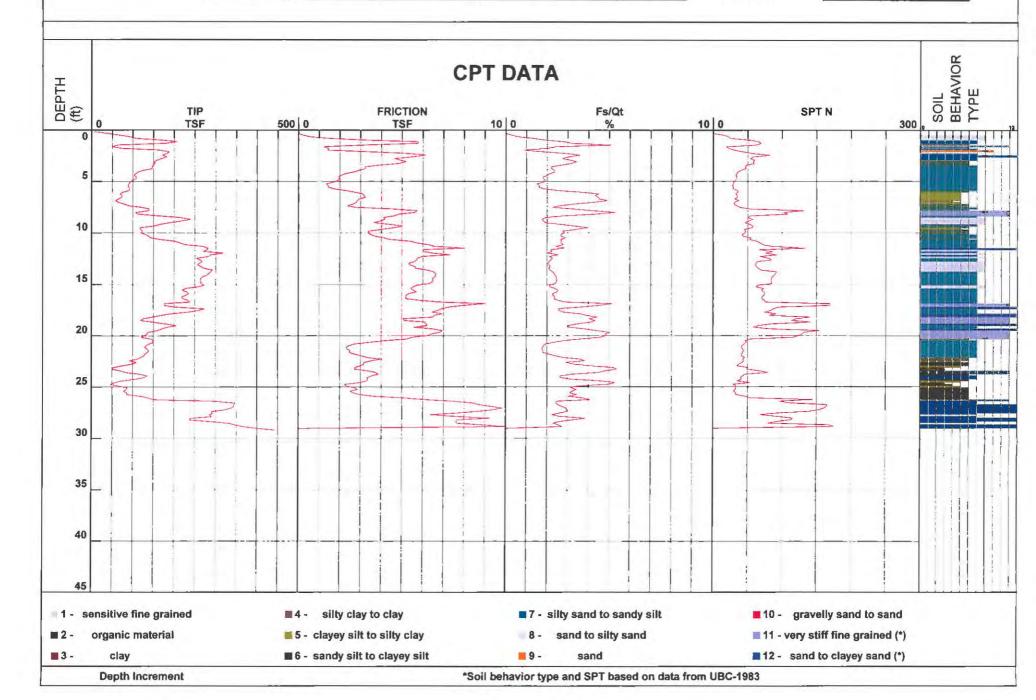
 Location
 Del Mar Heights

 Job Number
 07-9487

 Hole Number
 CPT-23

 Water Table Depth

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 4:40:56 PM Filename GPS Maximum Depth Elevation SDF(423).cpt 29.20 ft 186.6





Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-24

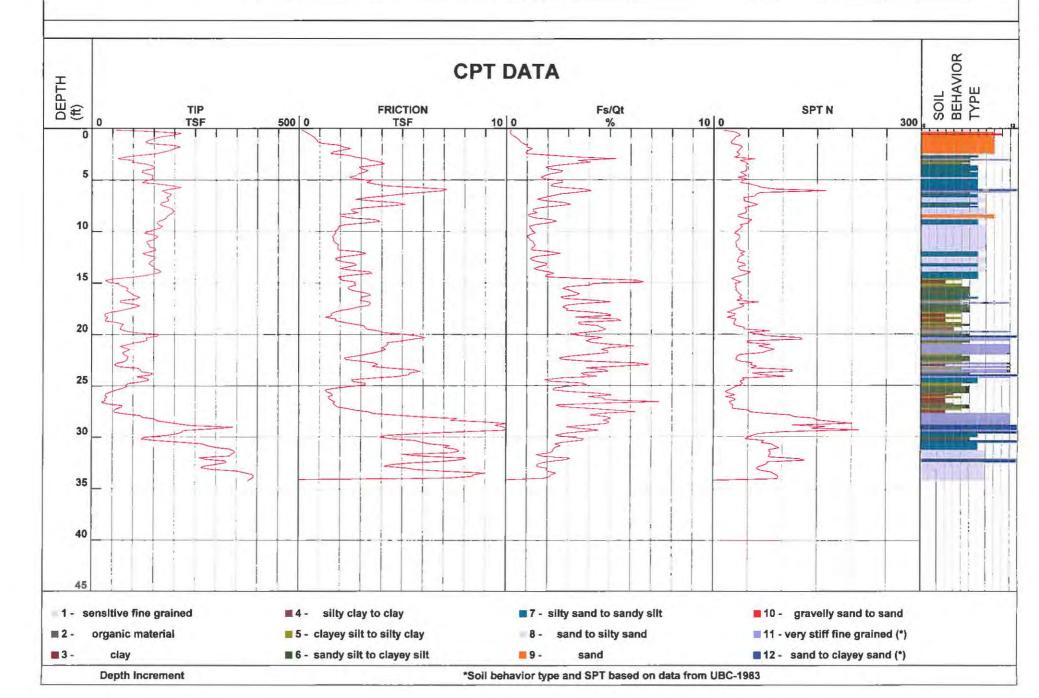
Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 1:54:08 PM Filename

GPS

Maximum Depth

Elevation

SDF(431).cpt 34.28 ft 215.5



## Middle Earth

## **Geotechnical Exploration**

 Location
 Del Mar Heights

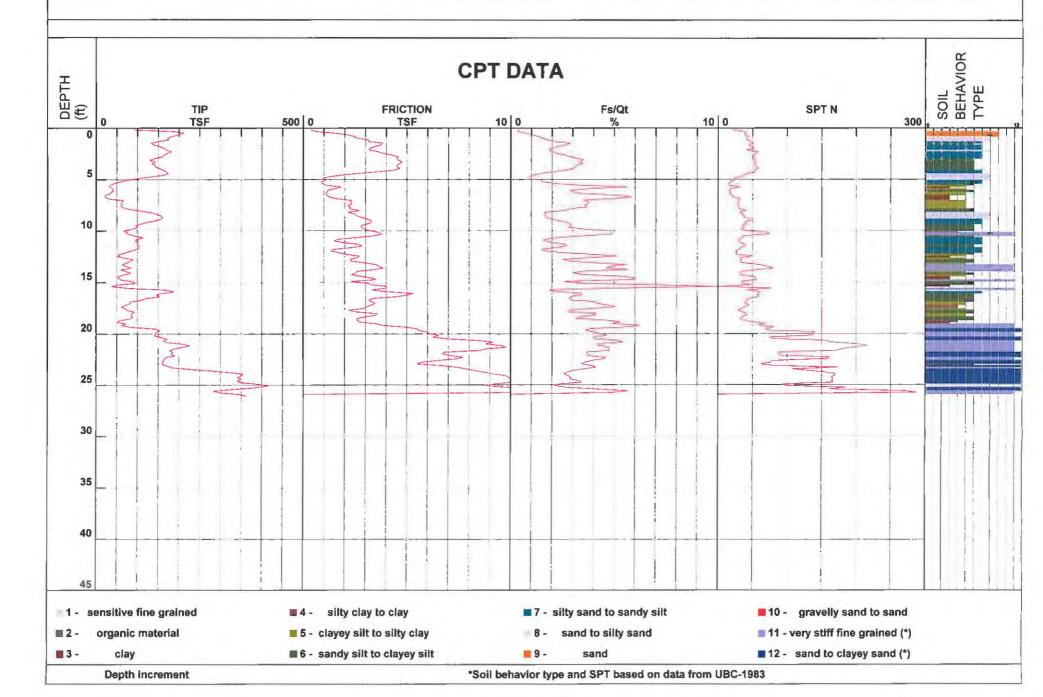
 Job Number
 07-9487

 Hole Number
 CPT-25

 Water Table Depth

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 2:46:45 PM Filename
GPS
Maximum Depth
Elevation

26.08 ft 215.3



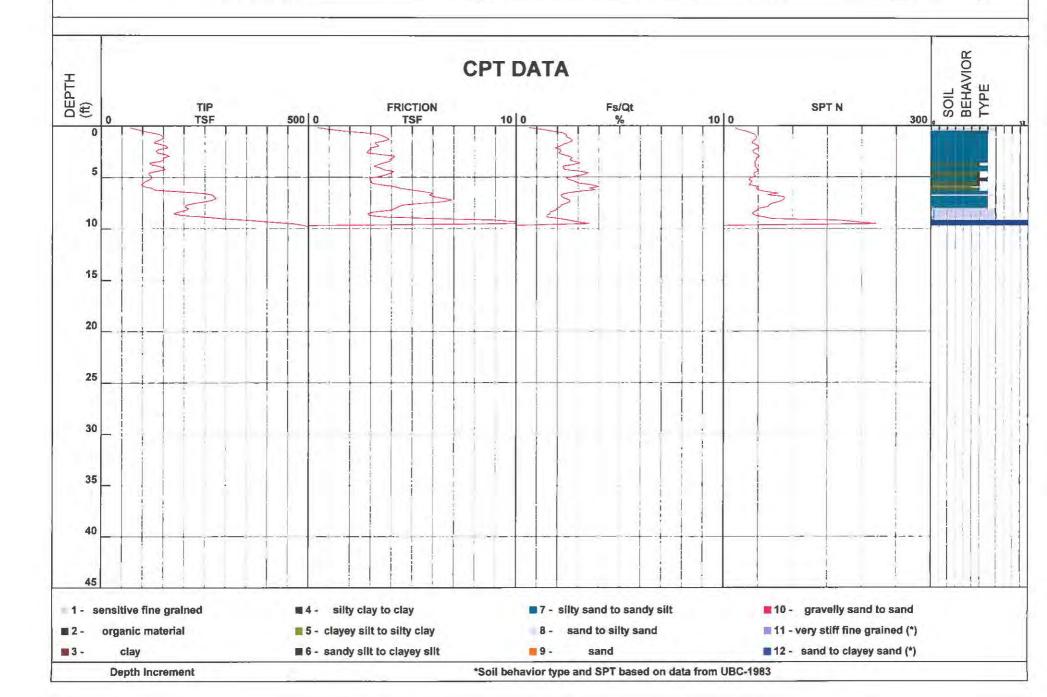
Location Job Number Hole Number

Del Mar Heights 07-9487 CPT-26 Water Table Depth

Operator Cone Number **Date and Time** 0.00 ft

ML/CW DSG1023 11/28/2007 11:08:43 AM Filename **GPS** Maximum Depth Elevation

SDF(412).cpt 9.84 ft 217.0



# Giss for any Jac

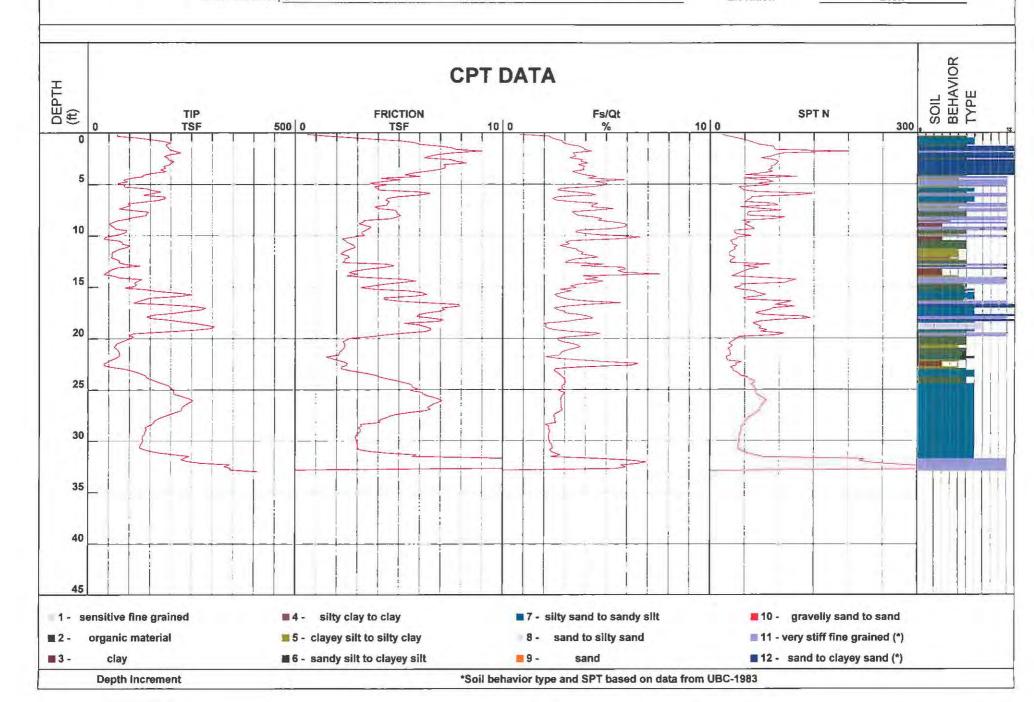
## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-27

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 9:34:41 AM Filename
GPS
Maximum Depth
Elevation

32.97 ft 216.7



# GEO TESTING INC

## **Geotechnical Exploration**

 Location
 Del Mar Heights

 Job Number
 07-9487

 Hole Number
 CPT-28

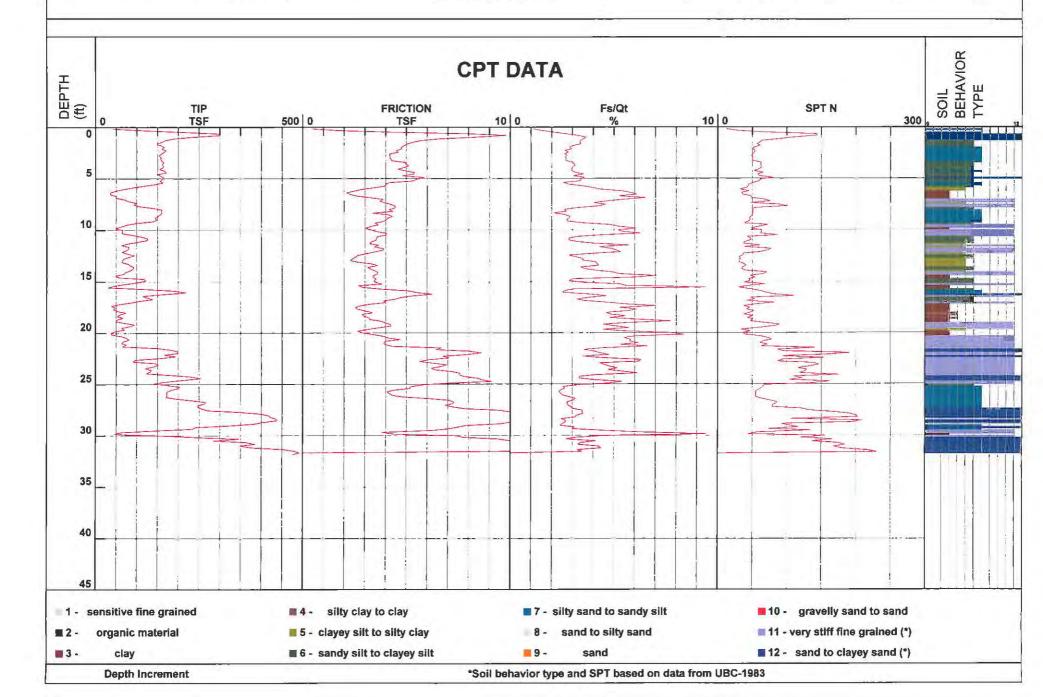
 Water Table Depth

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 11:10:20 AM Filename SDF(429).cpt

GPS

Maximum Depth 31.82 ft

Elevation 215.1



Location Job Number **Hole Number** Water Table Depth

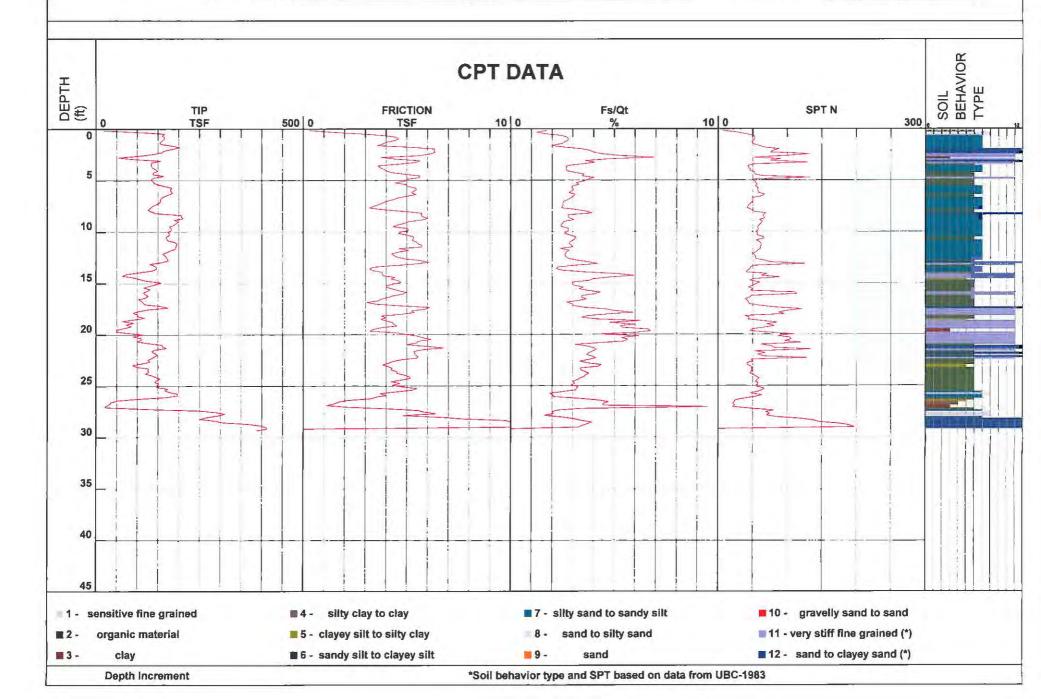
**Del Mar Heights** 07-9487 CPT-29

Operator Cone Number **Date and Time** 0.00 ft

ML/CW DSG1023 11/29/2007 12:59:48 PM **Filename** GPS Maximum Depth Elevation

SDF(430).cpt 29.36 ft

213.7



## distributed by

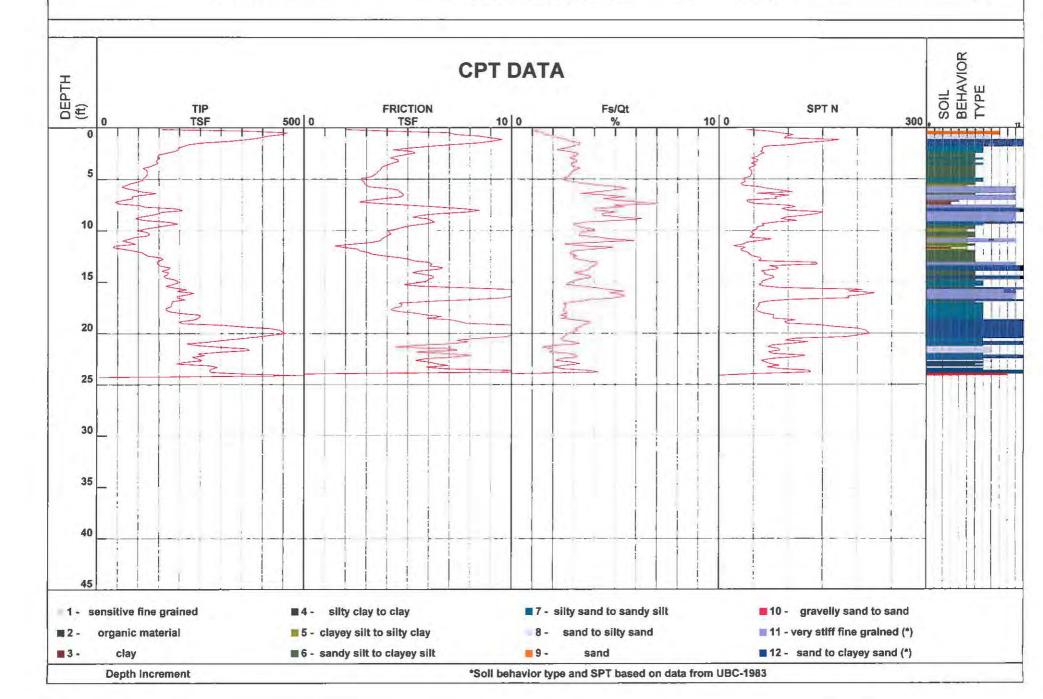
## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights
r 07-9487
er CPT-30

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 9:02:54 AM Filename
GPS
Maximum Depth
Elevation

SDF(410).cpt 24.28 ft 200.0



#### Illidale Early Genter trouble

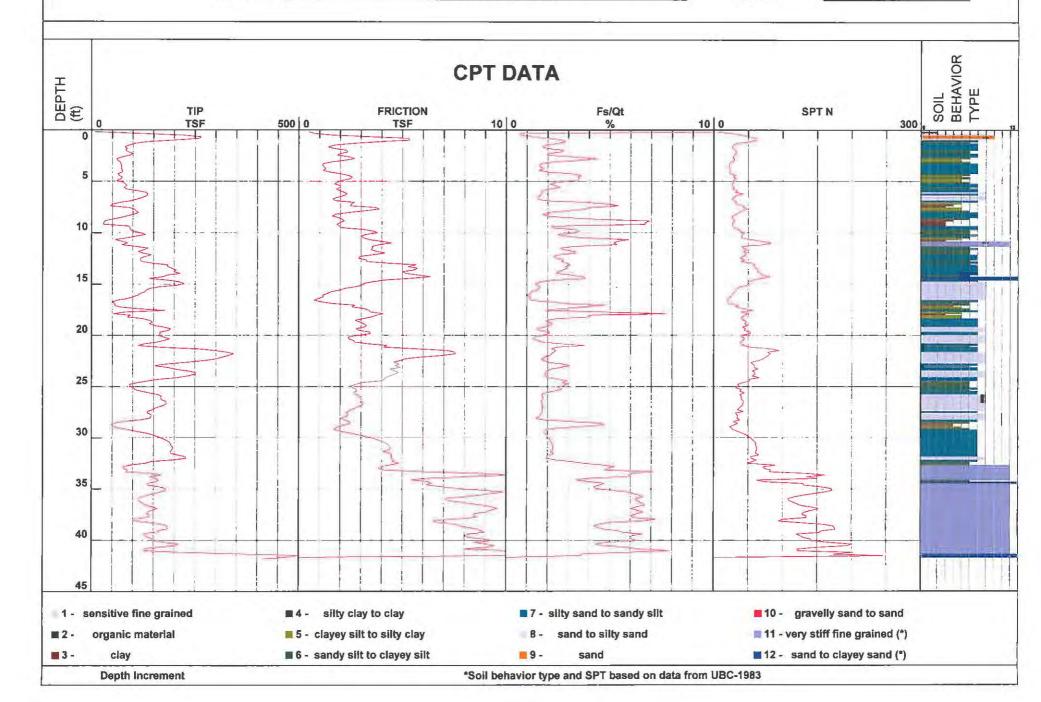
## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-31

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 7:48:11 AM Filename GPS Maximum Depth Elevation

SDF(409).cpt 41.83 ft 196.4

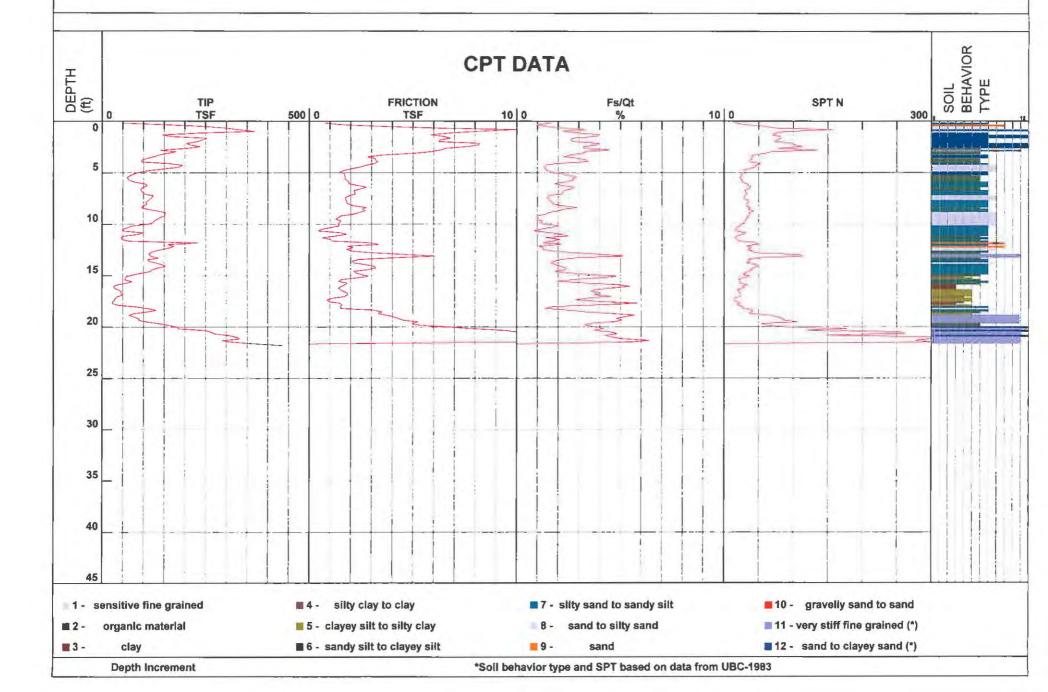


## Mindle Earth

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 4:59:07 PM Filename GPS Maximum Depth Elevation SDF(408).cpt 21.82 ft 196.6



## Hidis Lard

## **Geotechnical Exploration**

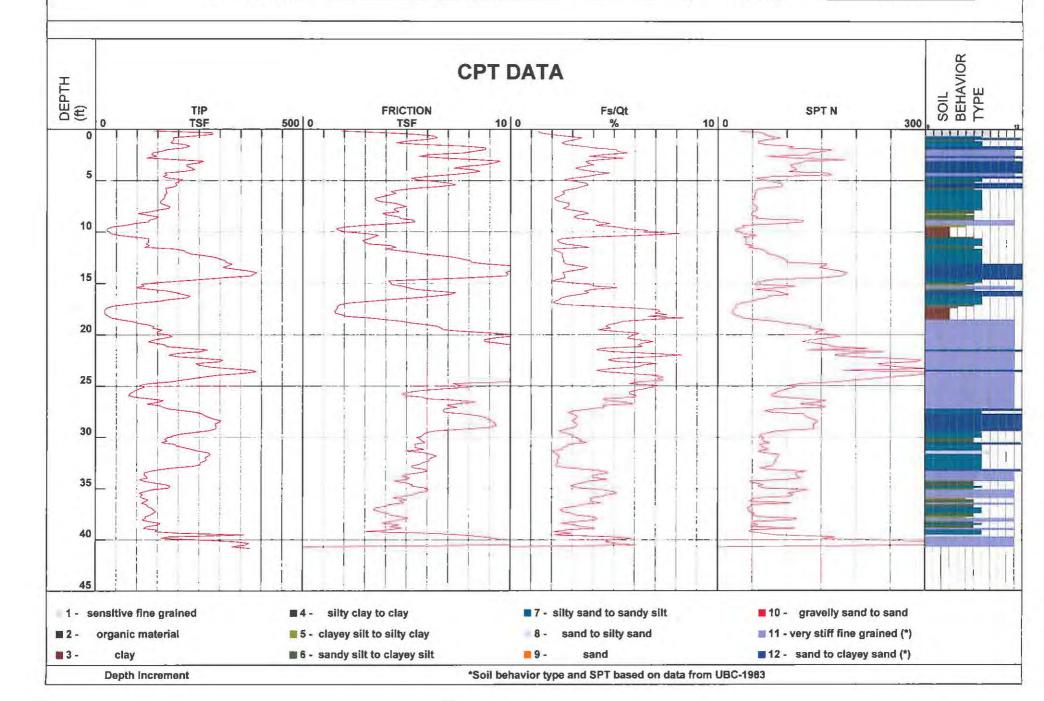
Location
Job Number
Hole Number
Water Table Depth

 Del Mar Heights

 ber
 07-9487

 nber
 CPT-33

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 10:03:26 AM Filename GPS MaxImum Depth Elevation SDF(411).cpt 40.85 ft 198.2



## Uldale Earth

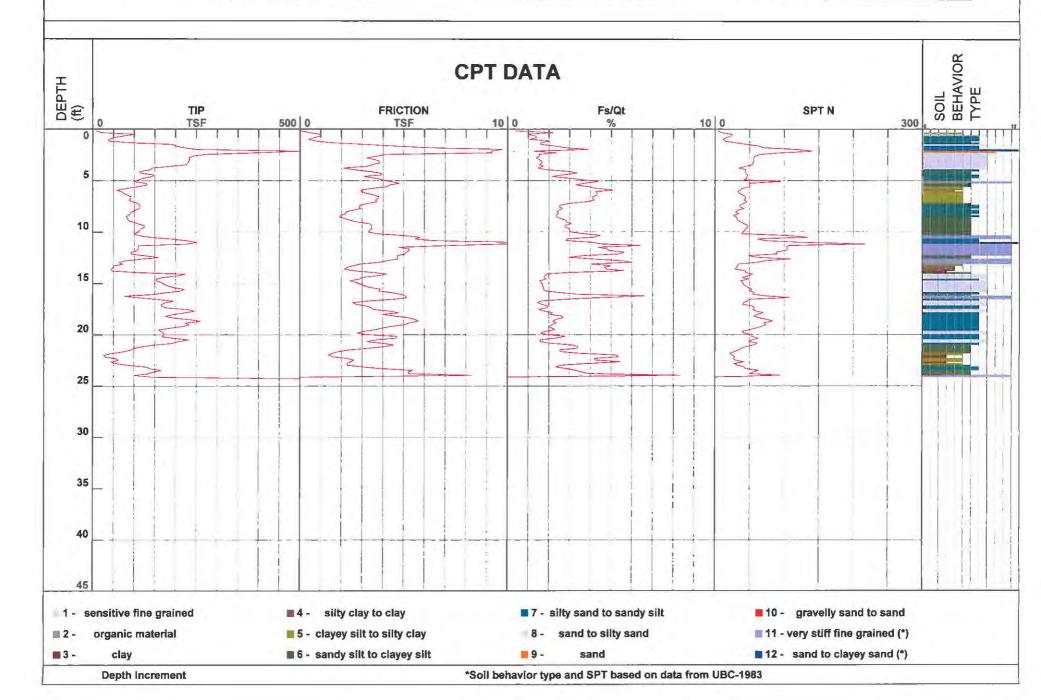
## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 r CPT-34

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202.4



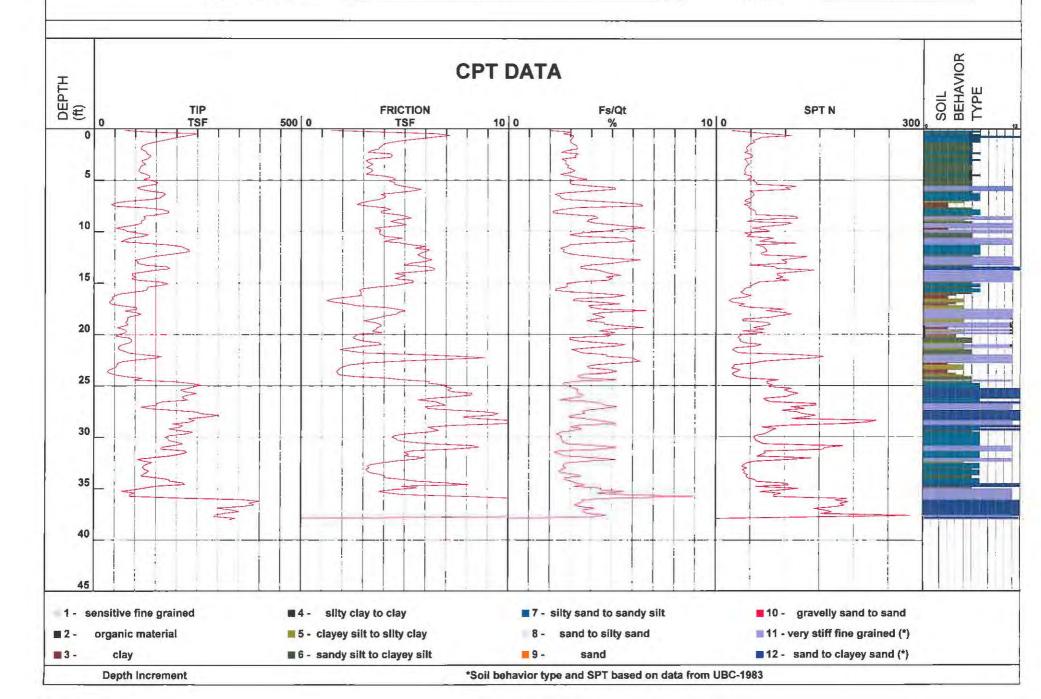


Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-35

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 10:27:51 AM Filename
GPS
Maximum Depth
Elevation

38.06 ft 215.0



# Middle Earth

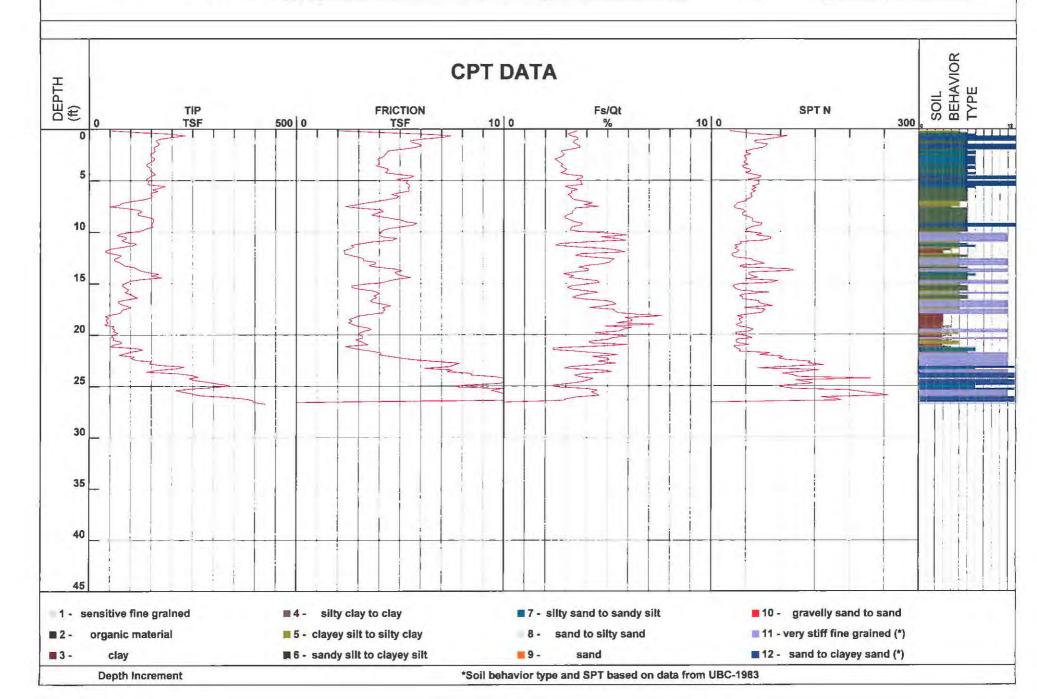
#### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights
r 07-9487
er CPT-36

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 9:01:38 AM Filename GPS Maximum Depth Elevation SDF(426).cpt 26.74 ft

216.7



## Middle Earth

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

 Del Mar Heights

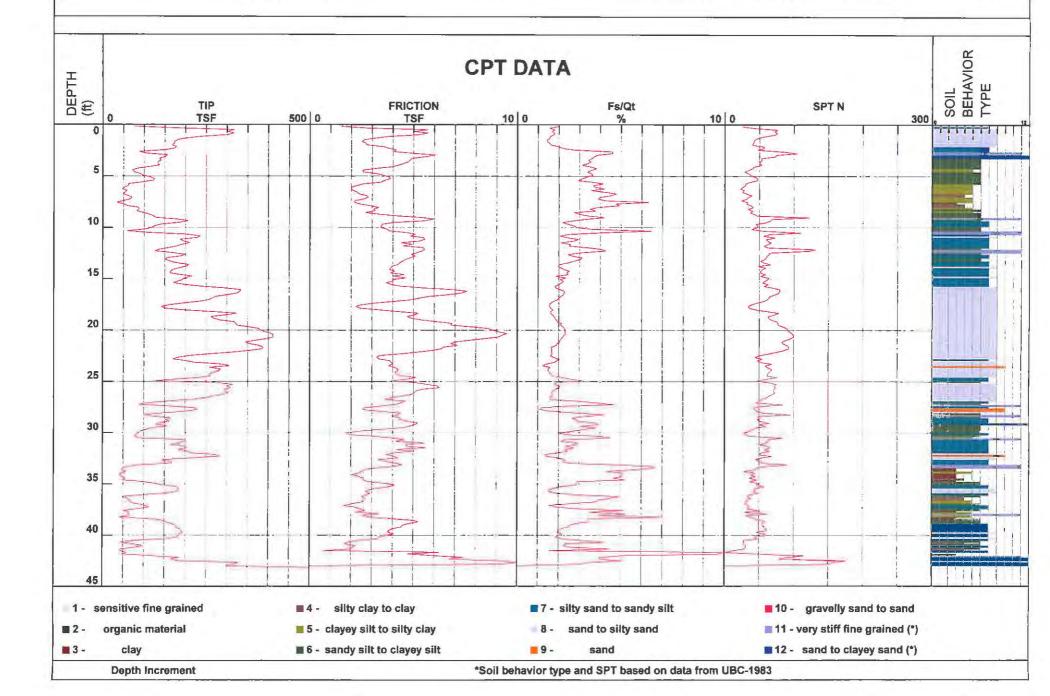
 nber
 07-9487

 mber
 CPT-37

Operator Cone Number Date and Time 0.00 ft

ML/CW DSG1023 11/27/2007 11:34:41 AM Filename SDF GPS Maximum Depth 4 Elevation

SDF(400).cpt 43.14 ft 203.1



## Mindle Earth Gly Te y In Gilbr

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

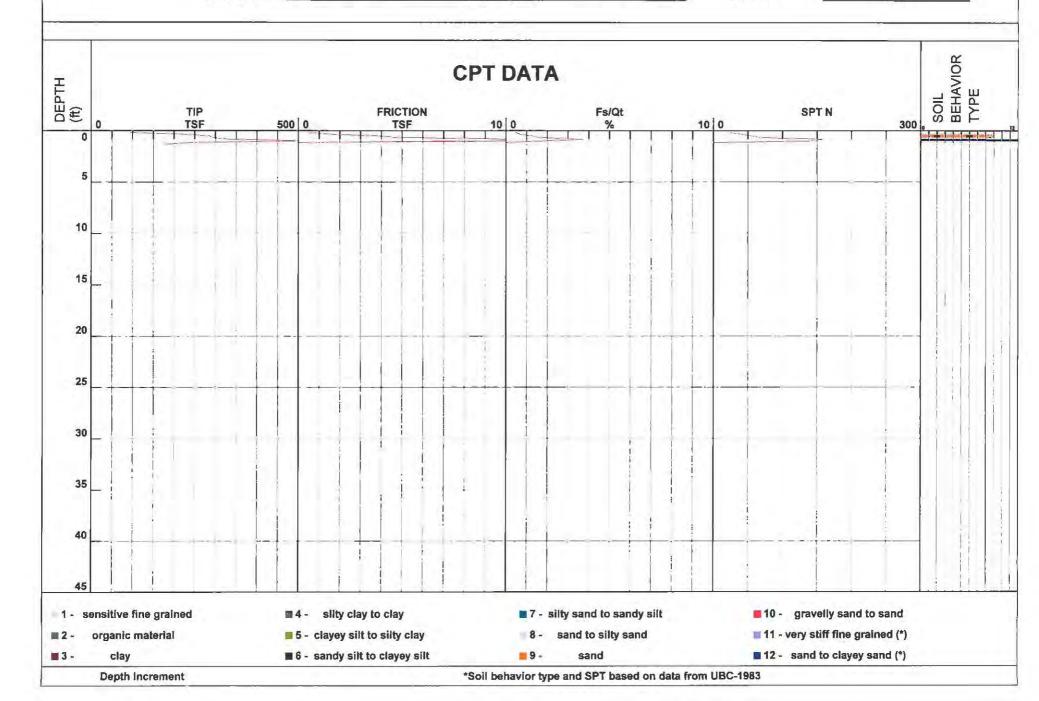
Del Mar Heights 07-9487 CPT-38

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GPS

Maximum Depth 1.31 ft

Elevation 202.1

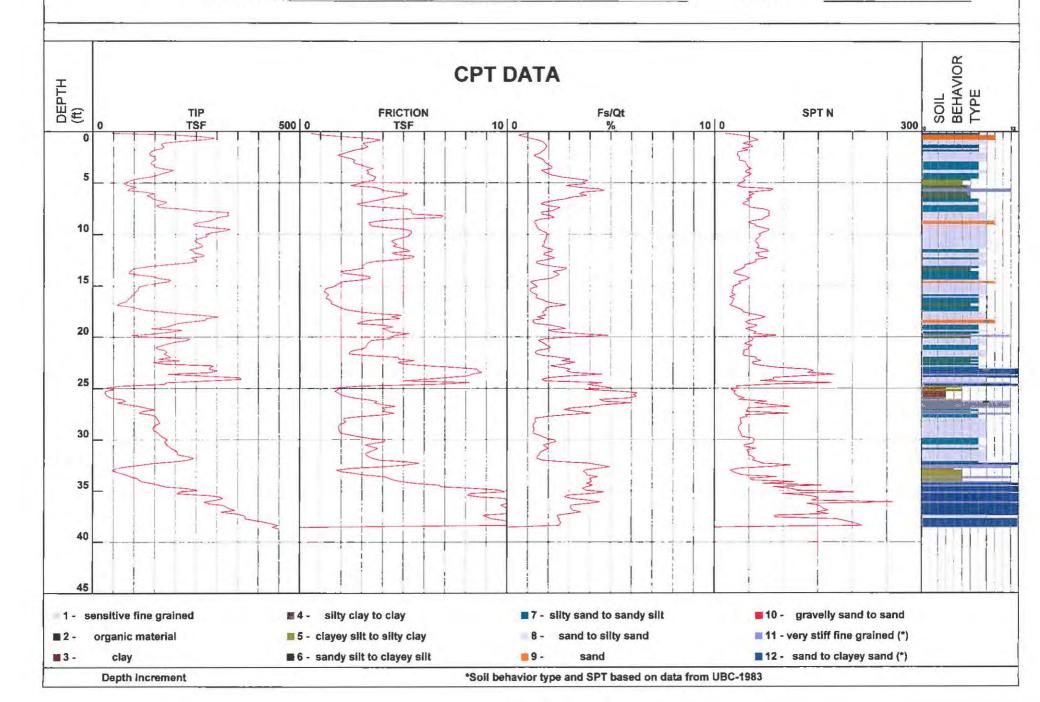


## Middle Earth

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-38A Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 12:33:42 PM Filename GPS Maximum Depth Elevation 38.71 ft 202.1





 Location
 Del Mar Heights

 Job Number
 07-9487

 Hole Number
 CPT-39

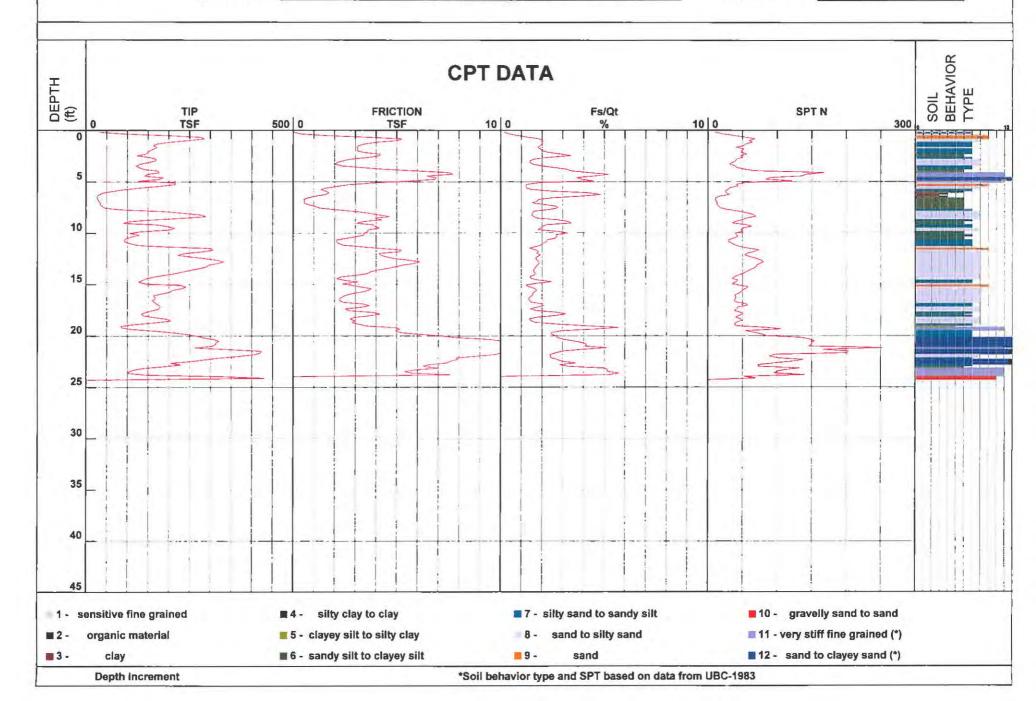
 Water Table Depth

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 3:29:02 PM Filename SDF(405).cpt

GPS

Maximum Depth 24.44 ft

Elevation 200.1



# Georgian No.

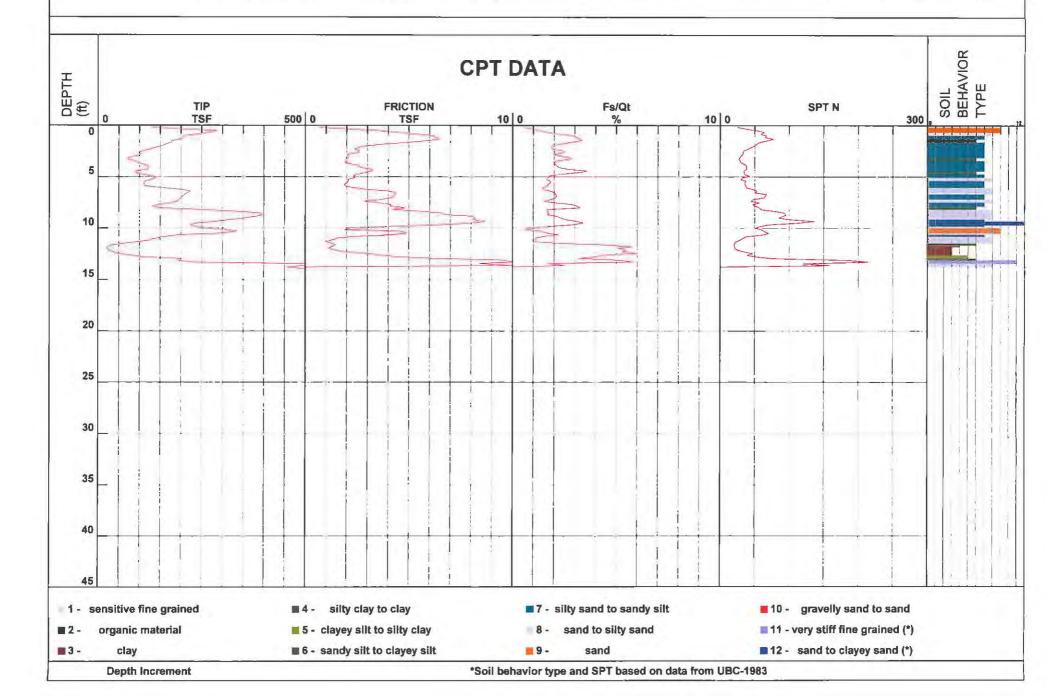
## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-40

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 4:28:54 PM Filename GPS Maximum Depth Elevation SDF(407).cpt

198.3



## MINGLE EATH

## **Geotechnical Exploration**

Location De Job Number Hole Number Water Table Depth

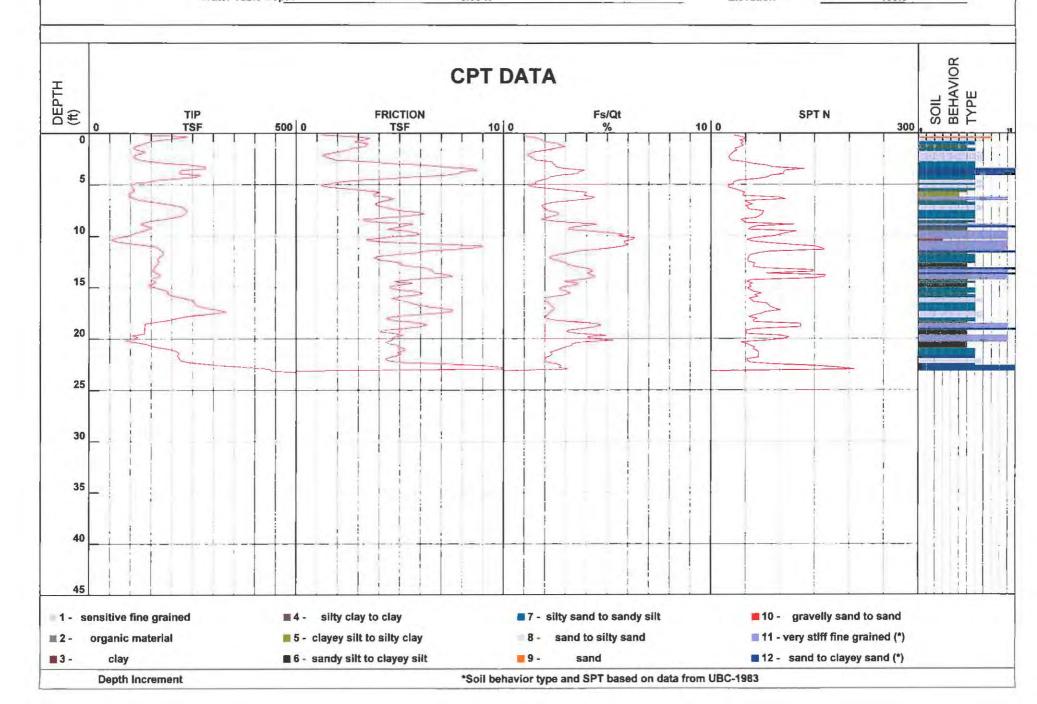
 Del Mar Heights
 Operator

 07-9487
 Cone Number

 CPT-41
 Date and Time

 0.00 ft

ML/CW DSG1023 11/27/2007 3:02:43 PM Filename GPS Maximum Depth Elevation SDF(404).cpt 23.29 ft 199.5

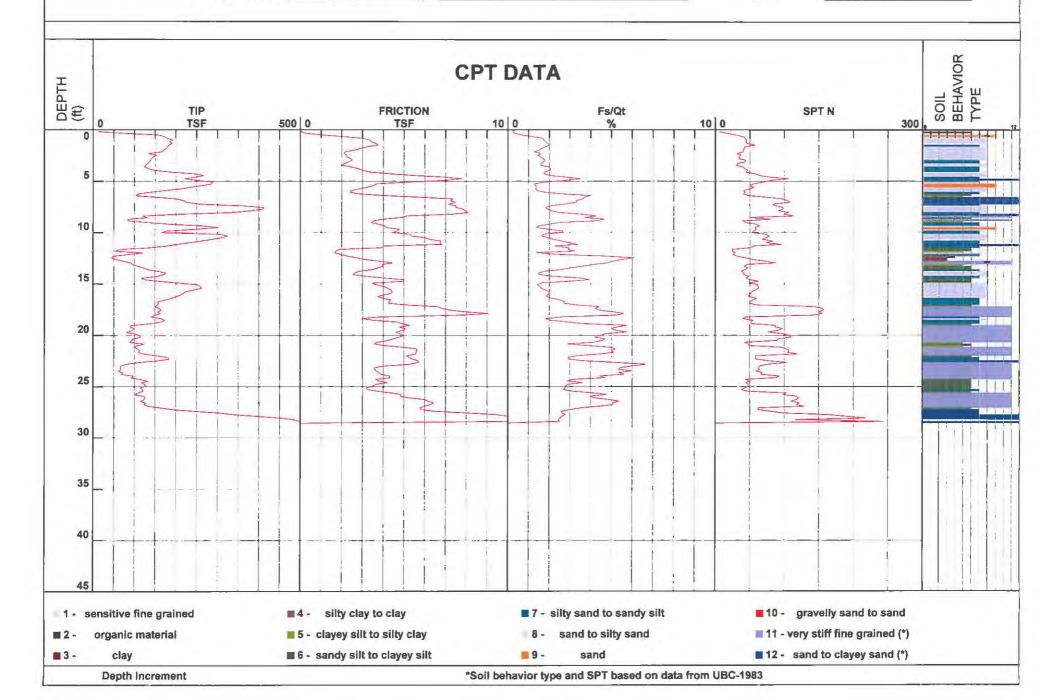


# Controlled Earth

#### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-42 Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 2:34:59 PM Filename GPS Maximum Depth Elevation SDF(403).cpt 28.71 ft 200.9

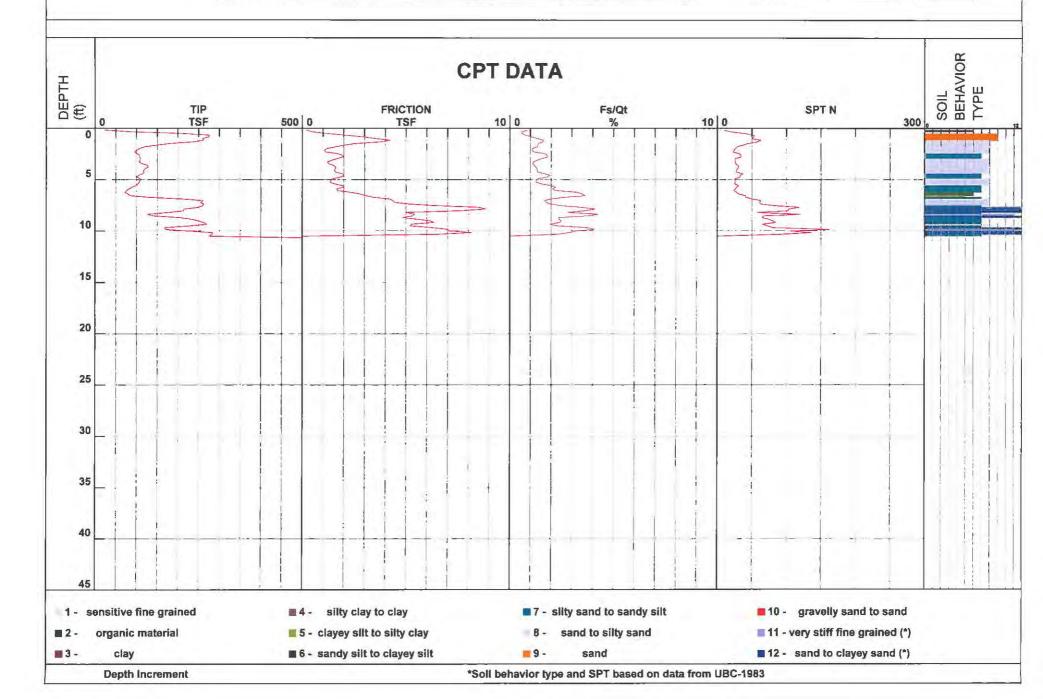


# Thirdig Earth

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-43 Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 10:37:40 AM Filename GPS Maximum Depth Elevation SDF(398).cpt 10.66 ft 202.6



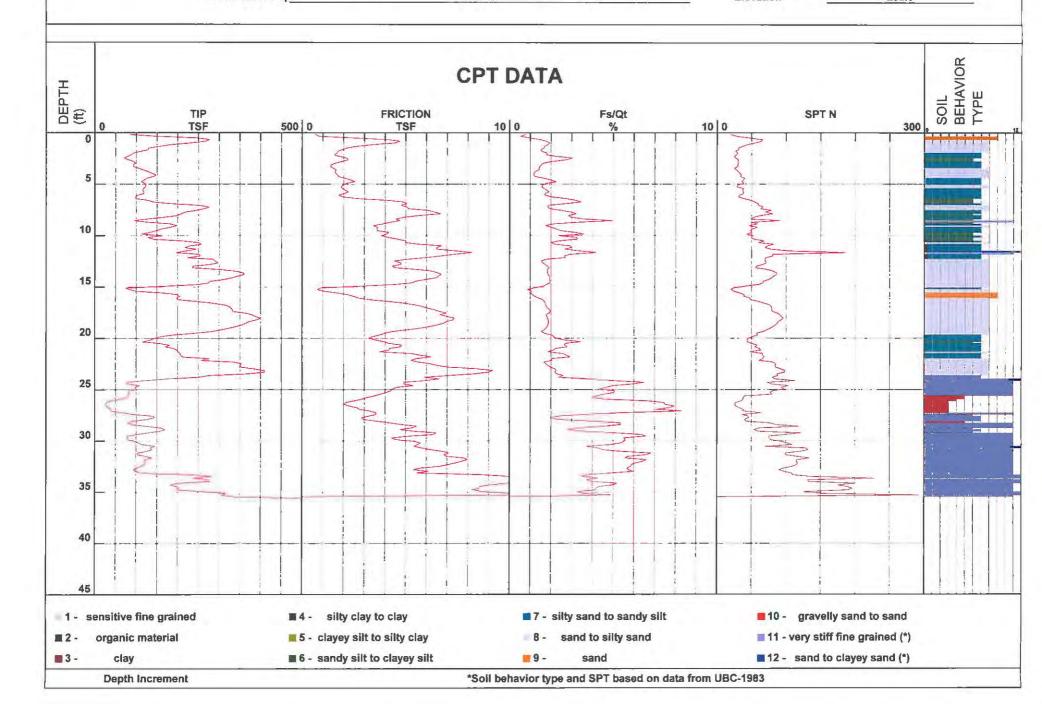
# GEN-TEN ENGLING

### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights
07-9487
CPT-43A

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 10:53:20 AM Filename GPS Maximum Depth Elevation SDF(399).cpt 35.60 ft 202.6



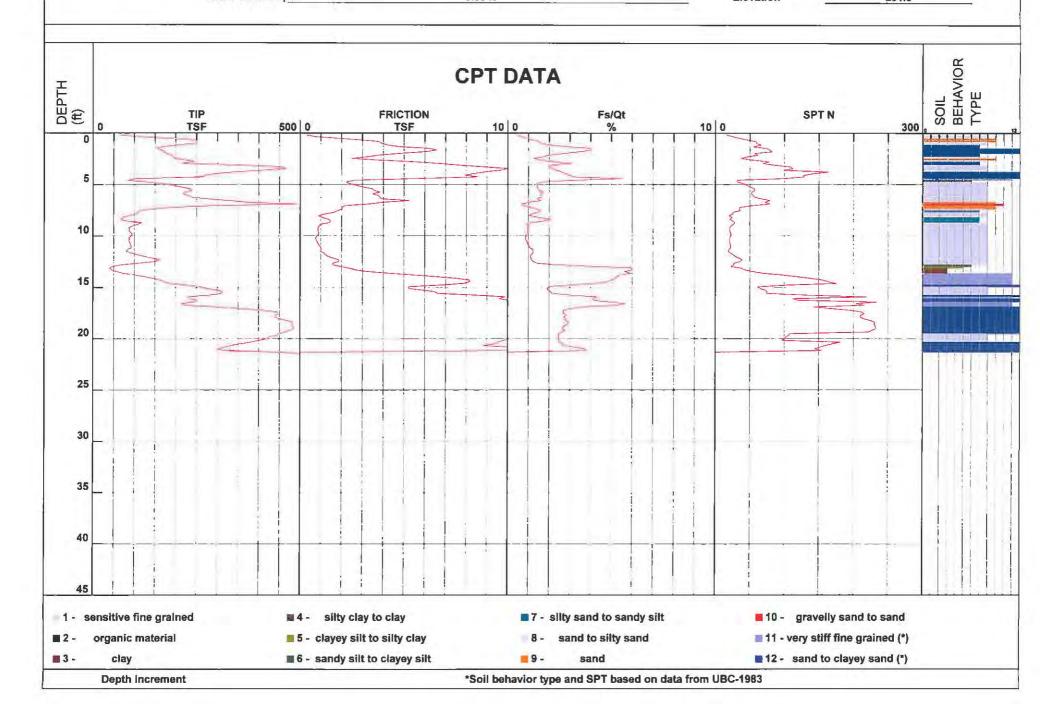
Location Job Number Hole Number Water Table Depth

Del Mar Heights 07-9487 CPT-44

Operator Cone Number **Date and Time** 0.00 ft

ML/CW DSG1023 11/27/2007 9:53:18 AM Filename GPS Maximum Depth Elevation

SDF(397).cpt 21.49 ft 201.9





Location
Job Number
Hole Number
Water Table Depth

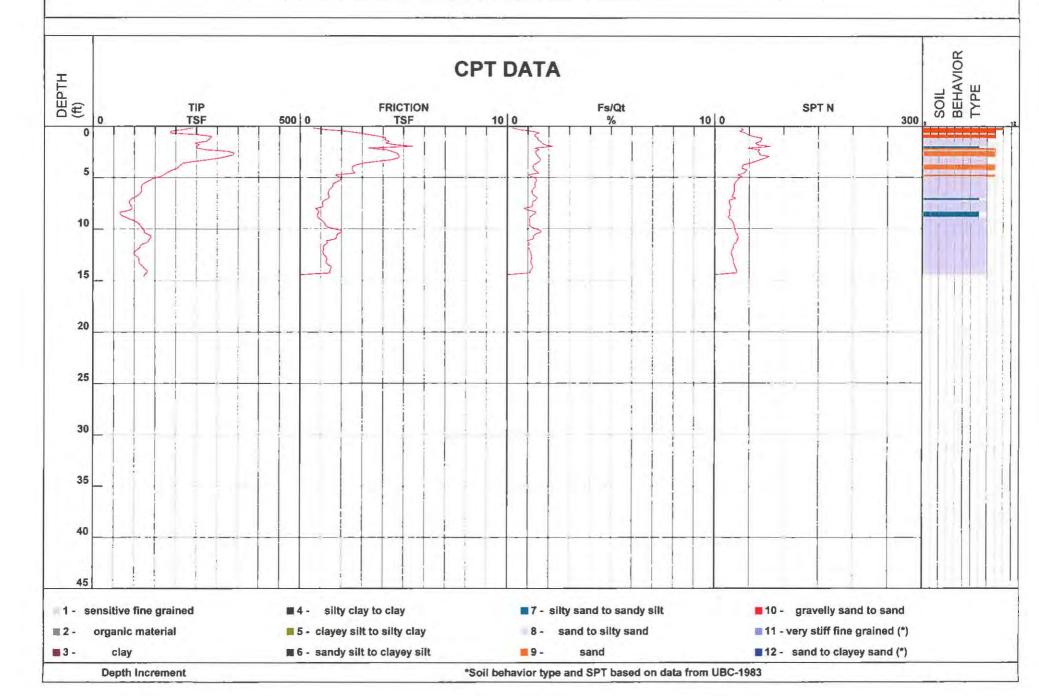
Del Mar Heights 07-9487 CPT-45

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/30/2007 7:55:32 AM Filename SDF(438).cpt

GPS

Maximum Depth 14.60 ft

Elevation 215.8





 Location
 Del Mar Heights

 Job Number
 07-9487

 Hole Number
 CPT-46

 Water Table Depth

 Mar Heights
 Operator

 07-9487
 Cone Number

 CPT-46
 Date and Time

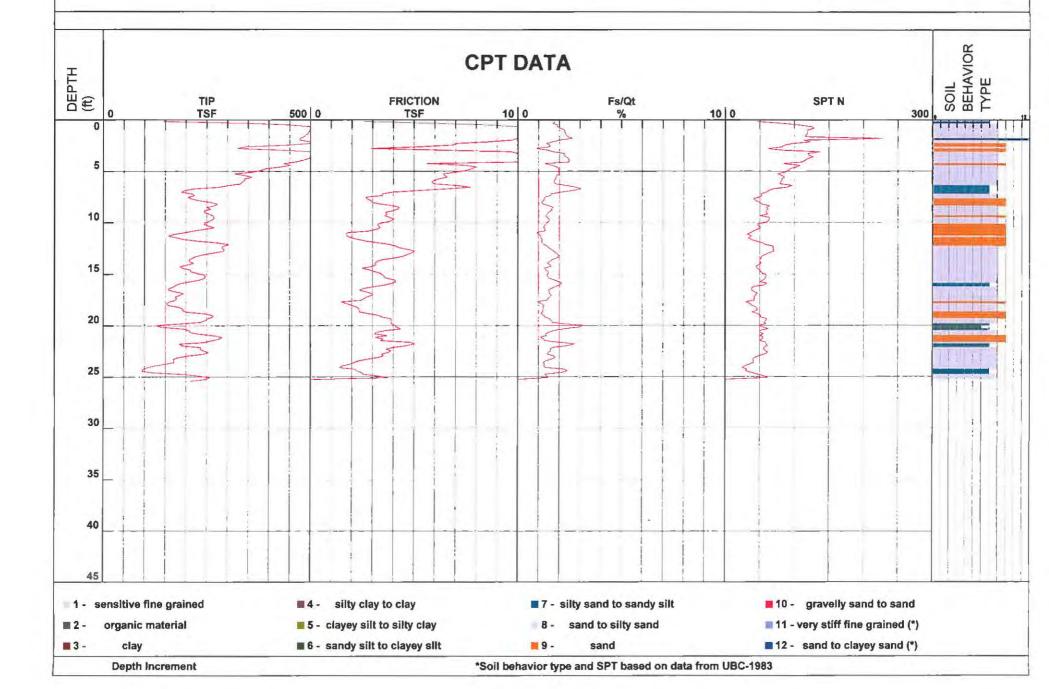
 0.00 ft

or ML/CW umber DSG1023 ad Time 11/30/2007 8:16:25 AM Filename SDF(439).cpt

GPS

Maximum Depth 25.43 ft

Elevation 214.0





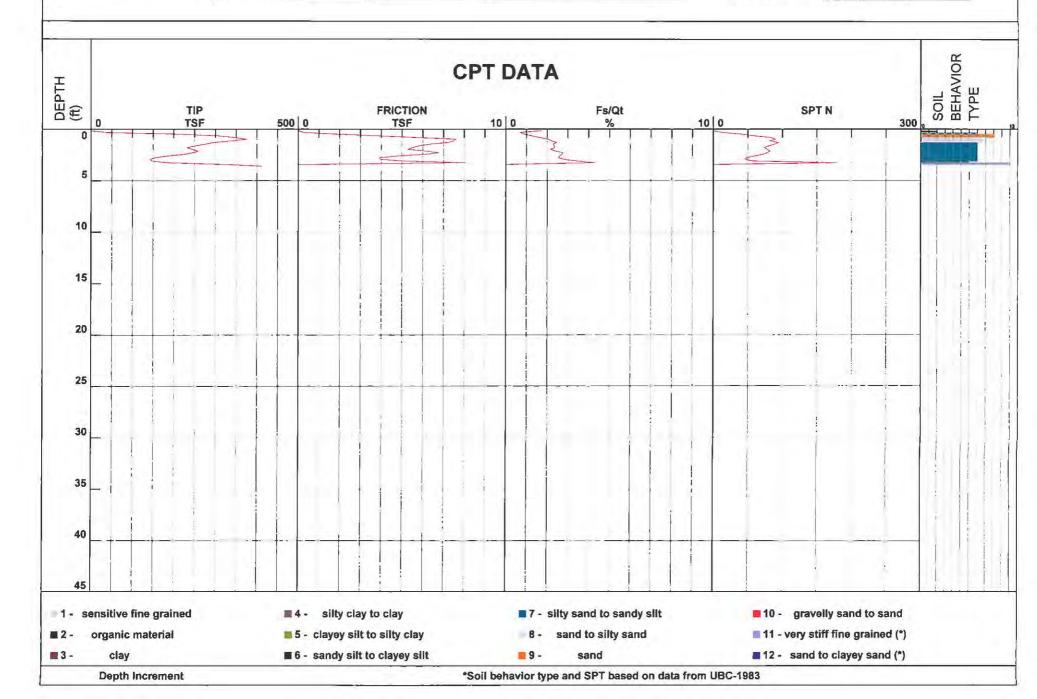
Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-47

Operator
Cone Number
Date and Time
0.00 ft

ML/CW DSG1023 11/28/2007 3:17:36 PM Filename
GPS
Maximum Depth
Elevation

3.61 ft 191.2





Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights

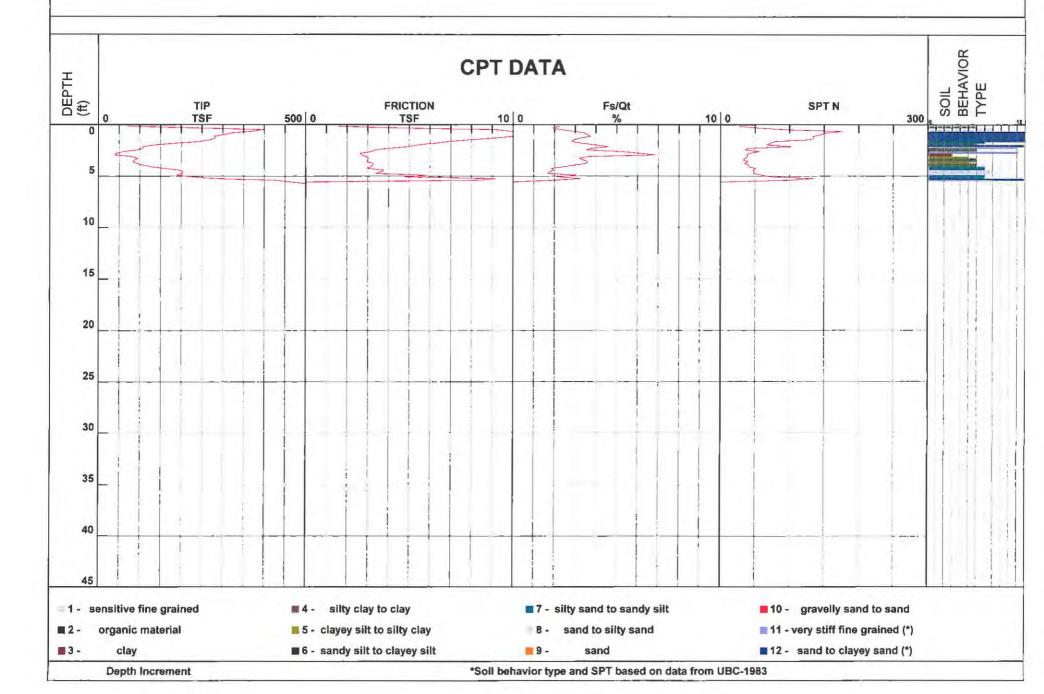
07-9487

CPT-48

Operator
Cone Number
Date and Time
0.00 ft

ML/CW DSG1023 11/28/2007 3:38:43 PM Filename
GPS
Maximum Depth
Elevation

SDF(421).cpt 5.74 ft 184.6



# APPENDIX B UNIFIED SOIL CLASSIFICATION CHART SOIL DESCRIPTION

#### Coarse-grained (More than half of material is larger than a No. 200 sieve)

GRAVELS, CLEAN GRAVELS (More than half of coarse fraction is larger than No. 4 sieve size, but	GW	Well-graded gravels, gravel and sand mixtures, little or no fines.
smaller than 3")	GP	Poorly graded gravels, gravel and sand mixtures, little or no fines.
GRAVELS WITH FINES (Appreciable amount)	GC	Clay gravels, poorly graded gravel-sand-silt mixtures
SANDS, CLEAN SANDS (More than half of coarse fraction	SW	Well-graded sand, gravelly sands, little or no fines
is smaller than a No. 4 sieve)	SP	Poorly graded sands, gravelly sands, little or no fines.
SANDS WITH FINES (Appreciable amount)	SM	Silty sands, poorly graded sand and silty mixtures.
(Approvided amount)	SC	Clayey sands, poorly graded sand and clay mixtures.

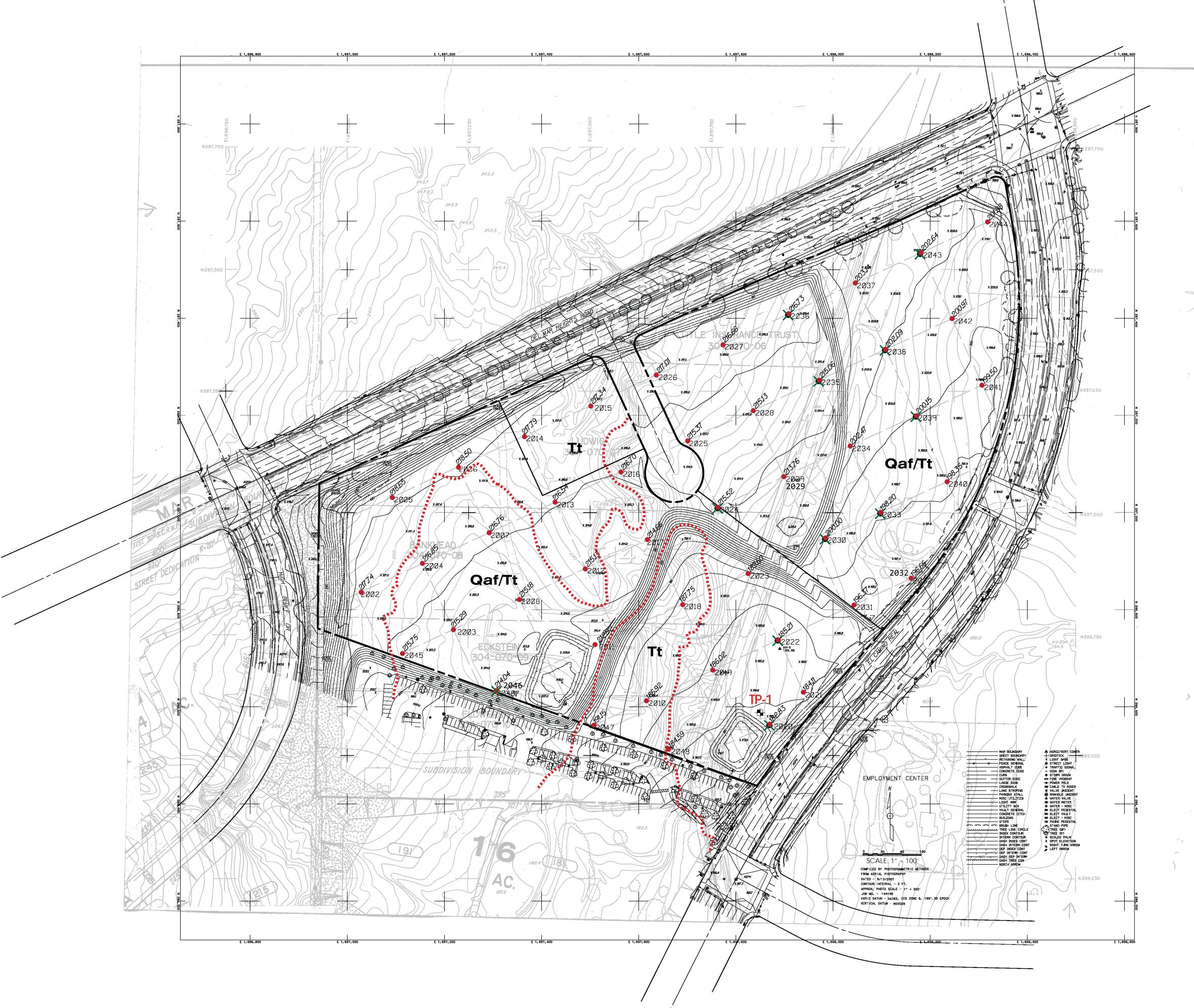
#### Fine-grained (More than half of material is smaller than a No. 200 sieve)

#### SILTS AND CLAYS

ML	Inorganic silts and very fine sands, rock flour, sandy silt and clayey-silt sand mixtures with a slight plasticity
CL	Inorganic clays of low to medium plasticity, gravelly clays, silty clays, clean clays.
OL	Organic silts and organic silty clays of low plasticity.
МН	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
СН	Inorganic clays of high plasticity, fat clays.
он	Organic clays of medium to high plasticity.
PT	Peat and other highly organic soils
	CL OL MH CH OH

(rev. 6/05)





## Legend

Indicates Location of Cone Penetrometer Probe No. 31

Indicates Location of Cone Penetrometer Probe No. 36 and Exploratory Boring No. 36

Indicates Approximate Location of Exploratory Test Pit

Torrey Sandstone

**Qaf/Tt** Artificial Fill over Torrey Sandstone

Approximate Location of Geologic Contact

# SITE PLAN

San Diego Corporate Center - Development Site SW of Del Mar Heights Road & El Camino Real San Diego, CA. Figure No. I Job No. 07-9487



# Appendix P

# PRELIMINARY GEOTECHNICAL INVESTIGATION

## REPORT OF PRELIMINARY GEOTECHNICAL INVESTIGATION

San Diego Corporate Center Lots 1 and 2
Phase I Development
Southwest Corner of Del Mar Heights Road and El Camino Real
San Diego, California

**JOB NO. 07-9487.1** 03 May 2011

Prepared for:

KILROY REALTY CORPORATION





# Geotechnical Exploration, Inc.

SOIL AND FOUNDATION ENGINEERING • GROUNDWATER • ENGINEERING GEOLOGY

03 May 2011

KILROY REALTY CORPORATION 3611 Valley Centre Drive, Suite 550 San Diego, CA 92130 Attn: Mr. Bob Little

Job No. 07-9487.1

Subject:

Report of Preliminary Geotechnical Investigation

San Diego Corporate Center Lots 1 and 2

Phase I Development

Southwest Corner of Del Mar Heights Road and El Camino Real

San Diego, California

In accordance with your request, and our revised proposal dated November 4, 2010, Geotechnical Exploration, Inc. has performed a preliminary geotechnical investigation for the subject project in San Diego, California. The fieldwork was performed during the period of February 7 through 17, 2011.

If the conclusions and recommendations presented in this report are incorporated into the design and construction of the proposed development, it is our opinion that the site is suitable for the project.

This opportunity to be of service is sincerely appreciated. Should you have any questions concerning the following report, please do not hesitate to contact us. Reference to our Job No. 07-9487.1 will expedite a response to your inquiries.

Respectfully submitted,

GEOTECHNICAL EXPLORATION, INC.

Wm. D. Hespeler, G.E.

Senior Geotechnical #

Jav K. Heiser

Senior Project Geologist

Leslie D. Reed, President

C.E.G. 999[exp. 3/31/13]/R.G. 3391

ch@gei-sd.com

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Ines6: 3/31/13

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VII.	LABORATORY TESTS AND SOIL INFORMATION	8
VIII.	CONCLUSION AND RECOMMENDATIONS	10
IX.	GRADING NOTES	27
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#### REFERENCES

#### **FIGURES**

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- II. Building Layout Plan III. Site Exploration Plan
- **Exploratory Boring Logs** IV.
- Geologic Map of San Diego Direct Shear Test Results V.
- VI.

#### **APPENDICES**

- Unified Soil Classification System A.
- Cone Penetrometer Logs from 2008 Investigation В.
- C. Geophysical Survey Report - Southwest Geophysics Inc



#### REPORT OF PRELIMINARY GEOTECHNICAL INVESTIGATION

San Diego Corporate Center Lots 1 and 2
Phase I Development
Southwest Corner of Del Mar Heights Road and El Camino Real
San Diego, California

Job No. 07-9487.1

#### I. PROJECT SUMMARY AND SCOPE OF SERVICES

In accordance with your request, we have performed a preliminary geotechnical investigation for the subject project located at the southwest corner of Del Mar Heights Road and El Camino Real in the City of San Diego (see enclosed Vicinity Map, Figure No. I). We previously performed a limited geotechnical investigation for the entire site, the results of which were presented in our report titled "Report of Geotechnical Investigation and Existing Fill Evaluation," dated March 31, 2008. The purpose of that investigation was to evaluate the compaction of the undocumented site fills and provide an investigation report for your evaluation of the property and submittal to the City to serve as an as-built geotechnical report for purposes of satisfying the grading permit requirements. The purpose of this investigation was to evaluate the foundation conditions for the Phase I portion of the site to allow development of design and construction recommendations for the planned construction.

Based on our review of the submittal plans dated October 8, 2010, the proposed Phase I development will include the construction of Garage 4 and Buildings 8 through 12 (see enclosed Figure No. II, "Building Layout Plan"). The lower levels of Garage 4 will cover nearly all of the Phase I site, with some portions having up to 7 levels. Buildings 8, 10 and 11 will be two to four stories over two to five levels of Garage 4 parking. Buildings 9 and 12 will be essentially 9- and 10-story structures over two levels of Garage 4. Based on information provided by your structural engineer, maximum combined dead and live column loads for Garage 4 and



Buildings 9 and 12 will be on the order of 1,030 kips, 1,710 kips and 1,300 kips, respectively.

The scope of work performed for this investigation included a review of our previous work for the site as well as the proposed Phase I development plans (dated October 8, 2010), a site reconnaissance and subsurface exploration program, laboratory testing, engineering analysis of the field and laboratory data, and the preparation of this report. The data obtained and the analyses performed were for the purpose of providing design and construction criteria for the project earthwork, building foundations, slab-on-grade floors, basement and retaining walls, and pavements.

#### II. SITE DESCRIPTION

The Phase I development site is a portion of the 23-acre property known as Lots 1 and 2 of the San Diego Corporate Center (APN Numbers 304-070-40, 43, 52 and 57), located southwest of the intersection of Del Mar Heights Road and El Camino Real in San Diego, California (see Figure No. III). The vacant property has been previously mass graded into three relatively flat lots that step up in elevation to the north and west. Surface vegetation on the padded lots consists of a light to moderate growth of weeds.

#### III. FIELD INVESTIGATION

The field investigation consisted of a surface reconnaissance and a subsurface exploration program using a truck-mounted, continuous-flight auger drill to investigate and sample the subsurface soils. During the period of February 7 through 17, 2011, 13 exploratory borings were drilled in the proposed Phase I building areas to a maximum depth of 55 feet, and three exploratory borings were



drilled in the Phase III area to a maximum depth of 66.5 feet for preliminary information for that future work. The soils encountered in the borings were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (refer to Appendix A). The approximate locations of the borings (which were surveyed by your Civil Engineer) are shown on the Site Exploration Plan, Figure No. III. In addition, the location plan and logs of our previous borings and cone penetrometer soundings are included in Appendix B.

Representative samples were obtained from the exploratory borings at selected depths appropriate to the investigation. All samples were returned to our laboratory for evaluation and testing. Standard penetration resistance blow counts were obtained by driving a 2-inch O.D. split spoon sampler with a 140-pound hammer dropping through a 30-inch free fall. The sampler was driven a maximum of 18 inches and the number of blows for each 6-inch interval was recorded. The blows per foot indicated on the boring logs represent the accumulated number of blows that were required to drive the last 12 inches or portion thereof. Samples contained in liners were recovered by driving a 3.0-inch O.D. California sampler 18 inches into the soil using a 140-pound hammer.

Boring logs have been prepared on the basis of our observations and laboratory test results. Logs of the borings for this investigation are attached as Figure No. IV. The following chart provides an in-house correlation between the number of blows and the relative density of the soil for the Standard Penetration Test and the 3-inch sampler.



SOIL	DENSITY DESIGNATION	2-INCH O.D. SAMPLER BLOWS/FOOT	3-INCH O.D. SAMPLER BLOWS/FOOT
Sand and	Very loose	0-4	0-7
Nonplastic Silt	Loose	5-10	8-20
Carried Programme	Medium	11-30	21-53
	Dense	31-50	54-98
	Very Dense	Over 50	Over 98
Clay and	Very soft	0-2	0-2
Plastic Silt	Soft	3-4	3-4
	Firm	5-8	5-9
	Stiff	9-15	10-18
	Very stiff	16-30	19-45
	Hard	31-60	46-90
	Very Hard	Over 60	Over 90

In addition to our borings, we retained Southwest Geophysics, Inc. to perform two geophysical traverses in the area of the site that is and will be underlain by the deepest layers of fill soil (see Figure No. III). The purpose of the traverses was to obtain information regarding the site Soil Classification to be utilized for determining seismic response parameters for structural design. The geophysical report is included in Appendix C and indicates characteristic shear wave velocities in the upper 100 feet of 1,430 and 1,565 feet per second. Accordingly, the recommended site Soil Classification for seismic design is "C".

#### IV. SOIL DESCRIPTION

Fill soils consisting predominantly of medium dense to dense clayey and silty sands were encountered in Borings 1, 2, 4 through 12, 15, and 16, to depths of 3 to 63 feet. The fill soils were underlain by materials of the Torrey Sandstone consisting of dense to very dense clayey and silty sands (formational sandstone) and dense to very dense sandy gravel (formational conglomerate) to the depths explored.



Materials of the Torrey Sandstone consisting of dense to very dense clayey and silty sands (formational sandstone) and dense to very dense sandy gravel (formational conglomerate) were encountered from the existing ground surface to the depths explored in Borings 3, 13 and 14. Although the sandstone and conglomerate materials encountered were very dense, they were of low cohesion and we did not encounter cemented materials.

Based on our laboratory testing as well as our experience with similar materials, the silty and clayey sand fill and formational materials encountered in the borings possess a low potential for expansion.

The boring logs and related information depict subsurface conditions only at the specific locations shown on the site exploration plan and on the particular dates designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in changes in the subsurface conditions due to environmental changes.

#### V. GROUNDWATER

Free groundwater was not encountered in Borings 1 through 15. Groundwater seepage was encountered in Boring 16 at a depth of about 61 feet, which corresponds to an elevation of +154 feet. At this depth we do not anticipate that groundwater seepage will impact the proposed Phase I construction or performance of the completed development. It must be noted, however, that fluctuations in the level of groundwater may occur due to variations in ground surface topography, subsurface stratification, rainfall, and other possible factors that may not have been evident at the time of our field investigation.



It should be kept in mind that grading operations can change surface drainage patterns and/or reduce permeabilities due to the densification of compacted soils. Such changes of surface and subsurface hydrologic conditions, plus irrigation of landscaping or significant increases in rainfall, may result in the appearance of surface or near-surface water at locations where none existed previously. The appearance of such water is expected to be localized and cosmetic in nature, if good positive drainage is implemented, as recommended in this report, during and at the completion of construction.

It must be understood that unless discovered during initial site exploration or encountered during site grading operations, it is extremely difficult to predict if or where perched or true groundwater conditions may appear in the future. When site fill or formational soils are relatively fine-grained and of low permeability, water problems may not become apparent for extended periods of time.

Water conditions, where suspected or encountered during construction, should be evaluated and remedied by the project civil and geotechnical consultants. The project developer and property owner, however, must realize that post-construction appearances of groundwater may have to be dealt with on a site-specific basis.

#### VI. FAULTING AND GEOLOGIC HAZARDS

The San Diego area, as most of California, is located in a seismically active region. The San Diego area has been referred to as the eastern edge of the Southern California Continental Borderland, an extension of the Peninsular Ranges Geomorphic Province. The borderland is part of a broad tectonic boundary between the North American and Pacific Plates. The plate boundary is dominated by a complex system of active major strike-slip (right lateral), northwest trending faults



extending from the San Andreas fault, about 70 miles east, to the San Clemente fault, about 50 miles west of the San Diego metropolitan area.

Based on our review of some available published information including the City of San Diego Seismic Safety Study, Geologic Hazards and Faults Map (Sheet 38), there are no faults known to pass through the site. The prominent fault zones generally considered having the most potential for earthquake damage in the vicinity of the site are the active Rose Canyon and Coronado Bank fault zones mapped approximately 3 and 16 miles southwest of the site, respectively, and the active Elsinore and San Jacinto fault zones mapped approximately 31 and 54 miles northeast of the site, respectively.

Although research on earthquake prediction has greatly increased in recent years, geologists and seismologists have not yet reached the point where they can predict when and where an earthquake will occur. Nevertheless, on the basis of current technology, it is reasonable to assume that the proposed buildings may be subject to the effects of at least one moderate to major earthquake during their design lives. During such an earthquake, the danger from fault offset through the site is remote, but relatively strong ground shaking is likely to occur.

Strong ground shaking not only can cause structures to shake, but it also has the potential for including other phenomena that can indirectly cause substantial ground movements or other hazards resulting in damage to structures. These phenomena include seismically induced waves such as tsunamis and seiches, inundation due to dam or embankment failure, soil liquefaction, landsliding, lateral spreading, differential compaction and ground cracking. Available information indicates that the location of and geotechnical conditions at the site are not conducive to any of these phenomena.



Based on our review of readily available geotechnical literature and our recent field investigation, the cut portion of the site is underlain by formational materials of the Torrey Sandstone (see Figure Nos. Va and Vb). The remainder of the site is underlain by fill soils overlying the Torrey Sandstone. The formational materials encountered on the site consist of dense to very dense, clayey and silty sand (sandstone) and dense to very dense sandy gravel (formational conglomerate). The fill soils encountered at the site consist predominantly of medium dense clayey and silty sands.

Based on formation outcrops and our prior work in the vicinity of the subject property, the Torrey Sandstone is essentially flat-lying with no significant geologic structure such as tilting or folding.

#### VII. LABORATORY TESTS AND SOIL INFORMATION

Laboratory tests were performed on samples of the soils and formational materials encountered in order to evaluate their index, strength, expansion, and compressibility properties. The following tests were conducted on the sampled soils:

- 1. Laboratory Compaction Characteristics (ASTM D1557-09)
- Determination of Percentage of Particles Smaller than #200 (ASTM D1140-06)
- 3. Expansion Index (ASTM D4829-07)
- 4. Direct Shear Test (ASTM D3080-04)
- 5. Ring-lined Barrel Density Test (ASTM D3550-07)



Laboratory compaction tests establish the laboratory maximum dry density and optimum moisture content of the tested soils and are also used to aid in evaluating the strength characteristics of the soils. The test results are presented on the boring logs at the appropriate sample depths.

The particle size smaller than a No. 200 sieve analysis aids in classifying the tested soils in accordance with the Unified Soil Classification System and provides qualitative information related to engineering characteristics such as expansion potential, permeability, and shear strength. The test results are presented on the boring logs at the appropriate sample depths.

The expansion potential of a sample of the more clayey soils encountered within the depth of proposed grading was determined utilizing the procedures specified in (ASTM D4829). The measured Expansion Index is 32. The test results are presented on the boring log. Based on this test, the classification tests and our past experience with similar soils, it is our opinion that the more clayey soils encountered with the proposed grading depths possess a low potential for expansion.

Four laboratory direct shear tests were performed to aid in evaluating the strength properties of the on-site soils. Two tests were performed on relatively undisturbed samples of the formational sandstone materials encountered and two tests were performed on samples of the formational sandstone and existing fill soils remolded to approximately 95 percent of the laboratory maximum density (95 percent relative compaction). The test results are shown on Figure Nos. VIa-VId.



Laboratory dry density tests were performed on selected relatively undisturbed samples of the existing fill and formational materials encountered to aid in evaluating engineering characteristics. The test results are presented on the boring logs at the appropriate sample depths.

#### VIII. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on the field investigation conducted by our firm, our laboratory test results, and our experience with similar soils and formational bedrock materials. The primary feature of concern at the site is the potential for excessive differential settlements of the proposed structures due to relatively heavy and variable foundation loads and the presence of both very dense formational sandstone materials and varying depths of fill at the planned foundation level. In order to minimize the potential for differential settlement damage to the proposed structures due to the relatively high and variable foundation loads and mixed foundation conditions, we recommend that all existing fill soils and any underlying loose natural soils be removed and replaced with fill soil compacted to a minimum degree of compaction of 95 percent.

The opinions, conclusions and recommendations presented in this report are contingent upon **Geotechnical Exploration**, **Inc.** being retained to review the final plans and specifications as they are developed and to observe the site earthwork and installation of foundations.

#### A. Earthwork

 <u>Clearing and Stripping:</u> The site should be cleared of any miscellaneous debris that may be present at the time of construction and stripped of all



vegetation. The cleared and stripped materials should be properly disposed of off-site.

- 2. <u>Excavation:</u> Based on the results of our exploratory borings as well as our experience with similar materials, it is our opinion that the natural formational materials can in general be excavated utilizing ordinary heavy earthmoving equipment. Contractors should not, however, be relieved of making their own independent evaluation of the excavatability of the on-site materials prior to submitting their bids.
- 3. <u>Removal and Recompaction of Existing Fill and Underlying Loose Natural Soils:</u> We recommend that all existing fill soils and any underlying loose natural soils be removed to a depth of 20 feet below the planned subgrade level and be replaced with fill soil compacted to a minimum degree of compaction of 95 percent at a moisture content within 2 percent of the laboratory optimum.
- 4. <u>Subgrade Preparation:</u> After the site has been cleared, stripped, and the required excavations made, the exposed subgrade soils in areas to receive fill and/or building improvements should be scarified to a depth of 8 inches, moisture conditioned to within 2 percent of the laboratory optimum, and compacted to the requirements for structural fill.
- 5. <u>Material for Fill:</u> All existing on-site soils with an organic content of less than 3 percent by volume are, in general, suitable for use as fill. Fill materials should not, however, contain rocks or lumps more than 6 inches in greatest dimension, not more than 15 percent larger than 2½ inches, and no more than 25 percent of the fill should be larger than ¼-inch. Any formational



conglomerate materials removed from the planned excavations should only be reused as fill in non-building areas. All materials for use as fill should be approved by our representative prior to filling.

- 6. Fill Compaction: All structural fill should, in general, be compacted to a minimum degree of compaction of 90 percent at a moisture content within 2 percent of the laboratory optimum based on ASTM D1557-09. As noted above in Recommendation #3, however, all fill soil placed in the upper 20 feet below the proposed structures and extending laterally 15 feet outside of the building limits should be compacted to a minimum degree of compaction of 95 percent at a moisture content within 2 percent of the laboratory In addition, the upper 6 inches of subgrade soil beneath pavements should be scarified, moisture conditioned, and compacted to a minimum degree of compaction of 95 percent just prior to placement of the aggregate base layer or concrete pavement. Fill material should be spread and compacted in uniform horizontal lifts not exceeding 8 inches in uncompacted thickness. Before compaction begins, the fill should be brought to the recommended water content by either aerating and drying the fill if it is too wet or moistening the fill with water if it is too dry. Each lift should be thoroughly mixed before compaction to ensure a uniform distribution of moisture.
- 7. <u>Permanent Slopes:</u> We recommend that any required permanent cut and fill slopes be constructed to an inclination no steeper than 2 (horizontal) to 1 (vertical). The project plans and specifications should contain all necessary design features and construction requirements to prevent erosion of the onsite soils both during and after construction. Slopes and other exposed



ground surfaces should be appropriately planted with a protective ground cover.

Fill slopes should be constructed so as to assure that the recommended minimum degree of compaction is attained out to the finished slope face. This may be accomplished by "backrolling" with a sheepsfoot roller or other suitable equipment as the fill is raised. Placement of fill near the tops of slopes should be carried out in such a manner as to assure that loose, uncompacted soils are not sloughed over the tops and allowed to accumulate on the slope face.

- 8. <u>Temporary Slopes:</u> Based on our subsurface investigation work, laboratory test results, and engineering analysis, temporary cut-slopes in the Torrey Sandstone materials and/or existing compacted fill materials should be safe against mass instability at an inclination of 3/4 (horizontal) to 1 (vertical). Some localized sloughing or ravelling of the soils exposed on the slopes, however, may occur. Since the stability of temporary construction slopes will depend largely on the contractor's activities and safety precautions (storage and equipment loadings near the tops of cut-slopes, surface drainage provisions, etc.) it should be the contractor's responsibility to establish and maintain all temporary construction slopes at a safe inclination appropriate to his methods of operation.
- 9. <u>Temporary Shoring:</u> We recommend that temporary shoring required where there is insufficient space for temporary slopes be designed to resist an equivalent fluid pressure of 30 pounds per cubic foot (pcf). Lateral resistance for the shoring caissons should be calculated utilizing a passive equivalent fluid pressure of 700 pcf against the diameter of the caissons.



10. <u>Trench and Retaining/Basement Wall Backfills:</u> All backfill soils placed in utility trenches or behind retaining/basement walls should be compacted to a minimum degree of compaction of 90 percent. Backfill material should be placed in lift thicknesses appropriate to the type of compaction equipment utilized and compacted to a minimum degree of 90 percent by mechanical means. In pavement areas, that portion of the trench backfill within the pavement section should conform to the material and compaction requirements of the adjacent pavement section.

Our experience has shown that even shallow, narrow trenches such as for irrigation and electrical lines that are not properly compacted can result in problems, particularly with respect to shallow groundwater accumulation and migration.

11. <u>Surface Drainage:</u> Positive surface gradients should be provided adjacent to the buildings, and roof gutters and downspouts should be installed so as to direct water away from foundations and slabs toward suitable discharge facilities. Ponding of surface water should not be allowed anywhere on the site.

In light of the relatively impermeable nature of the compacted fill and formational soils at the site, and the lack of any significant hydraulic head, it is our opinion that the site is not suitable for the infiltration/percolation of stormwater. In addition, groundwater infiltration from the proposed surface drainage swales will be negligible and have no adverse impact on this project or down-gradient properties.



Appropriate erosion control measures should be taken at all times during and after construction to prevent surface runoff waters from entering footing excavations or ponding on finished building pad areas.

#### B. Foundations

12. <u>Footings:</u> We recommend that the proposed buildings be supported on conventional, individual-spread and/or continuous footing foundations bearing on dense, undisturbed formational sandstone materials and/or fill soils compacted to a minimum degree of compaction of 95 percent. All footings should be founded at least 3 feet below the lowest adjacent finished grade and have a minimum width of 4 feet. Footings located adjacent to the tops of slopes should be extended sufficiently deep so as to provide at least 10 feet of horizontal cover or 1½ times the width of the footing, whichever is greater, between the slope face and outside edge of the footing at the footing bearing level. Footings located adjacent to utility trenches should have their bearing surfaces situated below an imaginary 1.5 to 1.0 plane projected upward from the bottom edge of the adjacent utility trench.

Footings conforming to the preceding recommendations may be designed for allowable bearing pressures of 8,000 pounds per square foot (psf) for combined dead and live loads and 10,600 psf for all loads, including wind or seismic.

All continuous footings should contain top and bottom reinforcement to provide structural continuity and to permit spanning of local irregularities. We recommend that a minimum of two No. 5 top and two No. 5 bottom reinforcing bars be provided in the footings. A minimum clearance of 3



inches should be maintained between steel reinforcement and the bottom or sides of the footing. In order for us to offer an opinion as to whether the footings are founded on soils of sufficient load bearing capacity, it is essential that our representative inspect the footing excavations prior to the placement of reinforcing steel or concrete.

NOTE: The project Civil/Structural Engineer should review all reinforcing schedules. The reinforcing minimums recommended herein are not to be construed as structural designs, but merely as minimum reinforcement to reduce the potential for cracking and separations.

13. Seismic Design Criteria: Site-specific seismic design criteria for the proposed structures are presented in the following table in accordance with Section 1613 of the 2010 CBC, which incorporates by reference ASCE 7-05 for seismic design. We have determined the mapped spectral acceleration values for the site, based on a latitude of 32.9507 degrees and longitude of -117.2385 degrees, utilizing a program titled "Seismic Hazard Curves, Response Parameters and Design Parameters-v5.0.8," provided by the USGS, which provides a solution for ASCE 7-05 (Section 1613 of the 2010 CBC) utilizing digitized files for the Spectral Acceleration maps. In addition, we have assigned a Site Soil Classification of C.

TABLE I

Mapped Spectral Acceleration Values and Design Parameters

Ss	S <sub>1</sub>	Fa	F <sub>v</sub>	Sms	S <sub>m1</sub>	Sds	S <sub>d1</sub>
1 412	0.521	1.0	1.3	1.412	0.678	0.941	0.452



If the buildings are designed utilizing dynamic lateral force procedures, we recommend that the spectral acceleration values in the following table be utilized.

Accelerat	ion Response Spectra
Period (Sec)	Spectral Acceleration (g)
0	0.376
0.096	0.941
0.200	0.941
0.480	0.941
0.500	0.903
0.600	0.753
0.700	0.645
0.800	0.565
0.900	0.502
1.000	0.452
1.100	0.411
1.200	0.376
1.300	0.347
1.400	0.323
1.500	0.301
1.600	0.282
1.700	0.266
1.800	0.251
1.900	0.238
2.000	0.226

14. <u>Lateral Loads</u>: Lateral load resistance for the structures supported on footing foundations may be developed in friction between the foundation bottoms and the supporting subgrade. An allowable friction coefficient of 0.35 is considered applicable. An additional allowable passive resistance equal to an equivalent fluid weight of 350 pounds per cubic foot acting against the foundations may be used in design provided the footings are poured neat against the adjacent undisturbed formational and/or compacted fill materials. These lateral resistance values assume a level surface in front of the footing



for a minimum distance of three times the embedment depth of the footing and any shear keys. For ground surfaces sloping down from footings at an inclination of 2.0 horizontal to 1.0 vertical, the allowable passive resistance should be reduced to 85 pcf. For variations between a level surface and 2.0:1.0 slopes in front of footings, passive resistance values may be interpolated.

- 15. <u>Settlement:</u> Settlements under building loads are expected to be within tolerable limits for the proposed structures. For footings designed in accordance with the recommendations presented in the preceding paragraphs, we anticipate that total settlements should range from about \$V\_2\$-inch for the smallest column loads to 1 inch for the largest column loads. Footing settlements should occur essentially as the construction progresses and loads are applied. We anticipate that post-construction differential settlements should be less than \$V\_4\$-inch in 25 feet.
- earth pressures and any additional lateral pressures caused by surcharge loads on the adjoining retained surface. We recommend that unrestrained (cantilever) walls with level backfill be designed for an equivalent fluid pressure of 35 pounds per cubic foot (pcf). We recommend that restrained walls (i.e., basement walls or any walls with angle points that restrain them from rotation) with level backfill be designed for an equivalent fluid pressure of 35 pcf plus an additional uniform lateral pressure of 5H pounds per square foot, where H is equal to the height of backfill above the top of the wall footing in feet. Unrestrained walls with up to 2.0:1.0 sloping backfills should be designed for an equivalent fluid pressure of 50 pcf. Restrained walls with up to 2.0:1.0 sloping backfills should be designed for an equivalent fluid



pressure of 50 pcf plus an additional uniform lateral pressure of 7H pounds per square foot, where H is equal to the height of backfill above the top of the wall footing in feet. Wherever walls will be subjected to surcharge loads, they should also be designed for an additional uniform lateral pressure equal to one-third the anticipated surcharge pressure in the case of unrestrained walls and one-half the anticipated surcharge pressure in the case of restrained walls.

For seismic design of unrestrained walls, we recommend that the seismic pressure increment be taken as a fluid pressure distribution utilizing an equivalent fluid weight of 14 pcf. For restrained walls we recommend that the seismic pressure increment be taken as a fluid pressure distribution utilizing an equivalent fluid weight of 22 pcf added to the active static fluid pressure utilizing an equivalent fluid weight of 35 pcf.

The preceding design pressures assume that the walls are backfilled with low expansion potential materials (Expansion Index less than 50) and that there is sufficient drainage behind the walls to prevent the build-up of hydrostatic pressures from surface water infiltration. We recommend that drainage be provided by a composite drainage material such as Miradrain 6000/6200 and QuickDrain or equivalent. No gravel or perforated pipe is used with the Miradrain/QuickDrain system. The drainage material should terminate 12 inches below the finish surface where the surface is covered by slabs or 18 inches below the finish surface in landscape areas.

Backfill placed behind the walls should be compacted to a minimum degree of compaction of 90 percent using light compaction equipment. If heavy equipment is used, the walls should be appropriately temporarily braced.



Retaining walls should be supported on footing foundations designed in general accordance with Recommendation #12 above. Lateral load resistance for the walls can be developed in accordance with Recommendation #14 "Lateral Loads".

#### C. Concrete Slab On-grade Criteria

- Minimum Floor Slab Thickness and Reinforcement: Based on our experience, we have found that, for various reasons, floor slabs occasionally crack, causing brittle surfaces such as ceramic tiles to become damaged. Therefore, we recommend that all slabs-on-grade contain at least a minimum amount of reinforcing steel to reduce the separation of cracks, should they occur. Interior floor slabs should be a minimum of 5 inches actual thickness and be reinforced with No. 4 bars on 24-inch centers, both ways, placed at midheight in the slab.
- 18. <u>Concrete Isolation Joints:</u> We recommend the project Civil/Structural Engineer incorporate isolation joints and sawcuts to at least one-fourth the thickness of the slab in any floor designs. The joints and cuts, if properly placed, should reduce the potential for and help control floor slab cracking. We recommend that concrete shrinkage joints be spaced no farther than approximately 20 feet apart, and also at re-entrant corners. However, due to a number of reasons (such as base preparation, construction techniques, curing procedures, and normal shrinkage of concrete), some cracking of slabs can be expected.



19. <u>Slab Moisture Emission:</u> Although it is not the responsibility of geotechnical engineering firms to provide moisture protection recommendations, as a service to our clients we provide the following discussion and suggested minimum protection criteria. Actual recommendations should be provided by the architect and waterproofing consultants.

Soil moisture vapor can result in damage to moisture-sensitive floors, some floor sealers, or sensitive equipment in direct contact with the floor, in addition to mold and staining on slabs, walls and carpets.

The common practice in Southern California has been to place vapor retarders made of PVC, or of polyethylene. PVC retarders are made in thickness ranging from 10- to 60-mil. Polyethylene retarders, called visqueen, range from 5- to 10-mil in thickness. These products are no longer considered adequate for moisture protection and can actually deteriorate over time.

Specialty vapor retarding and barrier products possess higher tensile strength and are more specifically designed for and intended to retard moisture transmission into and through concrete slabs. The use of such products is highly recommended for reduction of floor slab moisture emission.

The following American Society for Testing and Materials (ASTM) and American Concrete Institute (ACI) sections address the issue of moisture transmission into and through concrete slabs: ASTM E1745-97 (2009) Standard Specification for Plastic Water Vapor Retarders Used in Contact Concrete Slabs; ASTM E154-88 (2005) Standard Test Methods for Water



Vapor Retarders Used in Contact with Earth; ASTM E96-95 Standard Test Methods for Water Vapor Transmission of Materials; ASTM E1643-98 (2009) Standard Practice for Installation of Water Vapor Retarders Used in Contact Under Concrete Slabs; and ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

Based on the above, we recommend that the vapor barrier consist of a minimum 15-mil extruded polyolefin plastic (no recycled content or woven materials permitted). Permeance as tested before and after mandatory conditioning (ASTM E1745 Section 7.1 and sub-paragraphs 7.1.1-7.1.5) should be less than 0.01 perms (grains/square foot/hour inHg) and comply with the ASTM E1745 Class A requirements. Installation of vapor barriers should be in accordance with ASTM E1643. The basis of design is Stego wrap vapor barrier 15-mil.

- 19.1 Common to all acceptable products, vapor retarder/barrier joints must be lapped and sealed with mastic or the manufacturer's recommended tape or sealing products. In actual practice, stakes are often driven through the retarder material, equipment is dragged or rolled across the retarder, overlapping or jointing is not properly implemented, etc. All these construction deficiencies reduce the retarder's effectiveness. In no case should retarder/barrier products be punctured or gaps be allowed to form prior to or during concrete placement.
- 19.2 Vapor retarders/barriers do not provide full waterproofing for structures constructed below free water surfaces. They are intended to help reduce or prevent vapor transmission and/or capillary migration through the soil and through the concrete slabs.



Waterproofing systems must be designed and properly constructed if full waterproofing is desired. The owner and project designers should be consulted to determine the specific level of protection required.

20. <u>Exterior Slab Reinforcement:</u> As a minimum for protection of on-site improvements, we recommend that all exterior pedestrian concrete slabs be founded on properly compacted fill soils. The slabs should be 4 inches thick and reinforced with No. 4 bars at 24-inch centers, both ways, at the center of the slab, and contain adequate isolation and control joints. The performance of on-site improvements can be greatly affected by soil base preparation and the quality of construction. It is therefore important that all improvements are properly designed and constructed for the existing soil conditions. The improvements should not be built on loose soils or fills placed without our observation and testing.

For exterior slabs with the minimum shrinkage reinforcement, control joints should be placed at spaces no farther than 15 feet apart or the width of the slab, whichever is less, and also at re-entrant corners. Control joints in exterior slabs should be sealed with elastomeric joint sealant. The sealant should be inspected every 6 months and be properly maintained.

#### D. Slope Performance

21. <u>Slope Top/Face Performance:</u> The soils that occur in close proximity to the top or face of even properly compacted fill or dense natural ground cut slopes often possess poor lateral stability. The degree of lateral and vertical deformation depends on the inherent expansion and strength characteristics of the soil types comprising the slope, slope steepness and height, loosening



of slope face soils by burrowing rodents, and irrigation and vegetation maintenance practices, as well as the quality of compaction of fill soils. Structures and other improvements could suffer damage due to these soil movement factors if not properly designed to accommodate or withstand such movement.

22. <u>Slope Top Structure Performance:</u> Rigid improvements such as top-of-slope walls, columns, decorative planters, concrete flatwork, and other similar types of improvements can be expected to display varying degrees of separation typical of improvements constructed at the top of a slope. The separations result primarily from slope top lateral and vertical soil deformation processes. These separations often occur regardless of being underlain by cut or fill slope material. Proximity to a slope top is often the primary factor affecting the degree of separations occurring.

Typical and to-be-expected separations can range from minimal to up to 1 inch or greater in width. In order to minimize the effect of slope-top lateral soil deformation, we recommend that the top-of-slope improvements be designed with flexible connections and joints in rigid structures so that the separations do not result in visually apparent cracking damage and/or can be cosmetically dressed as part of the ongoing property maintenance. These flexible connections may include "slip joints" in wrought iron fencing, evenly spaced vertical joints in block walls or fences, control joints with flexible caulking in exterior flatwork improvements, etc.



## E. Pavements

23. <u>Concrete Pavement:</u> We recommend that concrete pavements subject only to automobile and light truck traffic (including the parking garage slab) be 6 inches thick and be supported directly on properly prepared on-site subgrade soils. The concrete for areas subject to heavy truck traffic (such as trash trucks and heavy delivery trucks) should have a minimum thickness of 8 inches. The upper 8 inches of the subgrade below the slabs should be compacted to a minimum degree of compaction of 95 percent just prior to paving. The concrete should conform to Section 201 of The Standard Specifications for Public Works Construction, 1994 Edition, for Class 560-C-3250.

In order to control shrinkage cracking, we recommend that saw-cut, weakened-plane joints be provided at about 15-foot centers both ways. The pavement slabs should be saw-cut no more than 24 hours after the placement of the concrete. The depth of the joint should be one-quarter of the slab thickness and its width should not exceed 0.02-feet. Reinforcing steel is not necessary unless it is desired to increase the joint spacing recommended above.

24. <u>Asphalt Concrete Pavement</u>: Based on the results of our exploratory borings and laboratory tests as well as our experience with soils similar to those encountered at the site, we anticipate that any required AC pavement sections for the proposed development will be on the order of 2 inches of asphalt concrete on 6 inches of aggregate base for parking stalls and minor traffic channels (Traffic Index of 4.0), 2½ inches on 7 inches for major automobile traffic channels (TI of 5.0), and 3 inches on 9 inches for



pavements subject to up to 27 heavy 2-axle trucks per week (TI of 6.0). Final pavement section recommendations should be based on R-value (Resistance) tests performed on bulk samples of the soils that are exposed at the finished subgrade elevations across the site at the completion of the mass grading operations.

Asphalt concrete should consist of Type III-C2-PG64-10 conforming to the Standard Specifications for Public Works Construction, 2000 Edition (Standard Specifications), Section 400-4 and be placed in accordance with Section 302-5. Aggregate base should conform to the requirements for Crushed Aggregate Base or Crushed Miscellaneous Base in Section 200-2 of the Standard Specifications. The upper 6 inches of the pavement subgrade soil as well as the aggregate base layer should be compacted to a minimum degree of compaction of 95 percent. Preparation of the subgrade and placement of the asphalt concrete and base materials should be performed under the observation of our representative.

## F. General Recommendations

25. <u>Project Start Up Notification:</u> In order to minimize any work delays during site development, this firm should be contacted 24 hours prior to any need for observation of footing excavations or field density testing of compacted fill soils. If possible, placement of formwork and steel reinforcement in footing excavations should not occur prior to observing the excavations; in the event that our observations reveal the need for deepening or redesigning foundation structures at any locations, any formwork or steel reinforcement in the affected footing excavation areas would have to be removed prior to



correction of the observed problem (i.e., deepening the footing excavation, recompacting soil in the bottom of the excavation, etc.).

26. <u>Waterproofing Quality Control</u>: It must be understood that it is not within the scope of our services to provide quality control oversight for basement or retaining wall waterproofing. It is the responsibility of the contractor and/or their retained construction inspection service provider to verify proper wall sealing and protection board installation (if needed).

## IX. GRADING NOTES

Geotechnical Exploration, Inc. recommends that we be retained to verify the actual soil conditions revealed during site grading work and footing excavation to be as anticipated in this "Report of Preliminary Geotechnical Investigation" for the project. In addition, the compaction of any fill soils placed during site grading work must be observed and tested by the soil engineer. It is the responsibility of the grading contractor to comply with the requirements on the grading plans and the local grading ordinance. All retaining wall and trench backfill should be properly compacted. Geotechnical Exploration, Inc. will assume no liability for damage occurring due to improperly or uncompacted backfill placed without our observations and testing.

### X. LIMITATIONS

Our conclusions and recommendations have been based on available data obtained from our field investigation and laboratory analysis, as well as our experience with similar soils and formational materials located in this area of San Diego. Of necessity, we must assume a certain degree of continuity between exploratory



excavations. It is, therefore, necessary that all observations, conclusions, and recommendations be verified at the time grading operations begin or when footing excavations are placed. In the event discrepancies are noted, additional recommendations may be issued, if required.

The work performed and recommendations presented herein are the result of an investigation and analysis that meet the contemporary standard of care in our profession within the City of San Diego. No warranty is provided.

This report should be considered valid for a period of two (2) years, and is subject to review by our firm following that time. If significant modifications are made to the building plans, especially with respect to the height and location of any proposed structures, this report must be presented to us for immediate review and possible revision.

It is the responsibility of the owner and/or developer to ensure that the recommendations summarized in this report are carried out in the field operations and that our recommendations for design of this project are incorporated in the structural plans. We should be retained to review the project plans once they are available, to see that our recommendations are adequately incorporated in the plans.

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



The firm of **Geotechnical Exploration**, **Inc.** shall not be held responsible for changes to the physical condition of the property, such as addition of fill soils or changing drainage patterns, which occur subsequent to issuance of this report and the changes are made without our observations, testing, and approval.

This opportunity to be of service is sincerely appreciated. Once again, should any questions arise concerning this report, please feel free to contact the undersigned. Reference to our **Job No. 07-9487.1** will expedite a reply to your inquiries.

Respectfully submitted,

GEOTECHNICAL EXPLORATION, INC.

Wm. D. Hespeler, G.

Senior Geotechnical

ay K. Heiser

Senior Project Geologist

Leslie D. Reed, President

C.E.G. 999[exp. 3/31/13]/R.G. 3391





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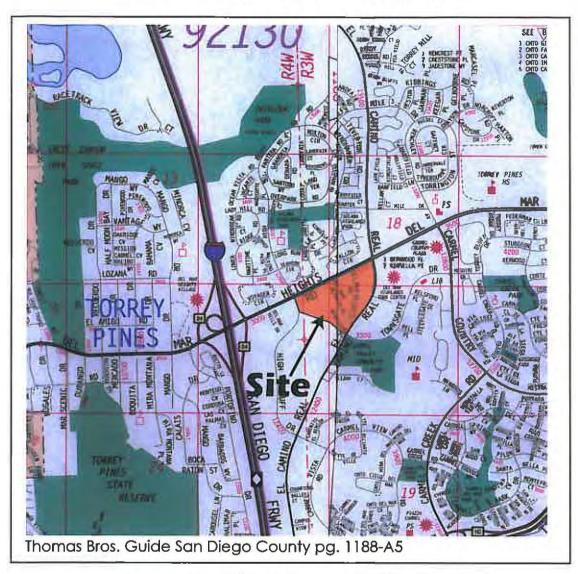
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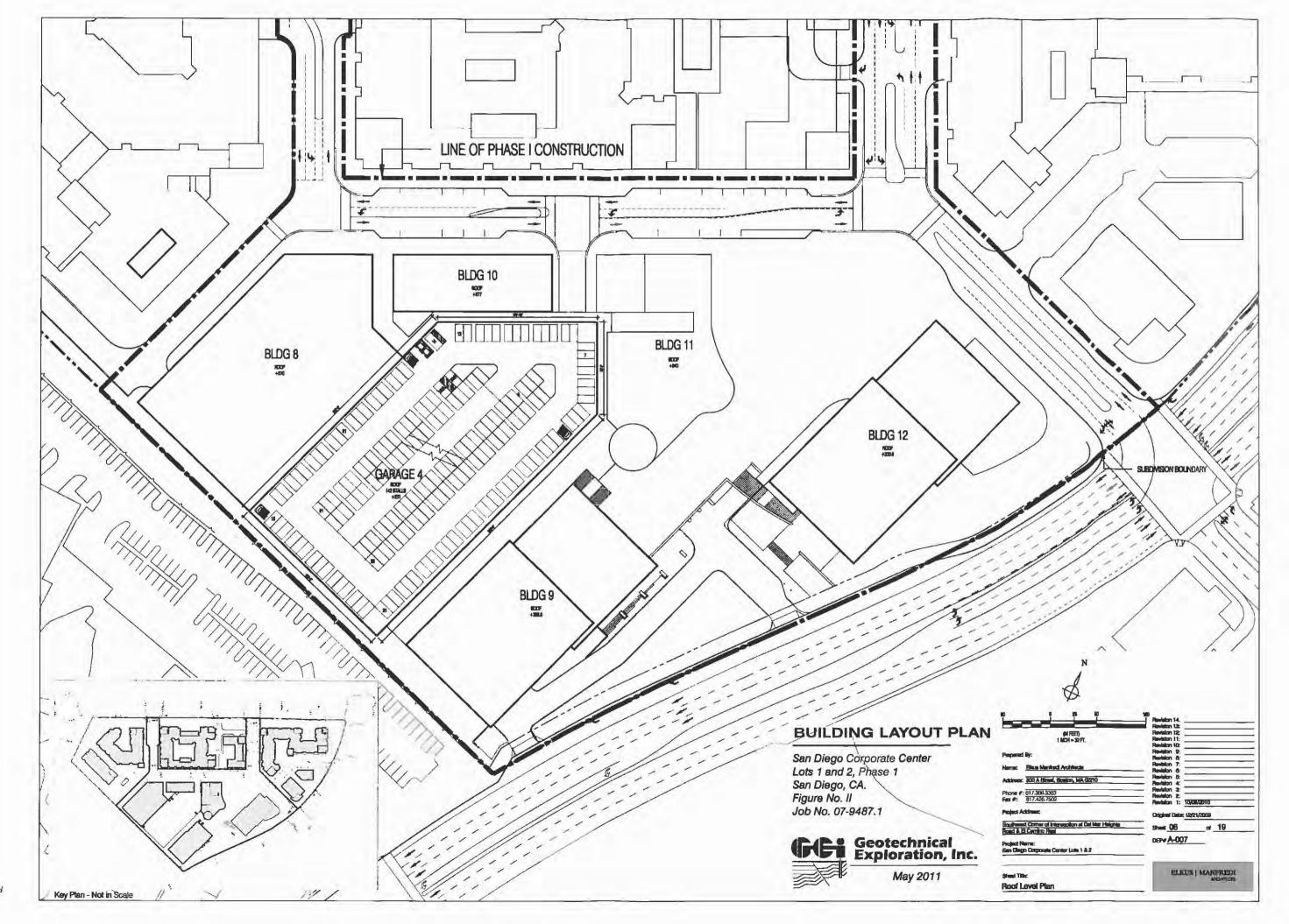
# **VICINITY MAP**



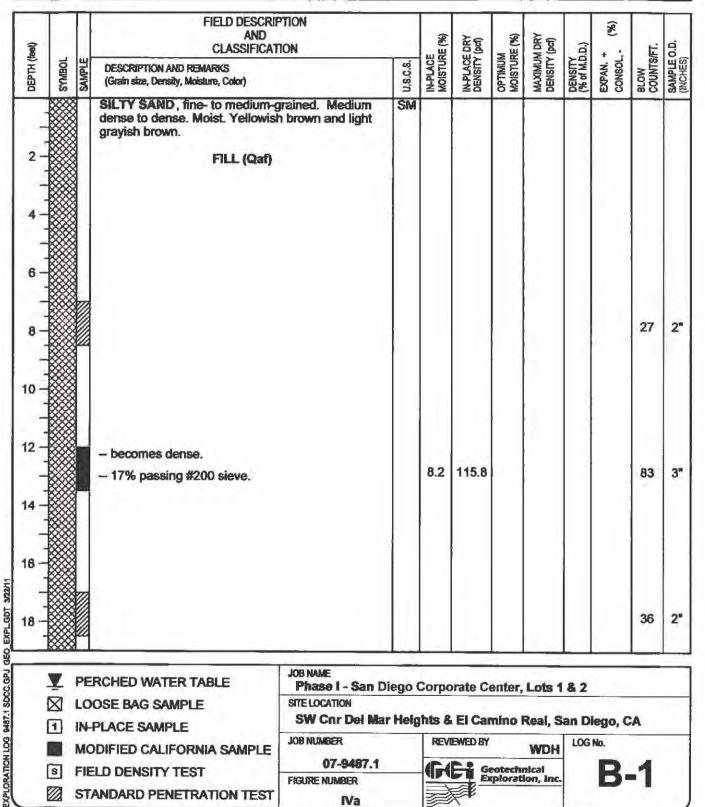
San Diego Corporate Center Lots 1 and 2 Phase 1 San Diego, CA.

> Figure No. I Job No. 07-9487.1



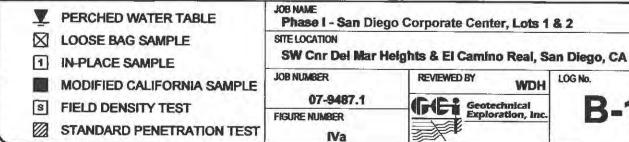


EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-6-11	
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY	
± 214' Mean Sea Level	Not Encountered	WDH	



LOG No.

Geotechnical Exploration, Inc.



EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch dlameter Boring	2-6-11
SURFACE ELEVATION	GROUNDWATERV SEEPAGE DEPTH	LOGGED BY
± 214' Mean Sea Level	Not Encountered	WDH

(ped)			FIELD DESCRIP AND CLASSIFICATI			E RE (%)	E DRY	M RE (%)	M DRY	, O.O.)	(%)	M.	0.0.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
20 -			SILTY SAND, fine- to medium-g dense to dense. Moist. Yellowish grayish brown. FILL (Qaf)	rained. Medium brown and light	SM								
24 -			SILTY SAND (FORMATIONAL Sine- to medium-grained. Dense, brown.  TORREY SANDSTO  – 16% passing #200 sieve.	. Moist. Yellowish	SM	8.8 1	115.6					65	3
26 -	-												
28 -			- fine-grained.									24	1
30 -													
32 -			<ul> <li>very dense from 32'; lightly cer medium-grained.</li> </ul>	mented, fine- to								69	2
36 - -						5.1	102.8					100/	
	¥ 🖂		RCHED WATER TABLE	JOB NAME Phase I - San D	iego	100		enter,	Lots	1 & 2		8"	1
	1		PLACE SAMPLE	SW Cnr Del Ma	r Heig				Real, S		3000	CA	
	s	FIE	DDIFIED CALIFORNIA SAMPLE ELD DENSITY TEST ANDARD PENETRATION TEST	JOB NUMBER  07-9487.1  FIGURE NUMBER  IVID			EWED BY		WDH nical ion, Inc	LOG	B	-1	

▼ PERCHED WATER TABLE	JOB NAME Phase I - San Dieg	go Corporate Center, Lots 1	& 2		
	SITE LOCATION				
1 IN-PLACE SAMPLE	SW Cnr Del Mar H	eights & El Camino Real, Sa	an Diego, CA		
MODIFIED CALIFORNIA SAMPLE	JOB NUMBER	REVIEWED BY WDH	LOG No.		
S FIELD DENSITY TEST	07-9487.1	Geotechnical Exploration, Inc.	R-1		
STANDARD PENETRATION TEST	FIGURE NUMBER	Experaeon, mc.	D-1		

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-6-11	
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY	
± 214' Mean Sea Level	Not Encountered	WDH	

(bed)			FIELD DESCRIP AND CLASSIFICATI			E RE (%)	(pd)	M RE (%)	M DRY (pd)	('0')	(%)	FT.	0.D.
DEPTH (faet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pd)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
40 -			SILTY SAND (FORMATIONAL Sine- to medium-grained. Dense brown.  TORREY SANDSTO	Moist. Yellowish	SM								
42 -												87/ 12"	2
44 -													
46 -				nasa u									
48 -			- very dense; no cementation, fi	ne-grained.								89/ 9"	2
52			SANDY GRAVEL (FORMATION CONGLOMERATE), with gravel diameter and silty sand matrix. Yellowish brown.  TORREY SANDSTO	to 1-1/2" in Very dense. Moist.	GM								
56 <del>-</del>			Practical Drilling Refusal.  Bottom @ 55'										
	Ž Ø	LO	RCHED WATER TABLE OSE BAG SAMPLE	JOB NAME Phase I - San D SITE LOCATION SW Cnr Del Mai							lego (		
j	1 S	MC	PLACE SAMPLE DDIFIED CALIFORNIA SAMPLE ELD DENSITY TEST ANDARD PENETRATION TEST	JOB NUMBER  07-9487.1  FIGURE NUMBER  IVC			EWED BY		WDH nical ion, Inc.	LOG		-1	

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-6-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 215' Mean Sea Level	Not Encountered	WDH

	Ļ	AND CLASSIFICATION		FIELD DESCRIPTION AND CLASSIFICATION		(pd)	M (%)	(pd)	('O')	(%)	FT.	O.D.
SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTUR	IN-PLACE	NUMITY	MAXIMUI	DENSITY (% of M.D	EXPAN. CONSOL	BLOW	SAMPLE O.D.	
		SILTY SAND, fine- to medium-grained. Medium dense. Moist. Yellowish brown.  FILL (Qaf)	SM									
900		SILTY SAND (FORMATIONAL SANDSTONE) fine- to medium-grained. Medium dense. Moist. Yellowish brown and tan.	SM							26	2"	
	X	TORREY SANDSTONE (Tt)		9.3	123.6	8.2	130.1	95				
		- becomes very dense.								106	2'	
				93	96.5					108/	3*	
		15% passing #200 sieve.								6*		
	SAMBOL	SYMBOL SYMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  SILTY SAND, fine- to medium-grained. Medium dense. Moist. Yellowish brown.  FILL (Qarf)  SILTY SAND (FORMATIONAL SANDSTONE) fine- to medium-grained. Medium dense. Moist. Yellowish brown and tan.  TORREY SANDSTONE (Tt)  - becomes very dense.	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  SILTY SAMD, fine- to medium-grained. Medium dense. Moist. Yellowish brown.  FILL (Qaf)  SILTY SAND (FORMATIONAL SANDSTONE) fine- to medium-grained. Medium dense. Moist. Yellowish brown and tan.  TORREY SANDSTONE (Tt)  - becomes very dense.	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  SILTY SAND, fine- to medium-grained. Medium dense. Moist. Yellowish brown.  FILL (Qaf)  SILTY SAND (FORMATIONAL SANDSTONE) fine- to medium-grained. Medium dense. Moist. Yellowish brown and tan.  TORREY SANDSTONE (Tt)  - becomes very dense.	AND CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  SILTY SAMD, fine- to medium-grained. Medium dense. Moist. Yellowish brown.  FILL (Qaf)  SILTY SAND (FORMATIONAL SANDSTONE) fine- to medium-grained. Medium dense. Moist. Yellowish brown and tan.  TORREY SANDSTONE (Tt)  9.3 123.6	AND CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  SILTY SAND, fine- to medium-grained. Medium dense. Moist. Yellowish brown.  FILL (Qaf)  SILTY SAND (FORMATIONAL SANDSTONE) fine- to medium-grained. Medium dense. Moist. Yellowish brown and tan.  TORREY SANDSTONE (Tt)  - becomes very dense.	TORREY SANDSTONE (Tt)  SILTY SAND (FORMATIONAL SANDSTONE) fine- to medium-grained. Medium dense. Moist. Yellowish brown and tan.  TORREY SANDSTONE (Tt)  9.3 123.6 8.2 130.1	TORREY SANDSTONE (Tt)  SILTY SAND (FORMATIONAL SANDSTONE) fine- to medium-grained. Medium dense. Moist. Yellowish brown and tan.  TORREY SANDSTONE (Tt)  - becomes very dense.	TORREY SANDSTONE (Tt)  AND CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Calor)  SILTY SAND (FORMATIONAL SANDSTONE) fine- to medium-grained. Medium dense. Moist. Yellowish brown and tan.  TORREY SANDSTONE (Tt)  - becomes very dense.	AND CLASSIFICATION DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  SILTY SAND, fine- to medium-grained. Medium dense. Moist. Yellowish brown and tan.  TORREY SANDSTONE (Tt)  - becomes very dense.  AND CLASSIFICATION  SW 30714WW 30 30 30 30 30 30 30 30 30 30 30 30 30	

Y	PERCHED WATER TABLE
-	

1 IN-PLACE SAMPLE

EXPLORATION LOG 9487.1 SDCC.GPJ GEO\_EXPLGDT \$72/11

MODIFIED CALIFORNIA SAMPLE

S FIELD DENSITY TEST

STANDARD PENETRATION TEST

JOB NAME

Phase I - San Diego Corporate Center, Lots 1 & 2

SITE LOCATION

SW Cnr Del Mar Heights & El Camino Real, San Diego, CA

JOB NUMBER

07-9487.1 FIGURE NUMBER

IVd

REVIEWED BY

10001

Geotechnical Exploration, Inc. LOG No.

D

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch dlameter Boring	2-6-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 215' Mean Sea Level	Not Encountered	WDH

(jeel)			FIELD DESCRIF AND CLASSIFICAT			(%) E	(pd)	/4 ₹E (%)	M DRY (pd)	,D.)	(%)	FT.	0.D.	
DEFIN (1881)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pct)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.	
Tililililililili		772	SILTY SAND (FORMATIONAL fine- to medium-grained. Medium Yellowish brown and tan.  TORREY SANDSTO	m dense. Moist.	SM							100/ 5*	2"	
ليابانانانانانا							6.6	105.9					165/ 6*	3"
			SANDY GRAVEL (FORMATION CONGLOMERATE), with silty st dense. Moist. Yellowish brown.  TORREY SANDSTO  — gravel is rounded and up to 2"	and matrix. Very	GM									
			Practical Drilling Refusal.  Bottom @ 54.5'											
7			RCHED WATER TABLE	JOB NAME Phase I - San D	)iego (	Corpo	orate C	enter,	Lots 1	& 2				
	_		OSE BAG SAMPLE PLACE SAMPLE	SW Cnr Del Ma	r Helg	hts 8	El Car	nino I	Real, S	an D	lego, C	A		
3		MO	DIFIED CALIFORNIA SAMPLE ELD DENSITY TEST ANDARD PENETRATION TEST	JOB NUMBER 07-9487.1 FIGURE NUMBER IVe		REVI	EWED BY		WDH	LOG	B.	-2		

▼ PERCHED WATER TABLE	JOB NAME Phase I - San Die	go Corporate Center, Lots 1	8.2
	SITE LOCATION		77. 77.
1 IN-PLACE SAMPLE	SW Cnr Del Mar H	leights & El Camino Real, S	an Diego, CA
MODIFIED CALIFORNIA SAM		REVIEWED BY WDH	LOG No.
S FIELD DENSITY TEST	07-9487.1 FIGURE NUMBER	Geotechnical Exploration, Inc.	R-2
STANDARD PENETRATION			UL

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch dlameter Boring	2-8-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 192' Mean Sea Level	Not Encountered	WDH/AH

(heer)			FIELD DESCRIPTION AND CLASSIFICATION		E (%)	E DRY	M PE (%)	M DRY (pcf)	('0')	(%)	FT.	0.D.
DEFIN (Reg)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
11.1.1.1.1			SILTY SAND, fine- to medium-grained. Very dense. Moist. Tan.  TORREY SANDSTONE (Tt)	SM								
1,1,1,1,1,1											83/ 10"	2
111111											97/ 10"	2
			SANDY GRAVEL (FORMATIONAL CONGLOMERATE), with silty sand matrix. Very dense. Moist. Yellowish brown. TORREY SANDSTONE (Tt)	GM							88/	
-			Bottom @ 20.5'								6"	2



EXPLORATION LOG 9487.1 SDCC.GPJ GEO\_EXPLGDT 3/22/11

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-8-11	
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY	
± 191' Mean Sea Level	Not Encountered	AH	

(pect)		). H	FIELD DESCRIP AND CLASSIFICATI			E RE (%)	E DRY	M RE (%)	M DRY (pd)	('0')	(%) +	Ę.	0.D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	(N-PLACE DRY DENSITY (pc)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pd)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2-	2 -		SILTY SAND. Loose. Moist. Dai TOPSOIL/ FILL (Qaf)	rk brown.	SM								
4 -			SILTY SAND (FORMATIONAL medium- to coarse-grained. Ver wet. Tan.	SANDSTONE) y dense. Moist to	SM								
6 -		\\	TORREY SANDSTO	NE (Tt)									
8 -	SANDY GRAVEL (FORMATION CONGLOMERATE), fine- to me Dense. Moist. Yellowish brown.  TORREY SANDSTO		dium-grained.	GM								i i managana anna i	
10 -													
12 -													
14 -	00000												
16 -	9 9					L							
	Ţ	PE	RCHED WATER TABLE	JOB NAME Phase I - San D	iego (	Corpo	rate C	enter,	Lots 1	& 2			
			OSE BAG SAMPLE PLACE SAMPLE	SW Cnr Del Ma	r Helg	hts &	El Ca	mino i	Real, S	il, San Diego, CA			
	s	MC	DDIFIED CALIFORNIA SAMPLE ELD DENSITY TEST	JOB NUMBER 07-9487.1		REVI	EWED BY	eotechi	WDH	LOG	No.	A	
			ANDARD PENETRATION TEST	FIGURE NUMBER				rpiorati	ion, Inc		D.	4	

T	PERCHED	WATER TABLE

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-8-11	
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY	
± 191' Mean Sea Level	Not Encountered	AH	

(bea)			FIELD DESCRIPTION AND CLASSIFICATION		E (%)	(pd)	M RE (%)	M DRY (pd)	('O')	(%)	FT.	0.D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pd)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
18 -	A = 0 = 0		SANDY GRAVEL (FORMATIONAL CONGLOMERATE), fine- to medium-grained. Dense. Moist Yellowish brown.  TORREY SANDSTONE (Tt)	GM								
22 -			SILTY SAND, fine- to medium-grained. Very dense. Moist. Yellowish brown to tan.  TORREY SANDSTONE (Tt)	SM								
24 -		<b>Z</b>									90/	2™
26 -											0	
28 -	N. O.											
30 -		77									001	The state of the s
			Bottom @ 32.5'								90/ 8"	2"

▼ PERCHED WATER TABLE☑ LOOSE BAG SAMPLE① IN-PLACE SAMPLE

MODIFIED CALIFORNIA SAMPLE

S FIELD DENSITY TEST

EXPLORATION LOG 9487.1 SDCC.GPJ GEO\_EXPLGDT 3/22/11

STANDARD PENETRATION TEST

JOB NAME

Phase I - San Diego Corporate Center, Lots 1 & 2

SITE LOCATION

SW Cnr Del Mar Heights & El Camino Real, San Diego, CA

JOB NUMBER REVIEWED BY ....... LOG No.

JOB NUMBER

07-9487.1
FIGURE NUMBER

IVh

Geotechnical Exploration, Inc.

LOG No.

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-inch diameter Boring	2-8-11	
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY	
± 184' Mean Sea Level	Not Encountered	AH	

()ae			FIELD DESCRIPTION AND CLASSIFICATION		(%)	DRY (pd)	A RE (%)	A DRY (pcl)	(D.)	(%)	EXPANSION INDEX	Ħ.	O.D.	
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Maisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pd)	DENSITY (% of M.D.D.)	EXPAN. +	EXPANSI	BLOW COUNTS/FT.	SAMPLE O.D.
2-			SILTY SAND, fine- to medium-g Medium dense. Moist. Tan. FILL (Qaf)  CLAYEY SAND, medium-graine Medium dense. Moist. Grayish b FILL (Qaf)	ed.	SM									
6-		X	26% passing #200 sieve.			10.0	117.8	11.0	124.0	95		32		
8-			fill materials vary; becomes mo and dark brown.	ore clayey	1	14.4	113.6						34	3'
12 -			CLAYEY SAND, fine- to mediun with gravel. Medium dense. Moi brown. FILL (Qaf)	n-grained, st. Grayish	SC								32	2'
16 -			SILTY SAND, fine- to medium-g Dense. Moist. Grayish brown. FILL (Qaf) - 12% passing #200 sieve.	rained.	SM	5.2							15	2"
	ا 🛚	.00	RCHED WATER TABLE OSE BAG SAMPLE PLACE SAMPLE	JOB NAME Phase I - SITE LOCATION SW Cnr I	1			Jay V.				ego, (	CA	
	s F	-IE	DIFIED CALIFORNIA SAMPLE LD DENSITY TEST ANDARD PENETRATION TEST	FIGURE NUMBE	487.1 R VI		REV	EWED B	Y Geotech Explorat	WD nical ion, ir	-		-5	

	Ţ	PERCHED WATER TABLE	JOB NAME Phase
	$\boxtimes$	LOOSE BAG SAMPLE	SITE LOCAT
	1	IN-PLACE SAMPLE	SW Cn
		MODIFIED CALIFORNIA SAMPLE	JOB NUMBE
	s	FIELD DENSITY TEST	FIGURE NUM
		STANDARD PENETRATION TEST	PIGURE NUM
=			

	Phase I - San Dieg	o Corporate Center, Lots 1	& 2
	SW Cnr Del Mar H	elghts & El Camino Real, S	an Diego, CA
	JOB NUMBER 07-9487.1	REVIEWED BY WIDH	LOG No.
г	FIGURE NUMBER	Geotechnical Exploration, Inc.	B-5

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 65 Auger Drill Rig	8-Inch dlameter Boring	2-8-11	
SURFACE ELEVATION	GROUNDWATERV SEEPAGE DEPTH	LOGGED BY	-
± 184' Mean Sea Level	Not Encountered	AH	

(tea)			FIELD DESCRIPTIO AND CLASSIFICATION			E (%)	(pd)	/ ₹E (%)	A DRY (pcf)	('D')	(%)	EXPANSION INDEX	<u>1</u>	O.D.					
DEPTH (feet)	CAMPO	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pd)	DENSITY (% of M.D.D.)	EXPAN. +	EXPANSI	BLOW COUNTS/FT.	SAMPLE O.D.					
20 -			SILTY SAND, fine- to medium-g Dense. Moist. Grayish brown. FILL (Qaf)	grained. S	M														
24 -			CLAYEY SAND, fine- to mediur Medium dense. Moist. Dark brow FILL (Qaf) – 22% passing #200 sieve.	n-grained. S wn.	C	11.9	11.9	11.9	11.9	11.9	11.9	108.2				7		42	3
26 -			SILTY SAND (FORMATIONAL		M														
28 - - 30 -			SANDSTONE), fine- to medium Very dense. Moist. Yellowish bro TORREY SANDSTONE 15% passing #200 sieve.	own.		9.2							94/	2					
32 -													90/ 9"	2					
34 -	1		Bottom @ 32.8'																
36 -																			
	Ţ.	PI	ERCHED WATER TABLE	JOB NAME Phase I - Sa	an i	Diego	Corpo	orate (	Center	Lots	182								
			OOSE BAG SAMPLE	STELOCATION SW Cnr Del								ego, (	CA						
	S	M	ODIFIED CALIFORNIA SAMPLE ELD DENSITY TEST TANDARD PENETRATION TEST	JOB NUMBER 07-948 FIGURE NUMBER IVJ	7.1		REV	EWED B	Y Geotech Explorat	WD inical iton, ir	-	B	-5						

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 65 Auger Drill Rig	8-Inch diameter Boring	2-9-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 186' Mean Sea Level	Not Encountered	AH

(paq)					FIELD DESCRIPTION AND CLASSIFICATION		E (%)	(pcf)	M RE (%)	M DRY (pcf)	('O')	(%)	FT.	0.D.
DEPTH (feet) SYMBOL		SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pd)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.		
2-			CLAYEY SAND, medium-grained. Medium dense. Moist. Brown.  FILL (Qaf)	SC										
4		M	- becomes grayish brown.				10.2	126.0				The state of the s		
-			- becomes very dark brown to black.											
8 -			- 21% passing #200 sieve.		11.3						63	3*		
4 -			- 20% passing #200 sieve.		8.9						47	2'		
8 -														

Ā	PERCHED WATER TABLE
$\boxtimes$	LOOSE BAG SAMPLE

1 IN-PLACE SAMPLE

EXPLORATION LOG MAT. I SDCC.GPJ GEO\_EXPLGDT 3/22/11

MODIFIED CALIFORNIA SAMPLE

FIELD DENSITY TEST

STANDARD PENETRATION TEST

JOB NAME

Phase I - San Diego Corporate Center, Lots 1 & 2

SITE LOCATION

SW Cnr Del Mar Heights & El Camino Real, San Diego, CA REVIEWED BY

JOB NUMBER

07-9487.1

FIGURE NUMBER ľVk Geotechnical Exploration, Inc.

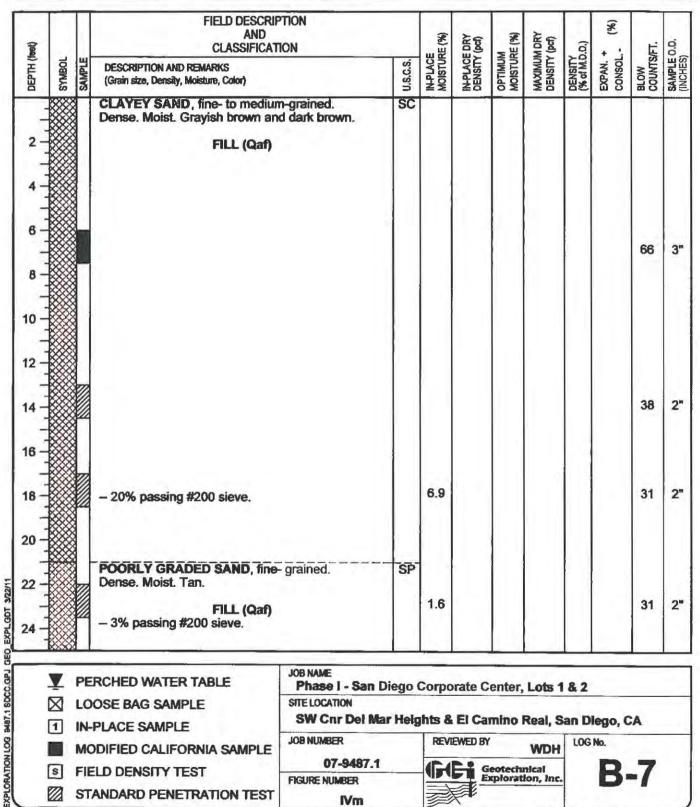
LOG No. WDH

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-9-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 186' Mean Sea Level	Not Encountered	AH

(peet)			FIELD DESCRIP AND CLASSIFICAT			E (%)	(pd)	A RE (%)	M DRY (pd)	(O:	(%)	FI.	O.D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
20 -			CLAYEY SAND, medium-graine dense. Moist. Brown. FILL (Qaf) – 20% passing #200 sieve.	ed. Medium	sc	7.2						48	2'
22 - -													
24 -			- 20% passing #200 sieve.			11.4						23	2
26 -													
28 - -			SILTY SAND (FORMATIONAL sine- to medium-grained. Very direddish brown.  TORREY SANDSTO	ense. Moist. Light	SM	9.5						78/ 8"	2
30 -	-		- 18% passing #200 sieve.	(.4									
32 - -												05/	
34 -			Bottom @ 33.8'									95/	2
	<b>Y</b>	PE	RCHED WATER TABLE	JOB NAME Phase I - San D	oneil	Corne	rato C	ontor	L ate 4				
	×	LO	OSE BAG SAMPLE	SITE LOCATION SW Cnr Del Ma							lego. C	A	
	1 5	MC	PLACE SAMPLE DDIFIED CALIFORNIA SAMPLE ELD DENSITY TEST	JOB NUMBER  07-9487.1 FIGURE NUMBER			EWED BY		WDH	LOG	-		
		ST	ANDARD PENETRATION TEST	IVI					- 1				



EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-10-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 184' Mean Sea Level	Not Encountered	AH



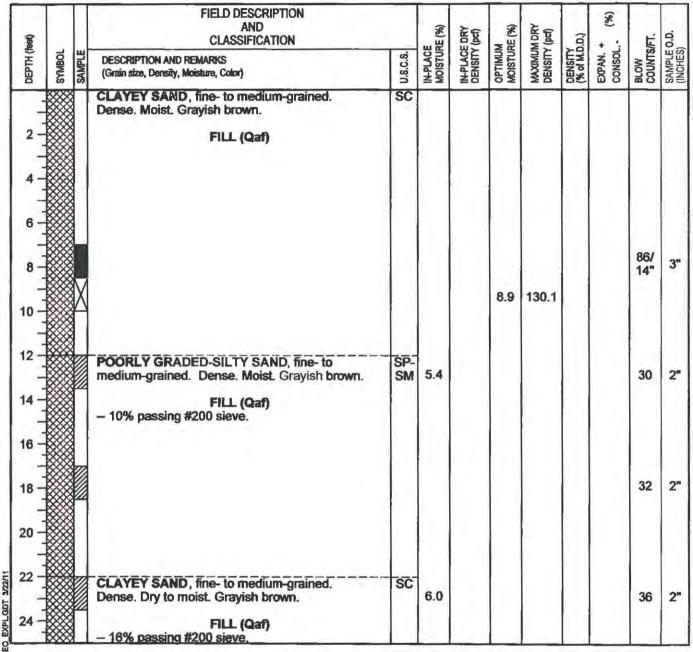


EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-10-11	
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY	8
± 184' Mean Sea Level	Not Encountered	AH	

(pea)		FIELD DESCRIP AND CLASSIFICATI			E (%)	(pd)	M RE (%)	M DRY (pcf)	('0')	(%)	FT.	0.D.
DEPTH (feet) SYMBOL	SYMBOL	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
26 -		CLAYEY SAND, fine- to medium Dense. Moist. Grayish brown. FILL (Qaf)  – 31% passing #200 sieve.		SC	11.6						35	2'
30 -		SANDY CLAY. Very stiff. Very n grayish brown. FILL (Qaf)	noist. Dark	CL								
34 -		- 79% passing #200 sieve.			29.6						31	2
40 -		SILTY SAND (FORMATIONAL : fine- to medium-grained. Very distribution of the control of the contr	ense. Moist. Tan.	SM							78/ 8"	2
44 - 46 - 48 -		Bottom @ 43'										
1 5	LO IN- MC	RCHED WATER TABLE OSE BAG SAMPLE PLACE SAMPLE ODIFIED CALIFORNIA SAMPLE ELD DENSITY TEST	JOB NAME Phase I - San D SITE LOCATION SW Cnr Del Ma JOB NUMBER 07-9487.1		jhts &	EI Ca	mino i		LOG			

-	
$\boxtimes$	LOOSE BAG SAMPLE
1	IN-PLACE SAMPLE
	MODIFIED CALIFORNIA SAMPLE
s	FIELD DENSITY TEST

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-10-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 185' Mean Sea Level	Not Encountered	AH



PERCHED WATER TABLE Phase I - San Diego Corporate Center, Lots 1 & 2 SITE LOCATION LOOSE BAG SAMPLE SW Cnr Del Mar Heights & El Camino Real, San Diego, CA IN-PLACE SAMPLE JOB NUMBER REVIEWED BY LOG No. WDH MODIFIED CALIFORNIA SAMPLE 07-9487.1 **B-8** Geotechnical Exploration, inc. FIELD DENSITY TEST s FIGURE NUMBER STANDARD PENETRATION TEST IVo

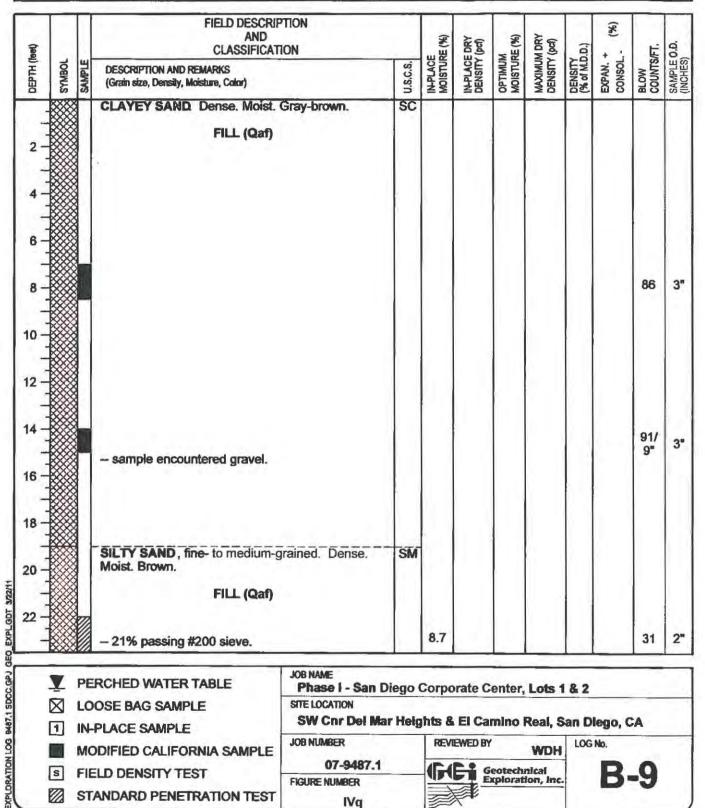
EXPLORATION LOG 9487.1 SDCC.GPJ

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-10-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 185' Mean Sea Level	Not Encountered	AH

()ee(			FIELD DESCRIF AND CLASSIFICAT			E RE (%)	E DRY	M RE (%)	M DRY (pd)	('0')	(%)	FT.	O.D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
26 -			CLAYEY SAND, fine- to medium Dense. Dry to moist. Grayish bro FILL (Qaf) - becomes medium dense. - 37% passing #200 sieve.	n-grained. wn.	SC	17.0						19	2"
30 -					Ť								į
32 -			<ul><li>becomes dense.</li><li>25% passing #200 sieve.</li></ul>			8.0						32	2"
36 -	₩												
38 -			SILTY SAND (FORMATIONAL fine- to medium-grained. Dense brown.		SM	4.7			er I			45	2"
40 -			TORREY SANDSTO – 11% passing #200 sieve.	NE (Tt)									
			- 24% passing #200 sieve.			7.1						33	2"
46 -			Bottom @ 43.5'										
48 -													
	_		RCHED WATER TABLE	JOB NAME Phase I - San I	Diego	Corpo	rate C	enter,	Lots 1	& 2			
	_		OSE BAG SAMPLE PLACE SAMPLE	SW Cnr Del Ma	ar Helg	hts &	El Ca	mino i	Real, S	an D	lego, C	A	
	s	MC	DDIFIED CALIFORNIA SAMPLE ELD DENSITY TEST ANDARD PENETRATION TEST	JOB NUMBER 07-9487.1 FIGURE NUMBER IVp		REVI	EWED BY		WDH nical lon, Inc.	LOG	ъ. В-	-8	

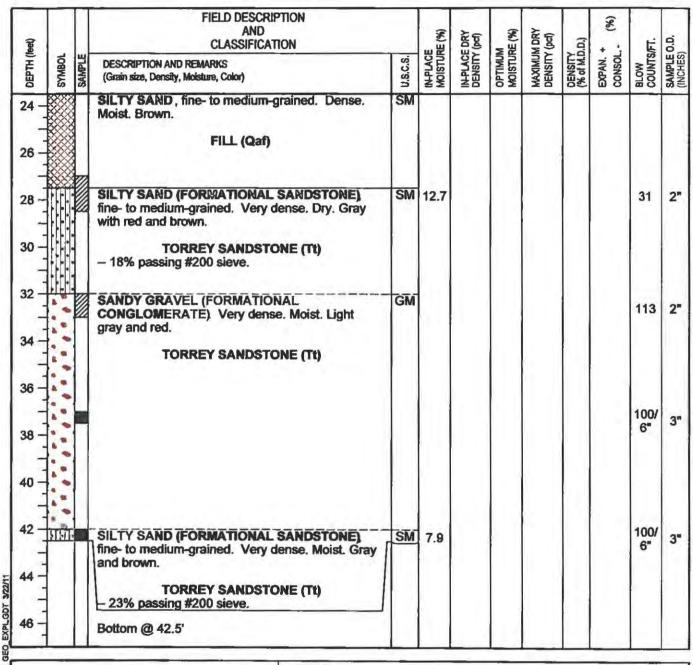
Y	PERCHED WATER TABLE
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EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-11-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 200' Mean Sea Level	Not Encountered	AH





EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch diameter Boring	2-11-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 200' Mean Sea Level	Not Encountered	AH





EXPLORATION LOG 9487.1 SDCC.GPJ

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-inch diameter Boring	2-14-11	
SURFACE ELEVATION	GROUNDWATERV SEEPAGE DEPTH	LOGGED BY	
± 198' Mean Sea Level	Not Encountered	AH	

٦ <u>٣</u>	FIELD DESCRIPTION AND CLASSIFICATION		E (%)	E DRY	M RE (%)	M DRY (pd)	('a'ı	(%) + :	WH.	O.D.
SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACI MOISTUR	IN-PLACI DENSITY	OPTIMU	MAXIMU	DENSITY (% of M.E	EXPAN. CONSOL	BLOW	SAMPLE O.D.
	CLAYEY SAND, fine- to medium-grained.  Medium dense to dense. Moist. Brown to yellowish brown.  FILL (Qaf)	SC								
X CON	_ 21% nassing #200 sieve		9.2	121.4	ie i				83	3'
	- 2170 passing #200 sieve.									
	- 22% passing #200 sieve.		7.7		¥	8.0			22	2
	- 22% passing #200 sieve.		6.6	118.8					105/ 9"	3
	SAMPLE	CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  CLAYEY SAND, fine- to medium-grained. Medium dense to dense. Moist. Brown to yellowish brown.  FILL (Qaf)  - 21% passing #200 sieve.	CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  CLAYEY SAND, fine- to medium-grained. Medium dense to dense. Moist. Brown to yellowish brown.  FILL (Qaf)  - 21% passing #200 sieve.	CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  CLAYEY SAND, fine- to medium-grained. Medium dense to dense. Moist. Brown to yellowish brown.  FILL (Qaf)  9.2  - 21% passing #200 sieve.  7.7	CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  CLAYEY SAND, fine- to medium-grained. Medium dense to dense. Moist. Brown to yellowish brown.  FILL (Qaf)  9.2 121.4  - 21% passing #200 sieve.  7.7	CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  CLAYEY SAND, fine- to medium-grained. Medium dense to dense. Moist. Brown to yellowish brown.  FILL (Qaf)  9.2 121.4  - 21% passing #200 sieve.  7.7	CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Midsture, Color)  CLAYEY SAND, fine- to medium-grained. Medium dense to dense. Moist. Brown to yellowish brown.  FILL (Qaf)  9.2 121.4  - 21% passing #200 sieve.  7.7	CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)  CLAYEY SAND, fine- to medium-grained. Medium dense to dense. Moist. Brown to yellowish brown.  FILL (Qaf)  9.2 121.4  - 21% passing #200 sieve.  7.7	CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Midelune, Color)  CLAYEY SAND, fine- to medium-grained. Medium dense to dense. Moist. Brown to yellowish brown.  FILL (Qaf)  9.2 121.4  - 21% passing #200 sieve.  7.7	CLASSIFICATION  DESCRIPTION AND REMARKS (Grain size, Density, Midsiure, Color)  CLAYEY SAND, fine- to medium-grained. Medium dense to dense. Moist. Brown to yellowish brown.  FILL (Qaf)  9.2 121.4  - 21% passing #200 sieve.  7.7

JOB NAME ▼ PERCHED WATER TABLE Phase I - San Diego Corporate Center, Lots 1 & 2 ■ LOOSE BAG SAMPLE SITE LOCATION SW Cnr Del Mar Heights & El Camino Real, San Diego, CA IN-PLACE SAMPLE JOS NUMBER REVIEWED BY LOG No. WDH MODIFIED CALIFORNIA SAMPLE 07-9487.1 Geotechnical Exploration, Inc. FIELD DENSITY TEST FIGURE NUMBER STANDARD PENETRATION TEST

**IVs** 

EXPLORATION LOG MAZ.1 SDCC.GPJ GEO\_EXPLGDT 3/22/11

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch diameter Boring	2-14-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 198' Mean Sea Level	Not Encountered	AH

DEPTH (1940) SYMBOL		רב ה <u>ה</u>	FIELD DESCRIPTION AND CLASSIFICATION	AND CLASSIFICATION		E DRY	M RE (%)	M DRY	('a')	(%)	S/FT.	0.D,
NET IN	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Muisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2 -			SILTY SAND, fine- to medium-grained. Very dense. Moist. Tan.  TORREY SANDSTONE (Tt)	SM							99/	2'
-												
1									,			
1 - 1 - 1			- 17% passing #200 sieve.		7.8						99/ 8"	2
-												
1											103/ 8.5"	2
-												
1												
											97/ 8"	2
-			Bottom @ 38.7*									

Ţ	PERCHED WATER TABLE
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1 IN-PLACE SAMPLE

EXPLORATION LOG 9487.1 SDCC.GPJ GEO\_EXPLGDT 3/22/11

MODIFIED CALIFORNIA SAMPLE

FIELD DENSITY TEST

STANDARD PENETRATION TEST

JOB NAME

Phase I - San Diego Corporate Center, Lots 1 & 2

SITE LOCATION

SW Cnr Del Mar Heights & El Camino Real, San Diego, CA

JOB NUMBER

07-9487.1 FIGURE NUMBER

IVt

REVIEWED BY

WDH

LOG No.

Geotechnical Exploration, Inc.

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-15-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 198' Mean Sea Level	Not Encountered	AH

(feet)			FIELD DESCRIPTION AND CLASSIFICATION		E (%)	(pd)	M RE (%)	M DRY (pcf)	).D.)	(%)	FI.	0.D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pd)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2 -			CLAYEY SAND, fine- to medium-grained.  Medium dense to dense. Moist. Yellowish brown to brown and dark brown.  FILL (Qaf)	SC								
6 -											41	3
			- 18% passing #200 sieve.		8.9		10.8	125.0			22	2
11.11.1.1												
			- 20% passing #200 sieve.		9.8						33	2

PERCHED WATER TABLE

LOOSE BAG SAMPLE

IN-PLACE SAMPLE

MODIFIED CALIFORNIA SAMPLE

FIELD DENSITY TEST

STANDARD PENETRATION TEST

EXPLORATION LOG 9487.1 SDCC.GPJ GEO\_EXPLIGHT 3/22/11

JOB NAME
Phase I - San Diego Corporate Center, Lots 1 & 2
SITE LOCATION
SW Cnr Del Mar Heights & El Camino Real, San Diego, CA
JOB NUMBER
REVIEWED BY
WDH
LOG No.

07-9487.1

FIGURE NUMBER

IVu

Geotechnical Exploration, Inc.

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-15-11	
SURFACE ELEVATION	GROUNDWATERV SEEPAGE DEPTH	LOGGED BY	
± 198' Mean Sea Level	Not Encountered	AH	

bet)			FIELD DESCRIP AND CLASSIFICATI			E (%)	(pd)	√l ₹E (%)	M DRY (pd)	,D,)	(%)	M.	0.D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
26 – 28 –			CLAYEY SAND, fine- to medium Medium dense to dense. Moist. I brown and dark brown. FILL (Qaf) - 29% passing #200 sieve.	n-grained. Yellowish brown to	SC	13.9						18	2
30 -													
36 -			CLAYEY SAND (FORMATIONA , fine- to medium-grained. Very Brown.  TORREY SANDSTO – 29% passing #200 sieve.	dense. Moist.	SC	7.7						54	A.
42 -			SILTY SAND (FORMATIONAL sine- to medium-grained. Very disprown.	ense. Moist.	SM							94/	2
46 - 48			Bottom @ 43'										
	Ā	PE	RCHED WATER TABLE	JOB NAME Phase I - San Di	ego	Corpo	rate C	enter,	Lots 1	& 2			
i i	1	IN-	OSE BAG SAMPLE PLACE SAMPLE DDIFIED CALIFORNIA SAMPLE	SW Cnr Del Mar JOB NUMBER	Helç	-	EWED BY		WDH	LOG	3.00	A	
			ELD DENSITY TEST ANDARD PENETRATION TEST	07-9487.1 FIGURE NUMBER				eotech xplorat	nical ion, inc		B-	11	

Ţ	PERCHED WATER TABLE	JOB NAME Phase I - San Dieg	go Corporate Center, Lots 1	& 2
$\boxtimes$	LOOSE BAG SAMPLE	SITE LOCATION		
1	IN-PLACE SAMPLE	SW Cnr Del Mar H	leights & El Camino Real, S	an Diego, CA
	MODIFIED CALIFORNIA SAMPLE	JOB NUMBER	REVIEWED BY WDH	LOG No.
s	FIELD DENSITY TEST	07-9487.1	Geotechnical Exploration, Inc.	R-11
	: : : ::::::::::::::::::::::::::::::::	FIGURE NUMBER	Exploration, Inc.	D-11

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-14-11
SURFACE ELEVATION	GROUNDWATERV SEEPAGE DEPTH	LOGGED BY
± 197' Mean Sea Level	Not Encountered	AH

()ee()	FIELD DESCRII AND CLASSIFICAT			E (%)	DRY (pcf)	A UE (%)	M DRY (pcf)	('a')	(%) +	FI.	0.D.
DEPTH (feet) SYMBOL	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pc)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2-	CLAYEY SAND, fine- to mediur Medium dense. Moist. Tan and g FILL (Qaf)	n-grained. grayish brown.	SC			10.1				39	3'
8 - 10 - 12 - 12 -								10		23	2
16 -	– 24% passing #200 sieve.			9.7						34	2
2-4-	– 18% passing #200 sieve.			7.1						23	2"
	ERCHED WATER TABLE DOSE BAG SAMPLE -PLACE SAMPLE ODIFIED CALIFORNIA SAMPLE ELD DENSITY TEST	JOB NAME Phase I - San SITE LOCATION SW Cnr Del M JOB NUMBER 07-9487.1 FIGURE NUMBER	ar Helg	hts &	El Car	mino I		an Di			)

Ţ	PERCHED WATER TABLE	Phase I - San Diego Corporate Center, Lots 1 & 2						
$\boxtimes$	LOOSE BAG SAMPLE	SITE LOCATION						
1	IN-PLACE SAMPLE	SW Cnr Del Mar H	leights & El Camino Real, Sa	an Diego, CA				
	MODIFIED CALIFORNIA SAMPLE	JOB NUMBER	REVIEWED BY WIDH	LOG No.				
s	FIELD DENSITY TEST	07-9487.1	Geotechnical Exploration, Inc.	B-12				
	STANDARD PENETRATION TEST	FIGURE NUMBER	Exploration, Inc.	D-1Z				

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 65 Auger Drill Rig	8-Inch dlameter Boring	2-14-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 197' Mean Sea Level	Not Encountered	AH

(beet)				FIELD DESCRIP AND CLASSIFICATI			E (%)	EDRY (pd)	M RE (%)	M DRY (pd)	,o.)	(%)	FT.	.d.o.
DEPTH (feet)	1000	DOWNE	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%) IN-PLACE DRY DENSITY (pd)		OPTIMUM MOISTURE (%)	MAXIMUM ORY DENSITY (pd)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
26 -	***			CLAYEY SAND, fine- to medium Medium dense. Moist. Tan and g FILL (Qaf)	n-grained. Irayish brown.	SC								
28 -				SILTY SAND (FORMATIONAL Stine- to medium-grained. Medium-grayish brown with red bands.	n dense. Moist.	SM	7.9						27	2'
32 -				TORREY SANDSTO		-								
34 -				clayey sand (FORMATIONA , fine- grained. Medium dense. I brown.	Moist. Reddish	SC	14.7						20	2
36 - -			1	TORREY SANDSTO  – 25% passing #200 sieve.  SANDY GRAVEL (FORMATION CONGLOMERATE), with silty sa dense. Moist, Yellowish brown.	IAL	GM								The state of the s
38 - 40 -				TORREY SANDSTO CLAYEY SAND (FORMATIONA , fine- to medium-grained. Very Reddish brown.	L SANDSTONE)	SC	11.8	117.0					93	3
42 -				TORREY SANDSTO – 24% passing #200 sieve @ 39	NE (Tt) '.								88/ 9.5"	2
44 - - 46 -				Bottom @ 42.8'					100					The state of the s
48 - -			ľ											
	Ā	F	E	RCHED WATER TABLE	JOB NAME Phase I - San D	iego	Corpo	orate C	enter.	Lots 1	8.2			
	X			OSE BAG SAMPLE	SW Cnr Del Mai							lego, C	CA C	
	1	A	10	PLACE SAMPLE DIFIED CALIFORNIA SAMPLE LD DENSITY TEST	JOB NUMBER 07-9487.1 FIGURE NUMBER		_	IEWED BY		WDH	LOG	-		)
		8	ST/	ANDARD PENETRATION TEST	IVx		<b>**</b>	FI-						

Ā	PERCHED WATER TABLE	JOB NAME Phase I - San Dieg	go Corporate Center, Lots 1	8.2
$\boxtimes$	LOOSE BAG SAMPLE	SITE LOCATION	And Age and Andrew	
1	IN-PLACE SAMPLE	SW Cnr Del Mar H	elghts & El Camino Real, Sa	an Diego, CA
	MODIFIED CALIFORNIA SAMPLE	JOB NUMBER	REVIEWED BY WDH	LOG No.
s	FIELD DENSITY TEST	07-9487.1	Geotechnical Exploration, Inc.	B-12
	STANDARD PENETRATION TEST	FIGURE NUMBER		012

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-17-11	
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY	
± 191' Mean Sea Level	Not Encountered	AH	

(ped)			FIELD DESCRIPTION AND CLASSIFICATION		E (%)	(pd)	/ RE (%)	N DRY (pcf)	('O'	(%)	Ę.	O.D.	
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
4			SILTY SAND (FORMATIONAL S fine- to medium-grained. Very de brown.  TORREY SANDSTO	ense. Moist. Light	SM								
8 -	000000000000000000000000000000000000000		SANDY GRAVEL (FORMATION CONGLOMERATE), with sitty sa dense. Moist. Yellowish brown m TORREY SANDSTO	and matrix. Very natrix.	GM								
16 -	0 . 0 . 0 . 0												and the control of th
24 -		SILTY SAND (FORMATIONAL string to medium-grained. Very de Grayish brown.  TORREY SANDSTO – 12% passing #200 sieve.		dense. Moist.	SM	7.4	7.4					106/ 8"	2*
28 -		77										94/	2
-			Bottom @ 29.5'										
			RCHED WATER TABLE	JOB NAME Phase I - San D	iego (	Corpo	rate C	enter,	Lots 1	& 2			
- 3			OSE BAG SAMPLE PLACE SAMPLE	SW Cnr Del Ma	r Heig	hts &	El Ca	mlno i	Real, S	an Di	lego, C	A	
i	s	MO FIE	DIFIED CALIFORNIA SAMPLE LD DENSITY TEST ANDARD PENETRATION TEST	JOB NUMBER  07-9487.1 FIGURE NUMBER  IVy		REVI	EWED BY		WDH nleal lon, Inc.	LOG	No. В-	13	}

¥	PERCHED WATER TABLE	JOB NAME Phase I - San Dieg	go Corporate Center, Lots 1	& 2
$\boxtimes$	LOOSE BAG SAMPLE	SITE LOCATION		
1	IN-PLACE SAMPLE	SW Cnr Del Mar H	leights & El Camino Real, S	an Diego, CA
	MODIFIED CALIFORNIA SAMPLE	JOB NUMBER	REVIEWED BY WDH	LOG No.
s	FIELD DENSITY TEST	07-9487.1 FIGURE NUMBER	Geotechnical Exploration, Inc.	B-13
	STANDARD PENETRATION TEST	IVV		210

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-15-11	
SURFACE ELEVATION	GROUNDWATERV SEEPAGE DEPTH	LOGGED BY	
± 218' Mean Sea Level	Not Encountered	AH	

()		FIELD DESCRIPTION AND CLASSIFICATION		(%)	(pd)	A EE (%)	A DRY (pcf)	(°0')	(%)	Ħ.	O.D.		
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pc)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2			SILTY SAND (FORMATIONAL) fine- to medium-grained. Very d TORREY SANDSTO	ense. Moist. Tan.	SM								
8-												105/ 10.5"	2'
10 -		X											
16 -		X	- 12% passing #200 sieve.			7.4						95/ 9"	2'
22 -		X											
0	X	LO	RCHED WATER TABLE OSE BAG SAMPLE PLACE SAMPLE	JOB NAME Phase I - San D SITE LOCATION SW Cnr Del Ma						-	iego, C	CA	
I I	s	MC FIE	DIFIED CALIFORNIA SAMPLE ELD DENSITY TEST ANDARD PENETRATION TEST	JOB NUMBER  07-9487.1 FIGURE NUMBER  IVz		-	EWED BY		WDH nical ion, inc.	LOG	10.00		ļ.

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-Inch dlameter Boring	2-15-11	
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY	
± 218' Mean Sea Level	Not Encountered	AH	

red)	SYMBOL		FIELD DESCRIP AND CLASSIFICATI			E (%)	DRY (pd)	E (%)	(pcf)	0.)	(%)	F	.D.
DEPTH (feet)		SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pd)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
26	8		SILTY SAND (FORMATIONAL sine- to medium-grained. Very de TORREY SANDSTO — 11% passing #200 sieve.  — 12% passing #200 sieve.	ense. Moist. Tan.	SM	7.7		0.2	20			96/ 9.5"	2
46 - 48 - 7			encountered gravel layer.  Practical drilling refusal.  Bottom @ 46'										
1	1	LO IN- MC FIE	RCHED WATER TABLE OSE BAG SAMPLE PLACE SAMPLE DIFFIED CALIFORNIA SAMPLE ELD DENSITY TEST ANDARD PENETRATION TEST	JOB NAME Phase I - San D SITE LOCATION SW Cnr Del Mai JOB NUMBER 07-9487.1 FIGURE NUMBER		hts &	EI Ca	mino I		LOG			

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-inch dlameter Boring	2-17-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 217' Mean Sea Level	Not Encountered	AH

(beel)	DEPTH (feet) SYMBOL		FIELD DESCRIPTION AND CLASSIFICATION		E (%)	DRY (pcf)	A IE (%)	A DRY (pcf)	(D.)	(%)	Ē.	.g.o
DEPTH (		SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
2-			CLAYEY SAND, fine- to medium-grained.  Medium dense to dense. Moist. Yellowish brown, brown and very dark brown.  FILL (Qaf)	SC								
8 -			25% passing #200 sieve.		13.0			(			16	2"
12 - 14 -			29% passing #200 sieve.		11.5	120.0					38	3*
16 - 18 - 20 -			– 20% passing #200 sieve.		9.7						40	2"
24 -			SILTY SAND (FORMATIONAL SANDSTONE) fine- to medium-grained. Medium dense to dense. Damp. Tan.  TORREY SANDSTONE (Tt) – 11% passing #200 sieve.	SM	5.6						36	2**

Y	PERCHED WATER TABLE
$\boxtimes$	LOOSE BAG SAMPLE
1	IN-PLACE SAMPLE
	MODIFIED CALIFORNIA SAMPLE
s	FIELD DENSITY TEST

EXPLORATION LOG 8487.1 SDCC.GPJ GEO\_EXPLGDT 3/22/11

STANDARD PENETRATION TEST

JOB NAME
Phase I - San Diego Corporate Center, Lots 1 & 2
SITE LOCATION

SW Cnr Del Mar Heights & El Camino Real, San Diego, CA

JOB NUMBER

07-9487.1

FIGURE NUMBER

REVIEWED BY

WDH

Geotechnical Exploration, Inc.

**Nab** 

**B-15** 

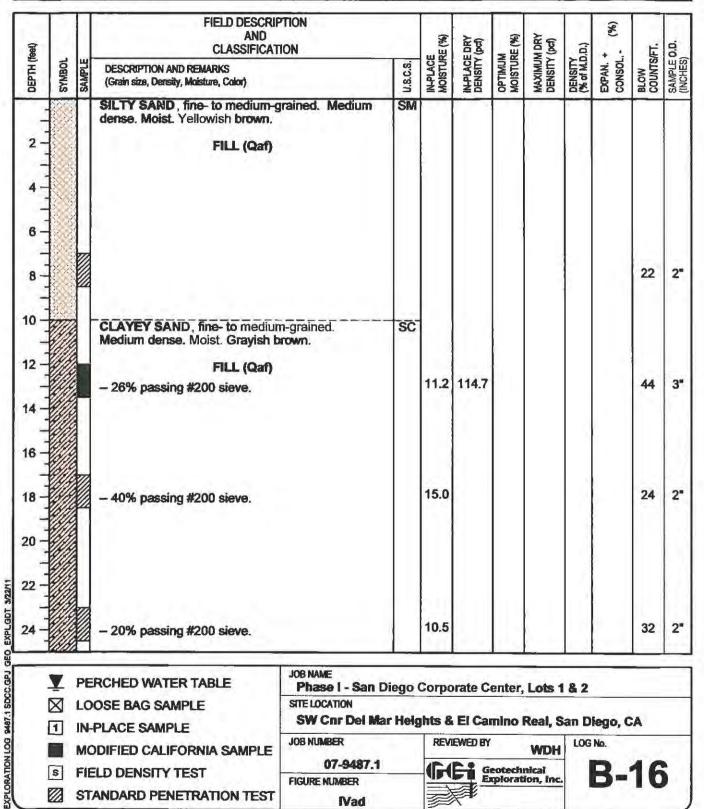
LOG No.

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-17-11	
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY	
± 217' Mean Sea Level	Not Encountered	AH	

2			FIELD DESCRIF AND CLASSIFICAT			E (%)	DRY (pcf)	E (%)	(pcf)	('0	(%)	H	).D.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pd)	DENSITY (% of M.D.D.)	EXPAN, +	BLOW COUNTS/FT.	SAMPLE O.D.
10 -			SILTY SAND (FORMATIONAL fine- to medium-grained. Medium Damp. Tan.  TORREY SANDSTO	m dense to dense.	SM							24	2"
- 23% passing #200 sieve.  4		- 23% passing #200 sieve.			9.0						23	2"	
11111111			<ul><li>becomes very dense.</li><li>23% passing #200 sieve.</li></ul>			6.3						99/ 8"	2"
4	4 0		SANDY GRAVEL (FORMATION CONGLOMERATE), 3/4"- 1-1/2 sand matrix. Very dense. Damp  TORREY SANDSTO  Practical drilling refusal.  Bottom @ 46'	gravel with silty . Tan.	GM								
1		LO IN-	RCHED WATER TABLE OSE BAG SAMPLE PLACE SAMPLE ODIFIED CALIFORNIA SAMPLE	JOB NAME Phase I - San Di SITE LOCATION SW Cnr Del Mar JOB NUMBER		hts &		mino f		LOG	No.		
			ELD DENSITY TEST ANDARD PENETRATION TEST	07-9487.1 FIGURE NUMBER IVac				eotechr cplorati	nical on, Inc.	B-15			

Y	PERCHED WATER TABLE	JOB NAME Phase I - San Dieg	jo Corporate Center, Lots 1	& 2
$\boxtimes$	LOOSE BAG SAMPLE	SITE LOCATION		Particular Company Com
1	IN-PLACE SAMPLE	SW Cnr Del Mar H	eights & El Camino Real, S	an Diego, CA
	MODIFIED CALIFORNIA SAMPLE	JOB NUMBER	REVIEWED BY WIDH	LOG No.
s	FIELD DENSITY TEST	07-9487.1	Geotechnical Exploration, Inc.	B-15
	STANDARD PENETRATION TEST	FIGURE NUMBER	Exploration, Inc.	D-13

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED	
CME 55 Auger Drill Rig	8-inch diameter Boring	2-17-11	
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY	
± 215' Mean Sea Level	61 feet	AH	



Ā	PERCHED WATER TABLE	JOS NAME Phase I - San Dieg	o Corporate Center, Lots 1	& 2	
$\boxtimes$	LOOSE BAG SAMPLE	SITE LOCATION		1200 - 2004 - 20	
1	IN-PLACE SAMPLE	SW Cnr Del Mar H	eights & El Camino Real, S	an Diego, CA	
	MODIFIED CALIFORNIA SAMPLE	JOB NUMBER	REVIEWED BY WIDH	LOG No.	1
s	FIELD DENSITY TEST	07-9487.1	Geotechnical Exploration, Inc.	<b>B-16</b>	
	STANDARD PENETRATION TEST	FIGURE NUMBER  IVad	Exploration, Inc.	D-10	

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 65 Auger Drill Rig	8-Inch diameter Boring	2-17-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 215' Mean Sea Level	61 feet	AH

(pect)			FIELD DESCRIP AND CLASSIFICATI			E (%)	(pct)	₩ ₹E (%)	M DRY (pcf)	(°0')	<b>%</b>	M.	0.D.
DEPTH (faet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Maisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pct)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
26 -			CLAYEY SAND, fine- to medium Medium dense. Moist. Grayish b FILL (Qaf)	n-grained. rown.	SC								
28			17% passing #200 sieve.			7.3						46	2
30 -													
34			- 19% passing #200 sieve.			11,1						34	2
36 -													
40 -			- 23% passing #200 sieve.			11.1						47	2
44								<b>\</b>					nitro contrato contrato con contrato contrato con contrato con contrato con contrato con contrato contrato con contrato con contrato con contrato contrato con contrato co
48 -			19% passing #200 sieve.			11.9						25	2
Į.	7		RCHED WATER TABLE OSE BAG SAMPLE	JOB NAME Phase I - San D SITE LOCATION									
1	I N	10	PLACE SAMPLE DIFIED CALIFORNIA SAMPLE LD DENSITY TEST	JOB NUMBER  07-9487.1 FIGURE NUMBER	r Helg		EWED BY		WDH	LOG		ta -1	

Ĭ	PERCHED WATER TABLE
X	LOOSE BAG SAMPLE

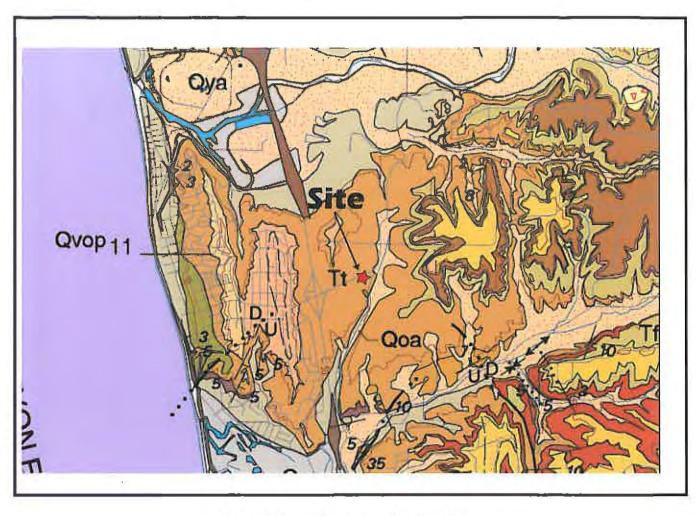
EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
CME 55 Auger Drill Rig	8-Inch diameter Boring	2-17-11
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 215' Mean Sea Level	61 feet	AH

(ped)			FIELD DESCRIP AND CLASSIFICAT			E (%)	(pd)	A RE (%)	M DRY (pd)	(a)	(%)	Ē.	o.b.
DEPTH (feet)	SYMBOL	SAMPLE	DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)		U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pd)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pd)	DENSITY (% of M.D.D.)	EXPAN. +	BLOW COUNTS/FT.	SAMPLE O.D.
52 -			CLAYEY SAND, fine- to medium Medium dense. Moist. Grayish b FILL (Qaf) – 42% passing #200 sieve. – 44% passing #200 sieve. – 29% passing #200 sieve.	n-grained. rown.	SC	18.1 17.8 14.7						17	2"
58 -			-16% passing #200 sieve.			12.9				7		32	2"
60 -			<ul><li>15% passing #200 sieve.</li><li>11% passing #200 sieve.</li></ul>			13.5 13.5						88	3"
62 -			- seepage @ 61' 20% passing #200 sieve.			21.2						17	2"
64 - 66 - 68 -			CLAYEY-SILTY SAND (FORMAS SANDSTONE), fine- to medium-Medium dense. Wet to saturated TORREY SANDSTO — 19% passing #200 sieve.  — 65% passing #200 sieve.  — 3" thick layer of very stiff gray (1.5% passing #200 sieve.	grained. I. Tan. NE (Tt)	SC- SM	19.0 26.6 19.5 23.5						24	2"
70 – 72 – 74 –			- 33% passing #200 sieve.  Bottom @ 66.5'										and the second
4	V I	PE	RCHED WATER TABLE	JOB NAME Phase I - San Di	iego	Corpo	rate C	enter,	Lots 1	8.2			
	-		OSE BAG SAMPLE	SITE LOCATION SW Cnr Del Mar							lego. C	A	
İ	s	MO	PLACE SAMPLE DIFIED CALIFORNIA SAMPLE LD DENSITY TEST ANDARD PENETRATION TEST	JOB NUMBER 07-9487.1 FIGURE NUMBER IVaf		-	EWED BY		WDH	LOG		To the	;

Ţ	PERCHED WATER TABLE	JOB NAME Phase I - San Dieg	o Corporate Center, Lots 1	& 2
$\boxtimes$	LOOSE BAG SAMPLE	SITE LOCATION		
1	IN-PLACE SAMPLE	SW Cnr Del Mar H	eights & El Camino Real, Sa	an Diego, CA
	MODIFIED CALIFORNIA SAMPLE	JOB NUMBER	REVIEWED BY WDH	LOG No.
s	FIELD DENSITY TEST	07-9487.1	Geotechnical	B-16
		FIGURE NUMBER	Exploration, Inc.	D-10
	STANDARD PENETRATION TEST	IVaf		

### GEOLOGIC MAP OF SAN DIEGO 2005

compiled by Michael P. Kennedy and Siang S Tan



San Diego Corporate Center Lots 1 and 2, Phase 1 San Diego, CA.

> Figure No. Va Job No. 07-9487.1



Correlation of Map Units and Description of Map Units

# Geologic Map of the San Diego 30' X 60' Quadrangle, California

Compiled by
Michael P. Kennedy and Siang S. Tan

2005

Digital Preparation by
Kelly R. Bovard', Anne G. Garcial and Diane Burns!

1 U.S. Gunleyted Survey Department of Earth Sciences, Victorius, of California, Biversale

#### DESCRIPTION OF MAP UNITS

Torrey Sandstone (middle Foccac)—White to light-brown, medium- to coarse grained, moderately well indiunated, massive and broadly ence-shalled arkonic anolatone. This unit is the Torrey Sand Moother of Hanna (1926) and was munted for exposures at Torrey Pues State Park. It is now considered a formation of the La Ioila Group (Kennedy and Moore, 1971)

Old allavial flood plain deposits undivided (has to middle Pleistocene)—Flavial sodiments deposited on cargon floors. Consists of moderately well consolidated, penalty sorted, permasable, commonly slightly dissocied gravel, sand, sit, and clay-bearing allaviant.

#### ONSHORE MAP SYMBOLS

— Tandard - Costad Serverin geologie antis, strikel relate strengen,

Control of craims between paralle, deposits, and their contributed province identical plants for a proposition and personally fracted by 1-5 as at some way or improved and personally fracted by 1-5 as at some way or improved and personally fracted by 1-5 as at some way or improved and personally fracted by 1-5 as at some and or improved and personally fracted by 1-5 as at some and or improved and personally fracted by 1-5 as at some and or increase.

Finalt: Sidds whose accurately heated, detail whose apparamently for dark shows executed, to replace which, the do-replacement land. However, the minimal plantate indicate flowering and angle of dip of help space.

Antictive—Sold where accounty toused, ended when approximately located, devial relian assessment Array advances enterent of social prings.

Symilar Stds when security bottom dated where monded. Acre administrative of polylogue
 Londolde Acres inhore pictual dentities of assesses.

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Royale and dip of Agreem poss

10 Octo

Scribs and tilp of molecus paid below.

Inches

STATE OF CALIFORNIA - ARNOLD SCHWARZENEGGER, GOVERNOR THE RESOURCES AGENCY - MICHAEL CHRISMAN, SECRETARY DEPARTMENT OF CONSERVATION - DEBDIE SARELRAM, INTERIM DIRECTOR

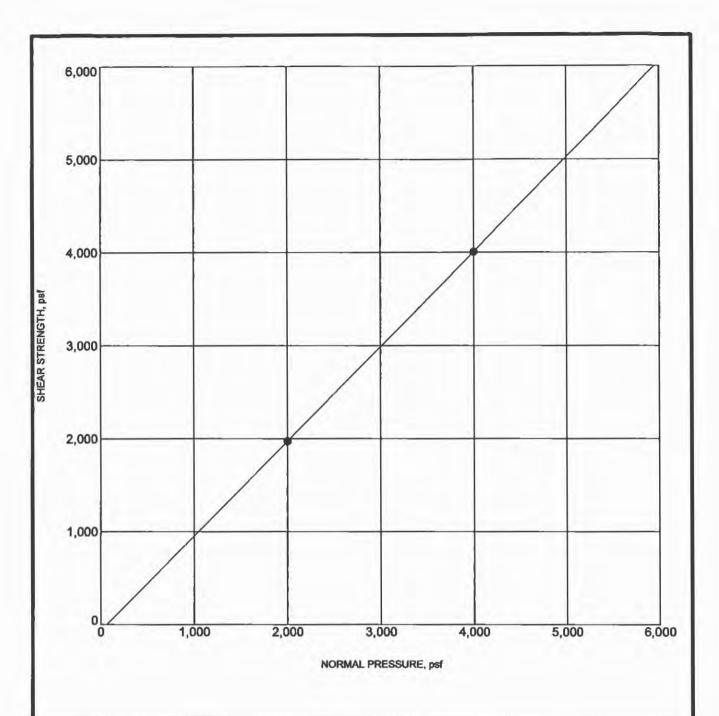
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The Department of Conservation trakes no warrantees as to the pulsability of this product for any particular perposes

Figure No. Vb Job No. 07-9487.1



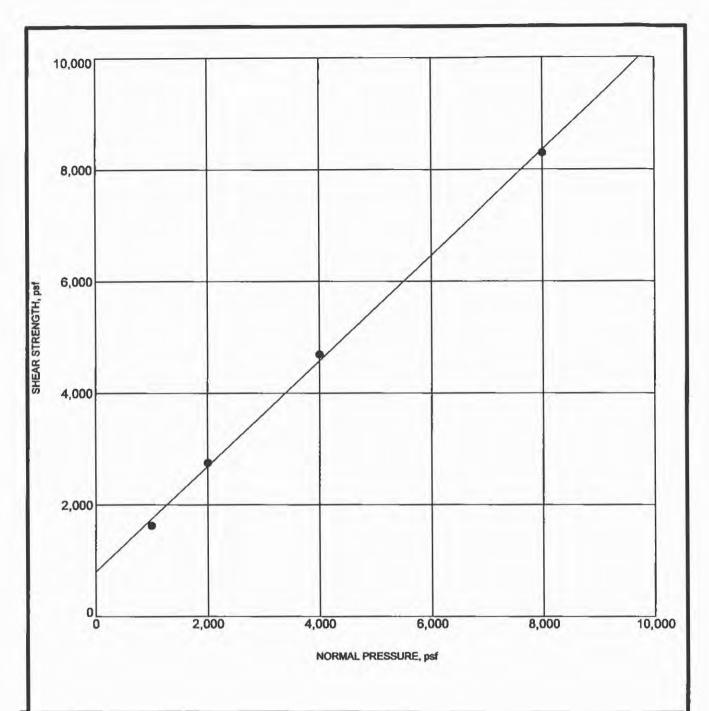
Geotechnical Exploration, Inc.



Sp	ecimen Identification	Class	ification	7/4	MC%	С	ф		
•	B-1 @ 37.0°	SILTY SAND (SM), Yello	owish-brown; Undisturbed	103	5	-63	45		
	GE# 6	entechnical	DIRECT	SHE	AR TE	TEST			
		xploration, Inc.	Figure Number: VIa  Job Name: Phase I - San Diego Corporate Center, Lot Site Location: SW Cnr Del Mar Heights & El Camino R  Job Number: 07-9487.1						



Job Name: Phase I - San Diego Corporate Center, Lots 1 & 2 Site Location: SW Cnr Del Mar Heights & El Camino Real San Job Number: 07-9487.1



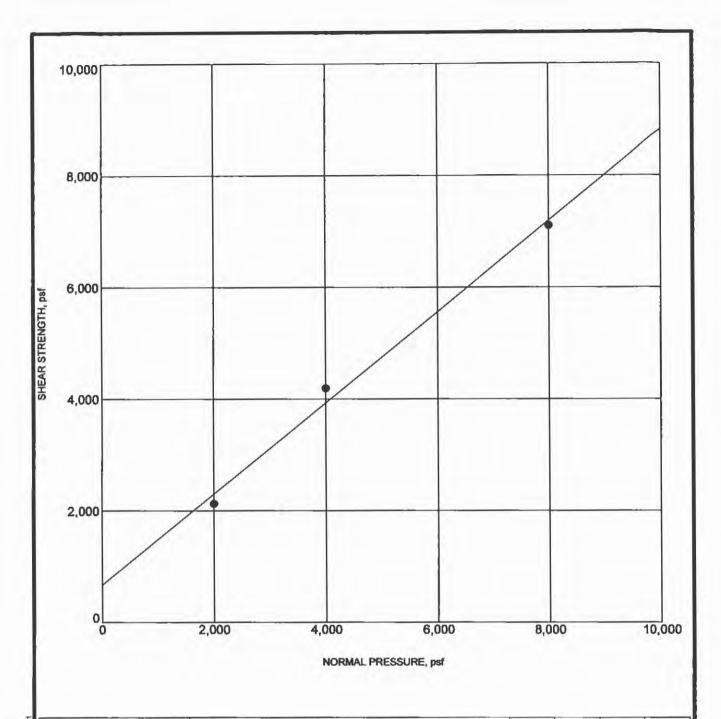
Specimen Identification  B-2 @ 10.0'		Classification	74	MC%	С	ф
0	B-2 @ 10.0'	SILTY SAND (SM), Tan; Remolded	124	9	804	43
+						
						-



Figure Number: VIb

Job Name: Phase I - San Diego Corporate Center, Lots 1 & 2 Site Location: SW Cnr Del Mar Heights & El Camino Real San

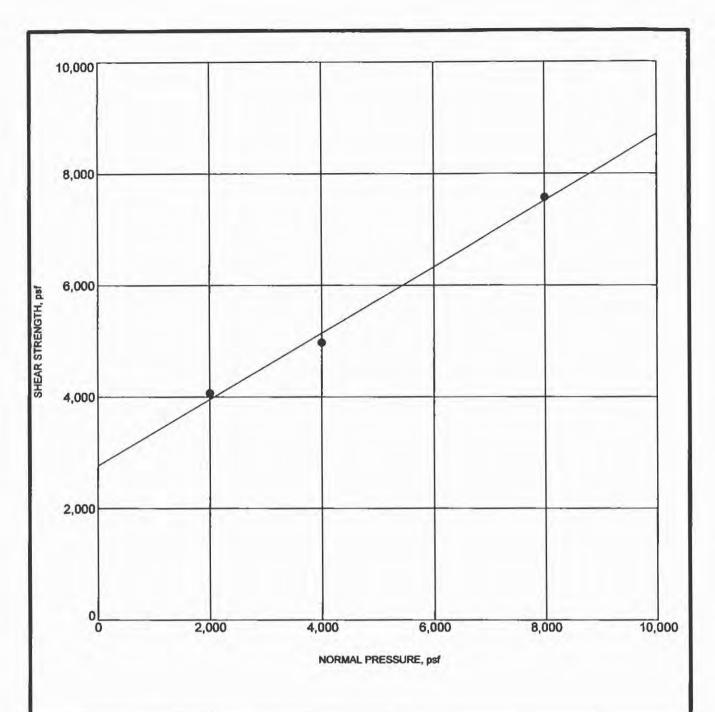
Job Number: 07-9487.1



Specimen Identification		Class	Classification		MC%	С	ф
•	B-2 @ 42.0'	SILTY SAND (SM), Yelio	owish brown; Undisturbed	106	6	673	39
	THE G	entechnical	DIRECT	SHE	AR TE	ST	
	GG:	xploration, Inc.	Figure Number: VIc Job Name: Phase I - Sal Site Location: SW Cnr D Job Number: 07-9487.1				



Job Name: Phase I - San Diego Corporate Center, Lots 1 & 2 Site Location: SW Cnr Del Mar Heights & El Camino Real San Job Number: 07-9487.1



Sp	Specimen Identification Classific		fication	74	MC%	С	ф
•	B-5 @ 5.0'	CLAYEY SAND (SC), Grayish brown; Remolded		118	10	2771	31
	Geotechnical Exploration, Inc.		DIRECT SHEAR TEST				
		xploration, Inc.	Figure Number: VId Job Name: Phase I - Sa Site Location: SW Cnr I Job Number: 07-9487.1	Del Mar			



Job Name: Phase I - San Diego Corporate Center, Lots 1 & 2 Site Location: SW Cnr Del Mar Heights & El Camino Real San

# APPENDIX A UNIFIED SOIL CLASSIFICATION CHART SOIL DESCRIPTION

#### Coarse-grained (More than half of material is larger than a No. 200 sieve)

GRAVELS, CLEAN GRAVELS (More than half of coarse fraction is larger than No. 4 sieve size, but	GW	Well-graded gravels, gravel and sand mixtures, little or no fines.
smaller than 3")	GP	Poorly graded gravels, gravel and sand mixtures, little or no fines.
GRAVELS WITH FINES (Appreciable amount)	GC	Clay gravels, poorly graded gravel-sand-silt mixtures
SANDS, CLEAN SANDS (More than half of coarse fraction	sw	Well-graded sand, gravelly sands, little or no fines
is smaller than a No. 4 sieve)	SP	Poorly graded sands, gravelly sands, little or no fines.
SANDS WITH FINES (Appreciable amount)	SM	Silty sands, poorly graded sand and silty mixtures.
	SC	Clayey sands, poorly graded sand and clay mixtures.

#### Fine-grained (More than half of material is smaller than a No. 200 sieve)

#### SILTS AND CLAYS

ML	Inorganic silts and very fine sands, rock flour, sandy silt and clayey-silt sand mixtures with a slight plasticity
CL	Inorganic clays of low to medium plasticity, gravelly clays, silty clays, clean clays.
OL	Organic silts and organic silty clays of low plasticity.
МН	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
СН	Inorganic clays of high plasticity, fat clays.
ОН	Organic clays of medium to high plasticity.
PT	Peat and other highly organic soils
	CL OL MH CH OH

(rev. 6/05)



## APPENDIX B

# CONE PENETROMETER LOGS FROM 2008 INVESTIGATION





Location
Job Number
Hole Number
Water Table Depth

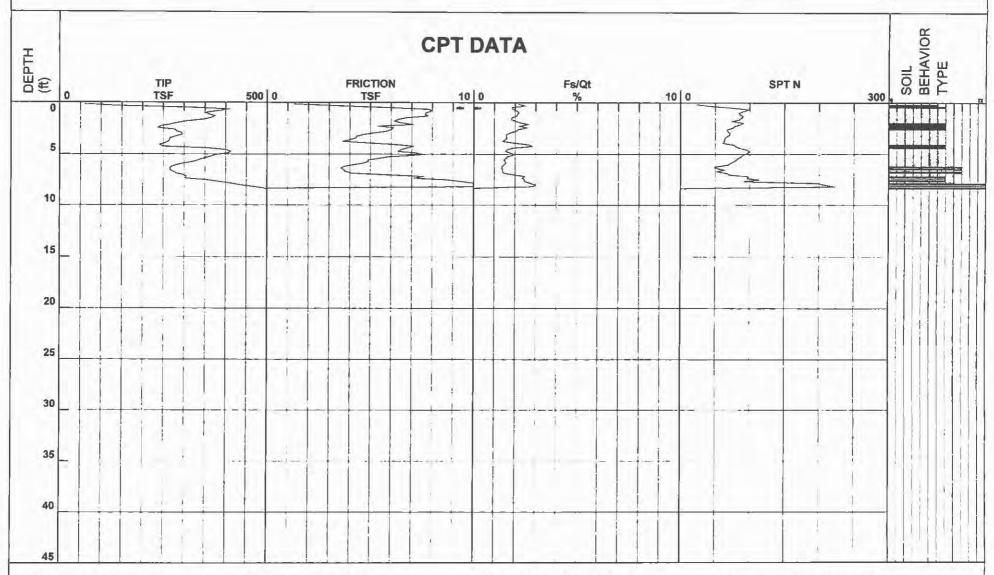
Del Mar Heights 07-9487 CPT-02

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 4:13:56 PM Filename SDF(437).cpt

GPS

Maximum Depth 8.53 ft

Elevation 217.7



1 - sensitive fine grained

■ 4 - slity clay to clay

■7 - silty sand to sandy silt

■ 10 - gravelly sand to sand

■ 2 - organic material

8 - sand to slity sand

■ 11 - very stiff fine grained (\*)

■3 - clay

■ 5 - clayey silt to silty clay ■ 6 - sandy silt to clayey silt

9 - sand

■ 12 - sand to clayey sand (\*)

Depth Increment

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

## Geo Testing Inc.

#### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-03

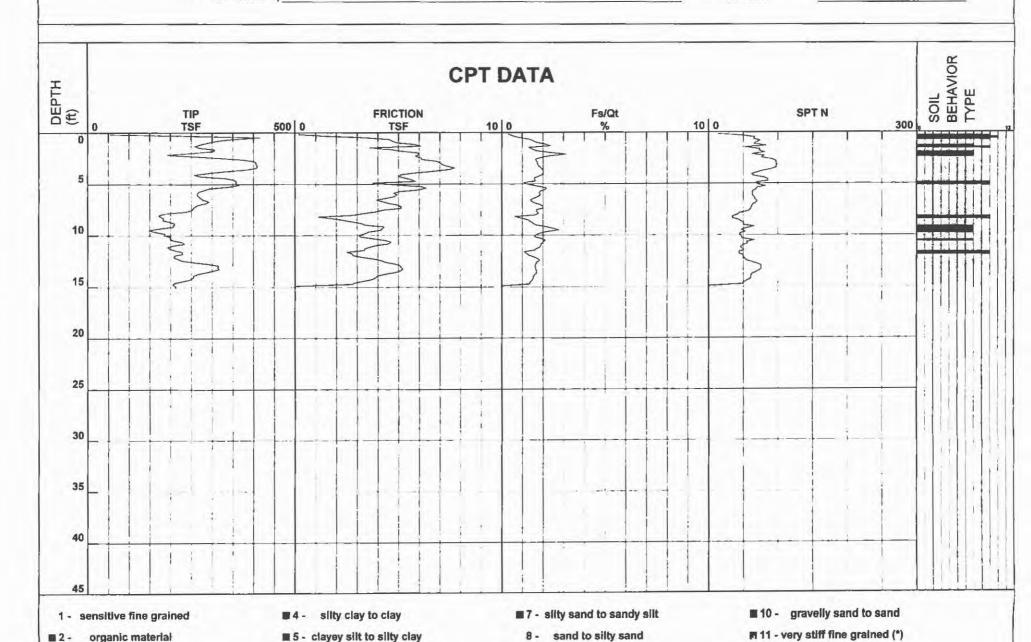
■ 6 - sandy silt to clayey silt

Operator
Cone Number
Date and Time
0.00 ft

ML/CW DSG1023 11/30/2007 8:59:59 AM Filename GPS Maximum Depth Elevation

■ 12 - sand to clayey sand (\*)

SDF(440).cpt 15.09 ft 215.3



Depth increment

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

sand

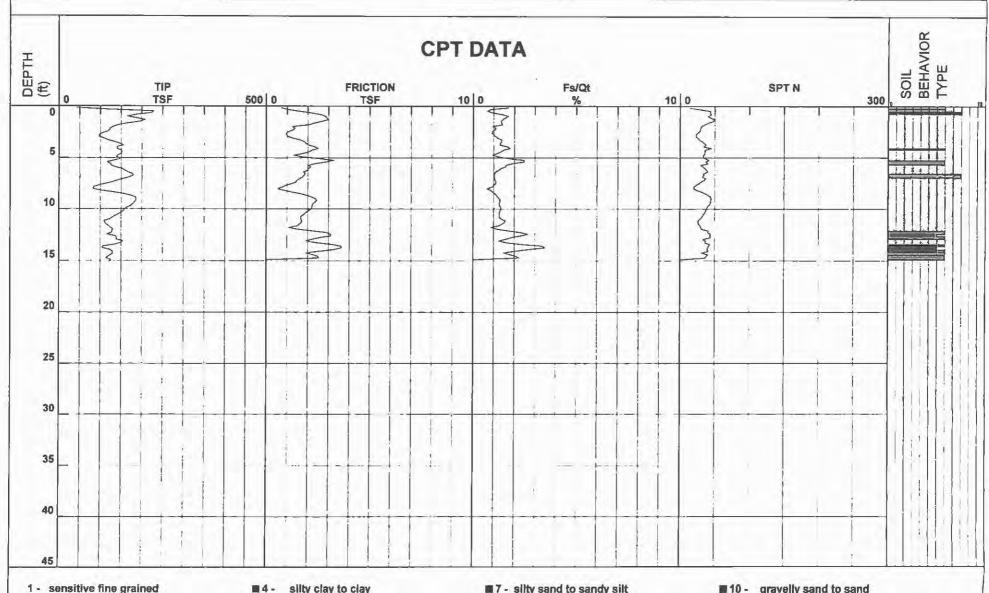


Location Job Number **Hole Number** Water Table Depth

Del Mar Heights 07-9487 CPT-04

Operator Cone Number **Date and Time** 0.00 ft

ML/CW DSG1023 11/29/2007 3:56:43 PM Filename SDF(436).cpt GPS Maximum Depth 15.09 ft Elevation 216.9



organic material

silty clay to clay

■ 5 - clayey slit to silty clay

■7 - silty sand to sandy silt

■ 10 - gravelly sand to sand

■3-■ 6 - sandy slit to clayey slit sand to slity sand sand

M 11 - very stiff fine grained (\*) ■ 12 - sand to clayey sand (\*)

Depth Increment

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



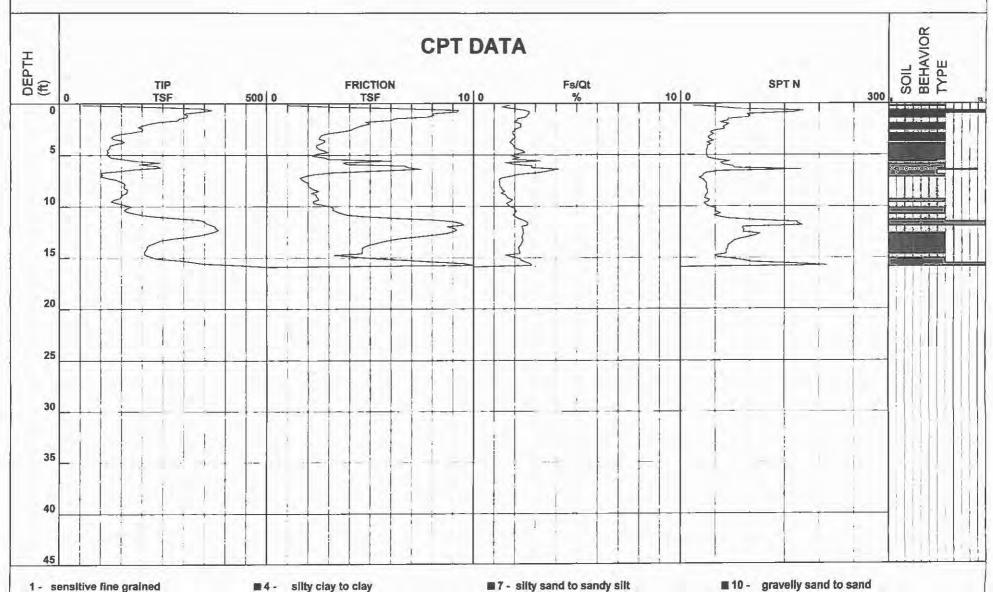
Location Job Number **Hole Number** Water Table Depth

Del Mar Heights 07-9487 CPT-05

Operator Cone Number **Date and Time** 0.00 ft

ML/CW DSG1023 11/28/2007 12:13:06 PM **Filename GPS** Maximum Depth Elevation

SDF(416).cpt 16.08 ft 218.6



organic material

silty clay to clay

■ 5 - clayey silt to silty clay

■ 11 - very stiff fine grained (\*)

clay

■ 6 - sandy silt to clayey silt

sand to slity sand sand

■ 12 - sand to clayey sand (\*)

Depth Increment

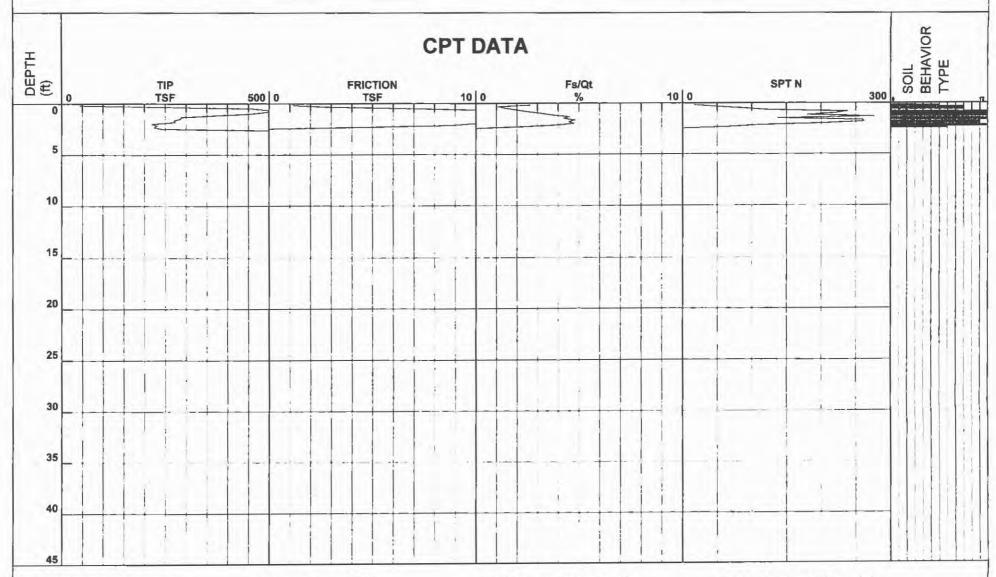
\*Soll behavior type and SPT based on data from UBC-1983



Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-06

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 11:53:12 AM Filename GPS Maximum Depth Elevation SDF(415).cpt 2.62 ft 218.5



1 - sensitive fine grained

■ 4 - silty clay to clay

■ 7 - silty sand to sandy silt

■ 10 - gravelly sand to sand

■ 2 - organic material

■ 5 - clayey silt to silty clay

8 - sand to silty sand

■ 11 - very stiff fine grained (\*)

■3 - clay

■ 6 - sandy silt to clayey silt

9 - sand

■ 12 - sand to clayey sand (\*)

Depth Increment

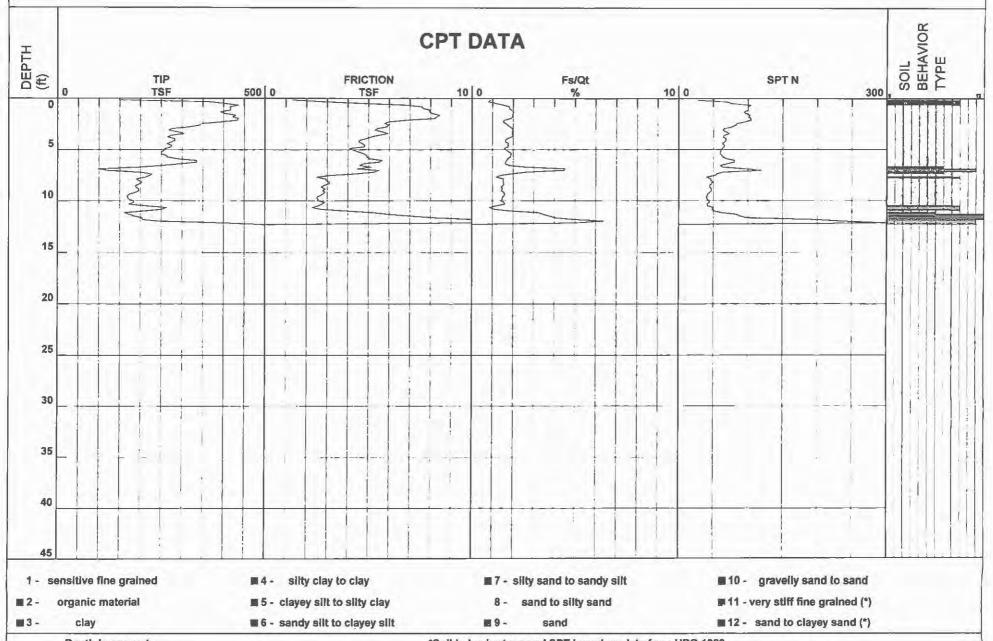
\*Soil behavlor type and SPT based on data from UBC-1983



Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-07

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 3:40:19 PM Filename SDF(435).cpt
GPS
Maximum Depth 12.47 ft
Elevation 216.8





Location
Job Number
Hole Number
Water Table Depth

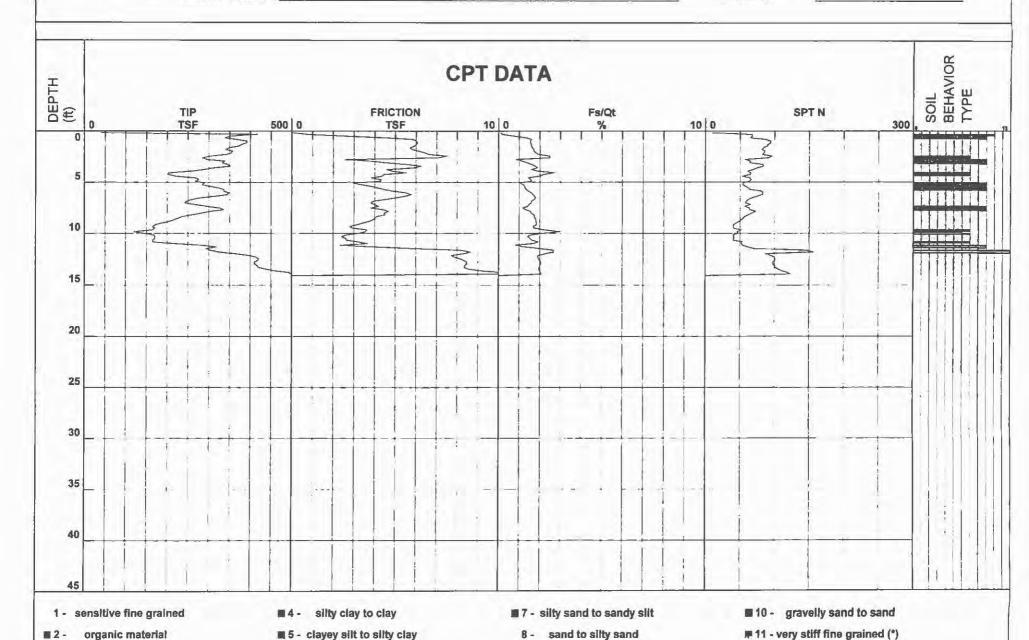
Del Mar Heights 07-9487 CPT-08

■ 6 - sandy silt to clayey silt

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/30/2007 9:17:19 AM Filename SD
GPS
Maximum Depth
Elevation

■ 12 - sand to clayey sand (\*)

SDF(441).cpt 14.27 ft 215.2



■3 - clay

Depth Increment

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

sand



Location
Job Number
Hole Number
Water Table Depth

 Del Mar Heights

 ber
 07-9487

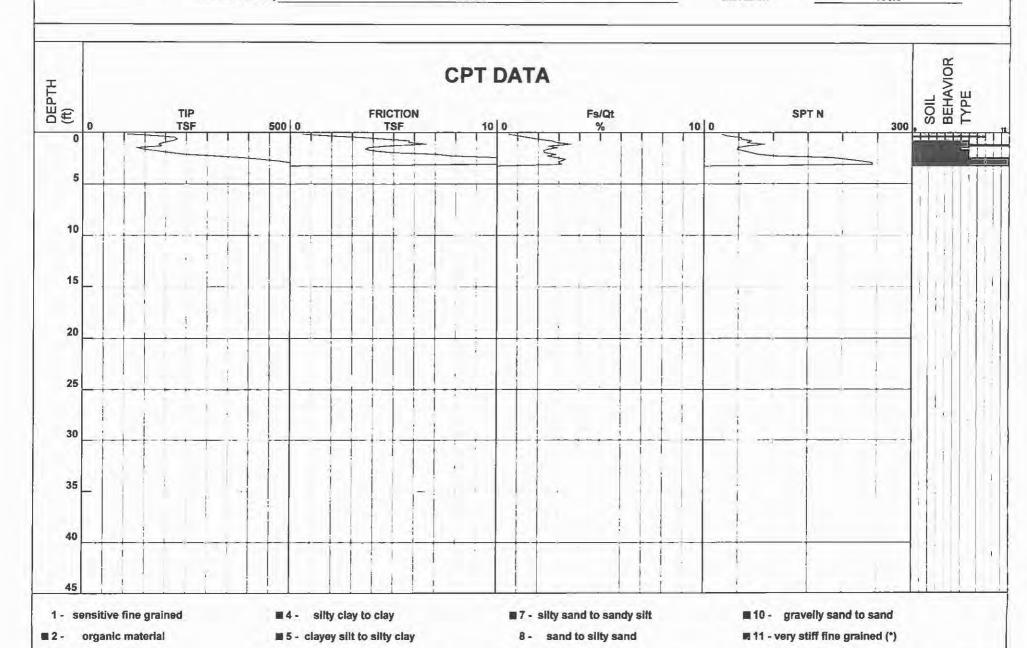
 ober
 CPT-10

■ 6 - sandy silt to clayey silt

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 3:01:11 PM Filename
GPS
Maximum Depth
Elevation

■ 12 - sand to clayey sand (\*)

3.44 ft 186.9



sand

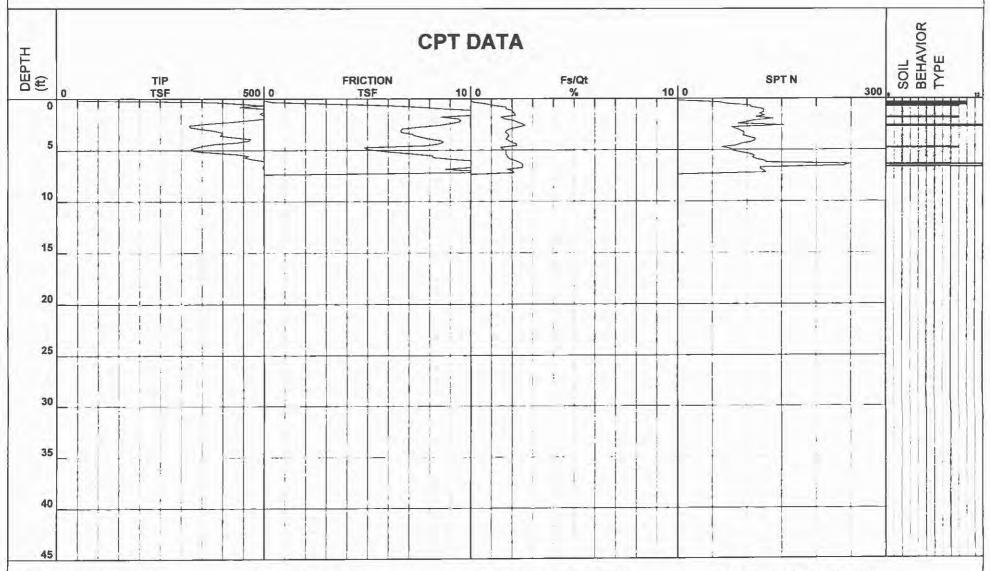


Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-11 Operator
Cone Number
Date and Time
0.00 ft

ML/CW DSG1023 11/30/2007 9:33:56 AM Filename GPS Maximum Depth Elevation SDF(442).cpt 7.55 ft

212.9



■ 2 - organic material
■ 3 - clay

1 - sensitive fine grained

■4 - silty clay to clay

■ 5 - clayey silt to silty clay

■ 6 - sandy slit to clayey silt

■ 7 - slity sand to sandy silt

8 - sand to silty sand

19 - sand

■ 10 - gravelly sand to sand

■ 11 - very stiff fine grained (\*)

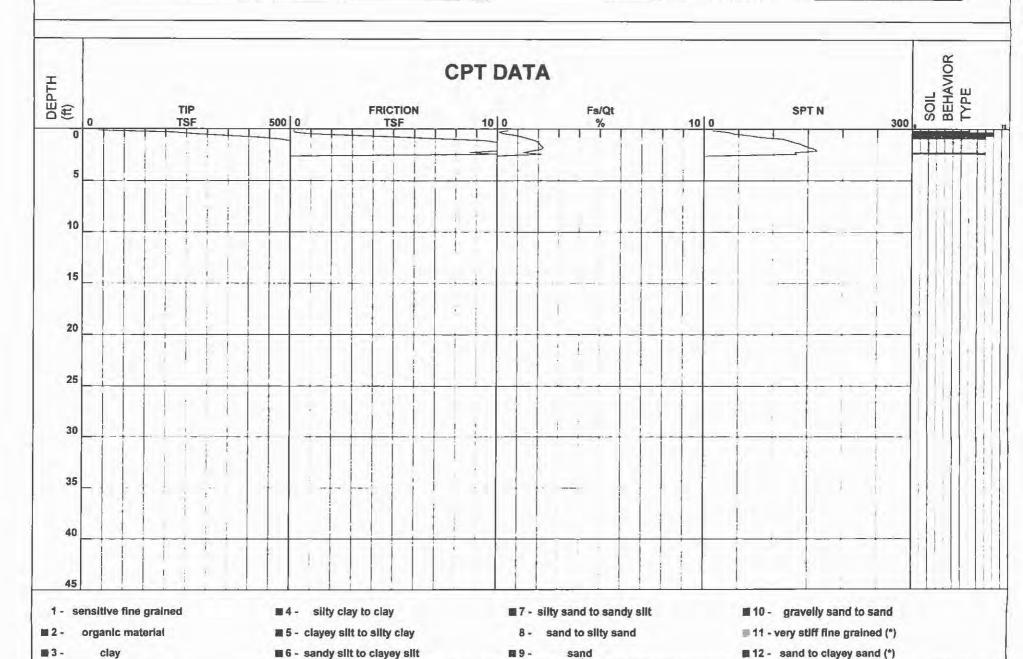
■ 12 - sand to clayey sand (\*)

Location Job Number **Hole Number** Water Table Depth

**Del Mar Heights** 07-9487 CPT-12

Operator Cone Number **Date and Time** 0.00 ft

ML/CW DSG1023 11/30/2007 9:52:31 AM **Filename** SDF(443).cpt GPS **Maximum Depth** 2.79 ft 215.1 Elevation



Depth Increment

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

sand

Location Job Number **Hole Number** Water Table Depth

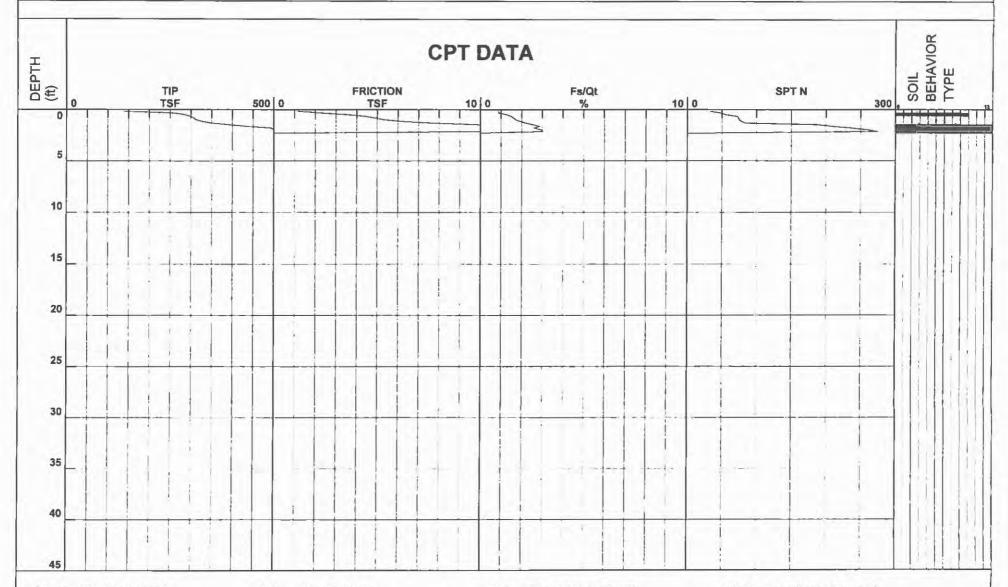
Del Mar Heights 07-9487 CPT-13

Operator Cone Number Date and Time 0.00 ft

ML/CW DSG1023 11/29/2007 3:31:02 PM Filename **GPS** Maximum Depth Elevation

SDF(434).cpt 2.46 ft

216.5



1 - sensitive fine grained

■ 4 - slity clay to clay

■ 7 - silty sand to sandy silt

■ 10 - gravelly sand to sand

organic material

**3**-

■ 5 - clayey silt to silty clay ■ 6 - sandy slit to clayey slit sand to silty sand sand

# 11 - very stiff fine grained (\*) ■ 12 - sand to clayey sand (\*)

clay Depth Increment

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

# GEÖ TESTING INC.

#### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

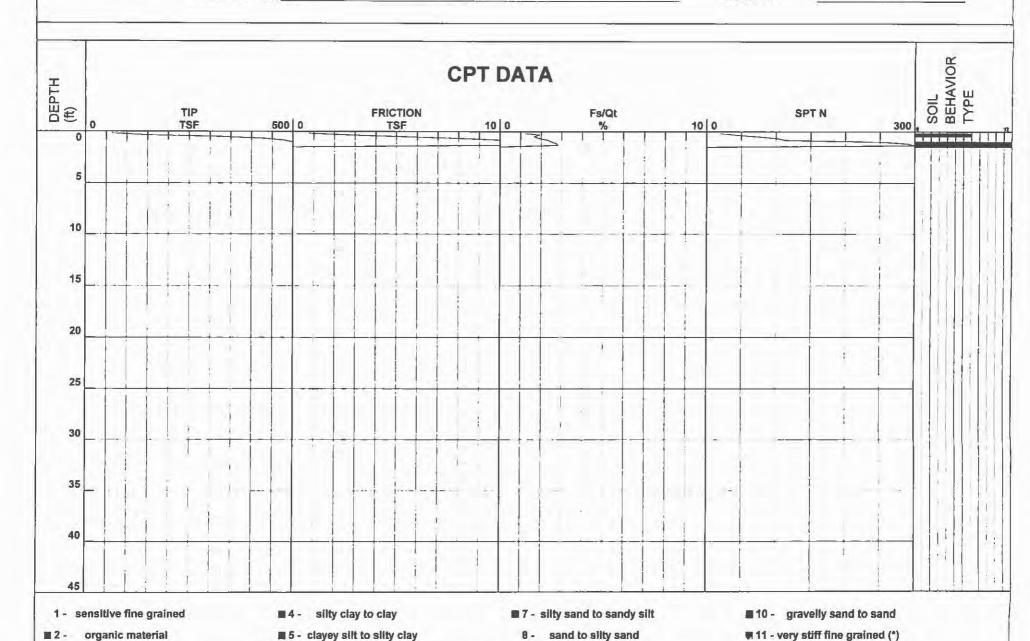
Del Mar Heights 07-9487 CPT-14

■ 6 - sandy silt to clayey silt

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 11:42:37 AM Filename GPS Maximum Depth Elevation

■ 12 - sand to clayey sand (\*)

1.64 ft 217.8



Depth Increment

■3-

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

sand

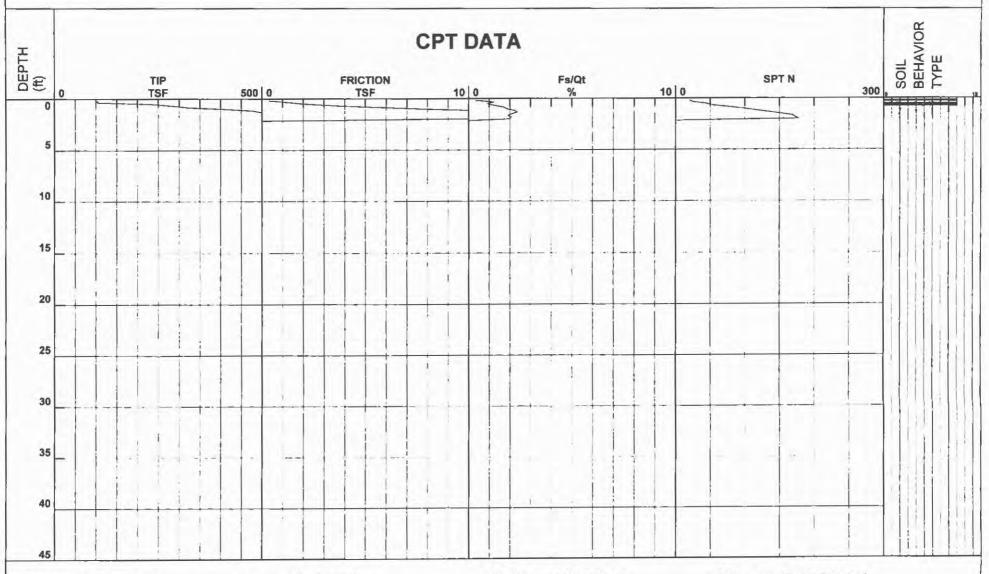


Location Job Number **Hole Number** 

Del Mar Heights 07-9487 CPT-15 Water Table Depth

Operator Cone Number **Date and Time** 0.00 ft

ML/CW DSG1023 11/28/2007 11:33:24 AM Filename SDF(413).cpt GPS Maximum Depth 2.30 ft 217.3 Elevation



1 - sensitive fine grained

■4 - silty clay to clay

■ 5 - clayey slit to silty clay

■ 7 - silty sand to sandy slit

■ 10 - gravelly sand to sand

organic material

sand to slity sand

■ 11 - very stiff fine grained (\*)

■3clay ■ 6 - sandy slit to clayey silt

sand

■ 12 - sand to clayey sand (\*)

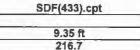
Depth Increment

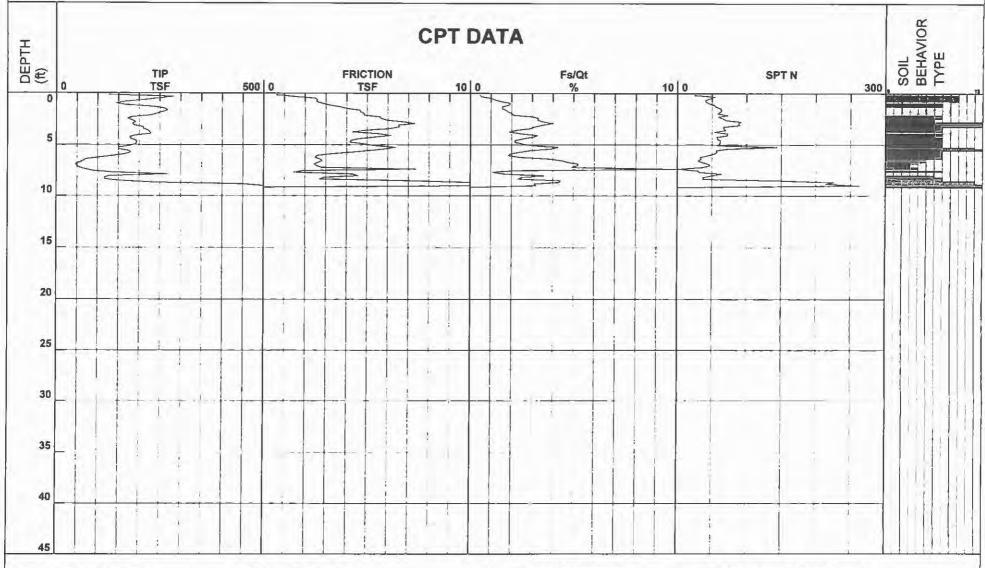
\*Soil behavior type and SPT based on data from UBC-1983



Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-16 Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 3:18:04 PM Filename SDF(4)
GPS
Maximum Depth 9.
Elevation 2:





1 - sensitive fine gralned

■4 - slity clay to clay

■ 7 - slity sand to sandy slit

■10 - gravelly sand to sand

■ 2 - organic material
■ 3 - clay

■ 5 - clayey silt to silty clay ■ 6 - sandy silt to clayey silt B - sand to silty sand

9 - sand

■11 - very stiff fine grained (\*)
■12 - sand to clayey sand (\*)

■3 - clay

Depth Increment

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

# GEO TESTING INC.

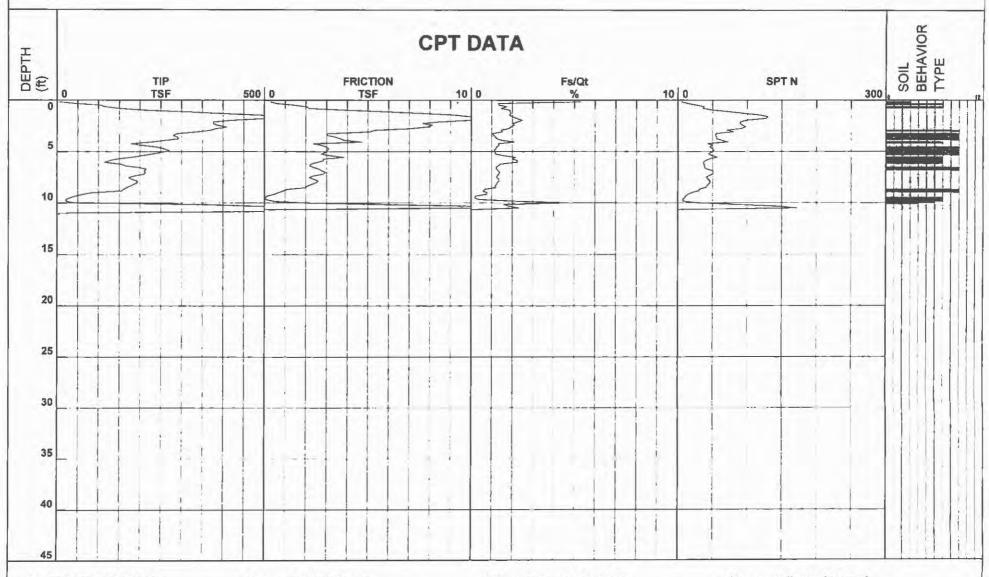
### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 r CPT-17

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/30/2007 10:19:32 AM Filename
GPS
Maximum Depth
Elevation

SDF(444).cpt 11.15 ft 214.7



1 - sensitive fine grained

■4 - silty clay to clay

■7 - slity sand to sandy silt

■ 10 - gravelly sand to sand

■ 2 - organic material

8 - sand to silty sand

m 11 - very stiff fine grained (\*)

■3 - clay

■ 5 - clayey silt to silty clay ■ 6 - sandy silt to clayey silt

19 - sand

■ 12 - sand to clayey sand (\*)

Depth Increment

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

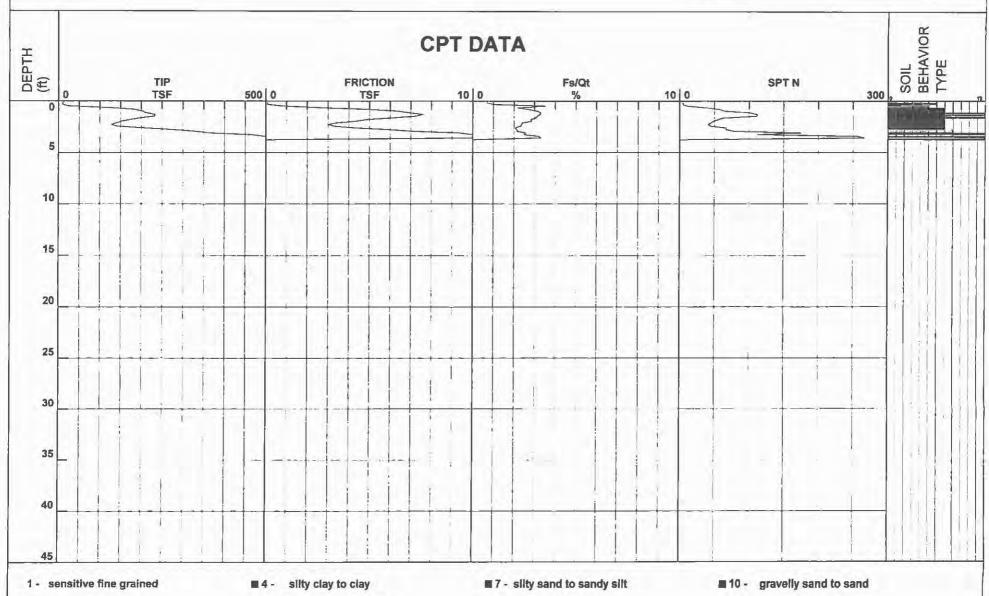
## GEO TESTING HICK

### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-18 Operator Cone Number Date and Time 0.00 ft

ML/CW DSG1023 11/29/2007 7:58:18 AM Filename SDF(424).cpt
GPS
Maximum Depth 3.94 ft
Elevation 187.8



■ 2 - organic material

■ 5 - clayey silt to silty clay

8 - sand to silty sand

■ 11 - very stiff fine grained (\*)

■3 - clay

■ 6 - sandy silt to clayey silt

8 - sand to silty sand

■ 12 - sand to clayey sand (\*)

Depth Increment

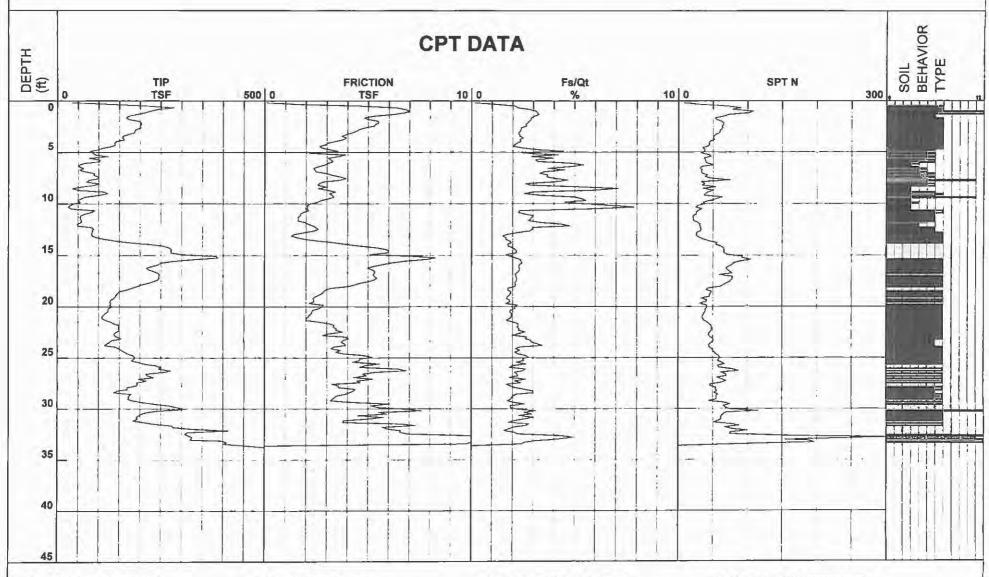
\*Soll behavior type and SPT based on data from UBC-1983



Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights
er 07-9487
ber CPT-19

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 2:23:34 PM Filename GPS Maximum Depth Elevation 33.79 ft 186.0



1 - sensitive fine grained

■ 4 - silty clay to clay

■7 - slity sand to sandy silt

■ 10 - gravelly sand to sand

■ 2 - organic material

■ 5 - clayey silt to slity clay

8 - sand to silty sand

■ 11 - very stiff fine grained (\*)

■3 - clay

■ 6 - sandy silt to clayey silt

9 - sand

■ 12 - sand to clayey sand (\*)

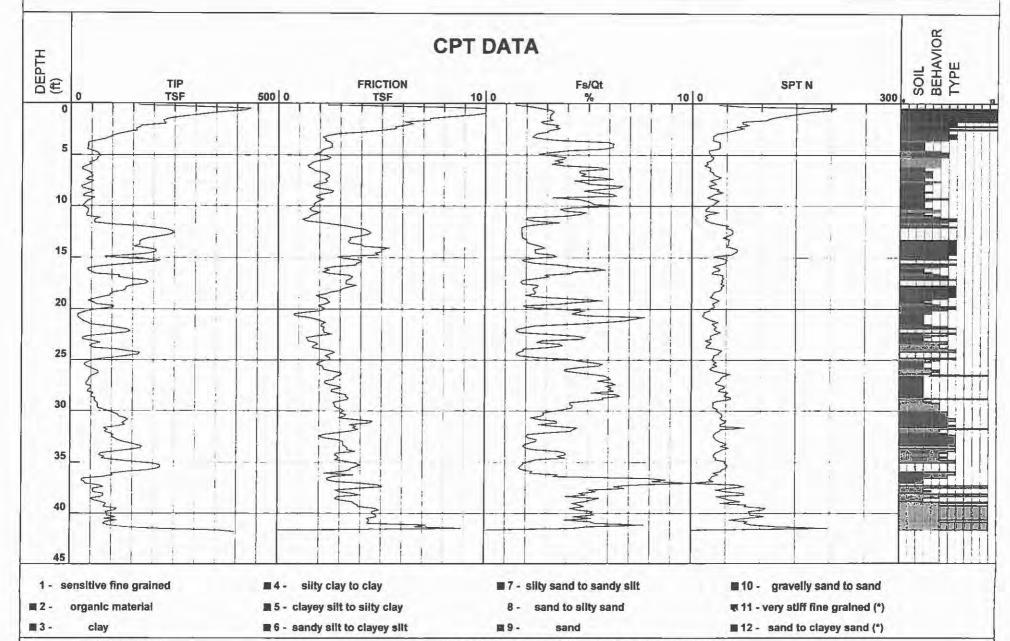
# GEO TESTING INC.

#### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-20

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 3:56:57 PM Filename GPS Maximum Depth Elevation SDF(422).cpt 41.83 ft 182.8



# GENTESTING INC.

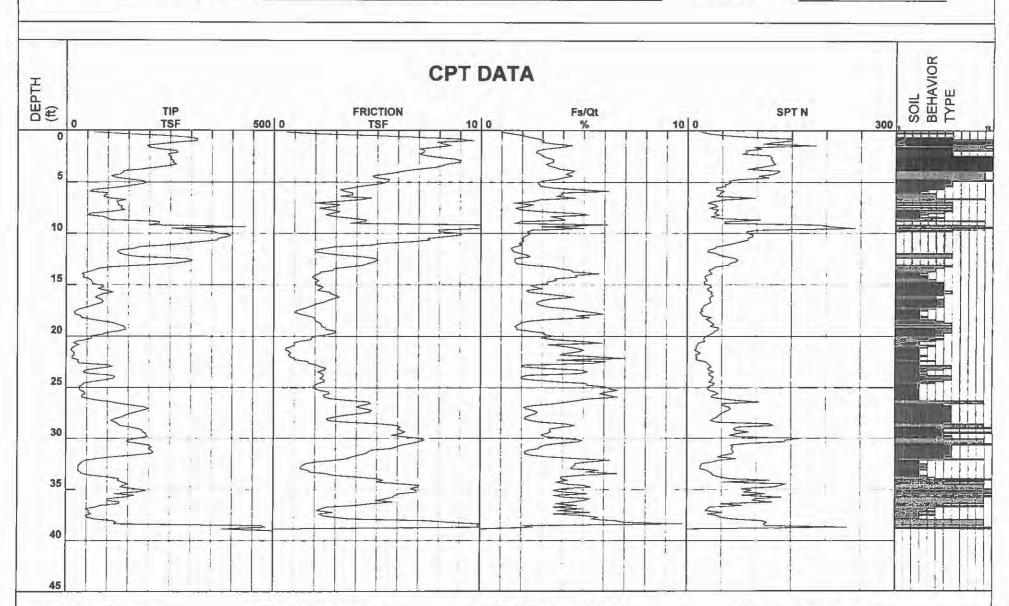
#### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-21

Operator
Cone Number
Date and Time
0.00 ft

ML/CW DSG1023 11/29/2007 8:16:34 AM Filename SDF(425).cpt
GPS
Maximum Depth 39.04 ft
Elevation 194.1



1 - sensitive fine grained

■ 4 - silty clay to clay

■ 7 - silty sand to sandy silt

■ 10 - gravelly sand to sand

3 2 - organic material

8 - sand to silty sand

**周11 - very stiff fine grained (\*)** 

■3 - clay

■ 5 - clayey silt to slity clay ■ 6 - sandy silt to clayey slit

9 - sand

■ 12 - sand to clayey sand (\*)

Depth Increment

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

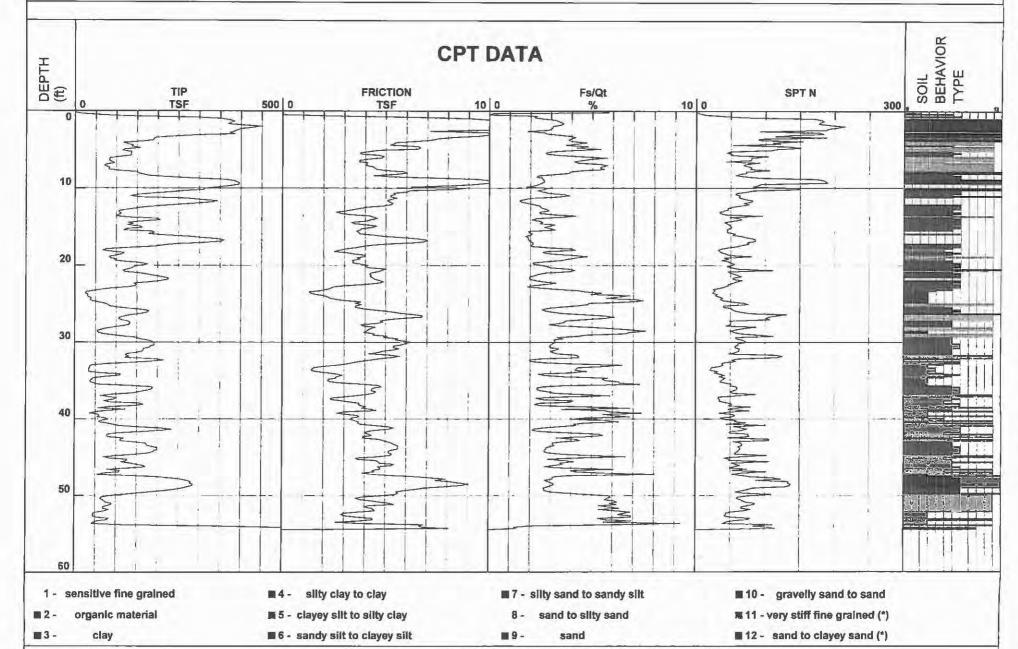


Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-22

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 1:19:54 PM Filename
GPS
Maximum Depth
Elevation

SDF(417).cpt 54.63 ft 185.



# GEO-TESTING INCL

#### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

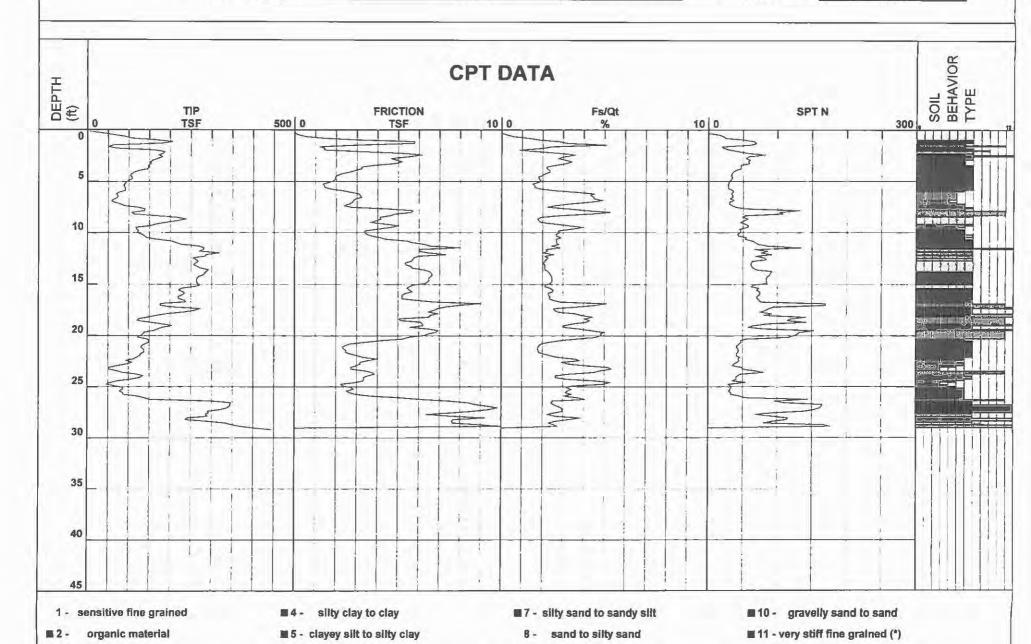
Del Mar Heights 07-9487 CPT-23

■ 6 - sandy silt to clayey silt

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 4:40:56 PM Filename GPS Maximum Depth Elevation

■ 12 - sand to clayey sand (\*)

SDF(423).cpt 29.20 ft 186.6



Depth Increment

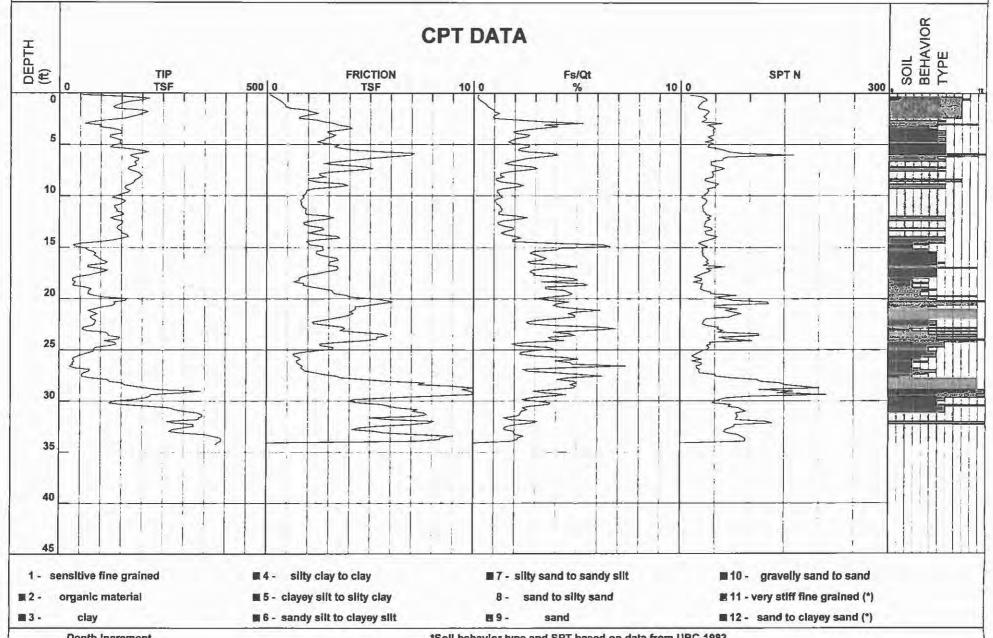
\*Soll behavior type and SPT based on data from UBC-1983

sand

Location Job Number **Hole Number** Water Table Depth **Del Mar Heights** 07-9487 CPT-24

Operator Cone Number **Date and Time** 0.00 ft

ML/CW DSG1023 11/29/2007 1:54:08 PM **Filename** SDF(431).cpt GPS Maximum Depth 34.28 ft Elevation 215.5



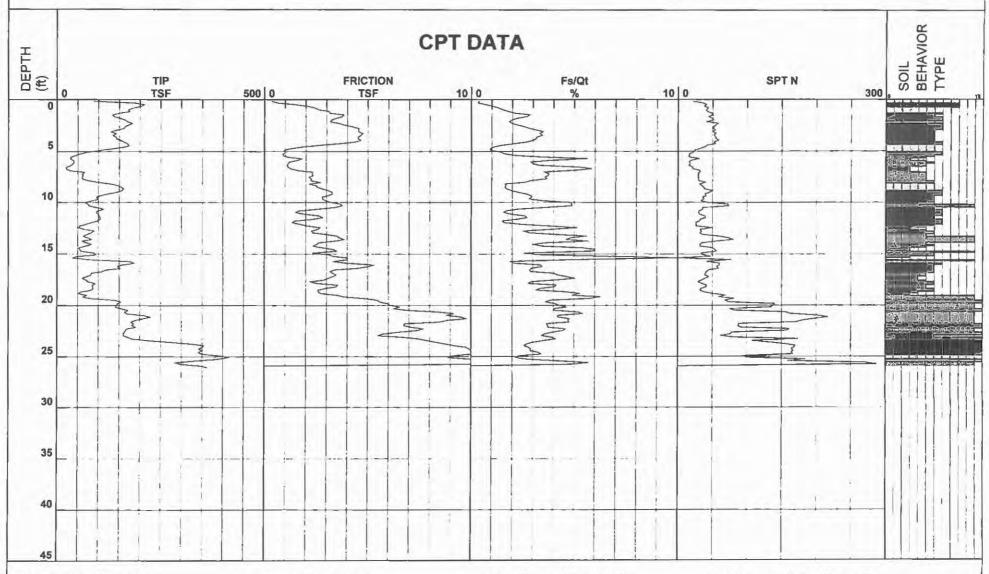
# Graffink bk

#### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-25

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 2:46:45 PM Filename GPS Maximum Depth Elevation 26.08 ft 215.3



■ 2 - organic material ■ 3 - clay

1 - sensitive fine grained

■4 - silty clay to clay

■ 5 - clayey silt to silty clay

■ 6 - sandy silt to clayey silt

■ 7 - slity sand to sandy slit

8 - sand to slity sand

9 - sand

■10 - gravelly sand to sand

■ 11 - very stiff fine grained (\*)

■ 12 - sand to clayey sand (\*)

Depth Increment

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

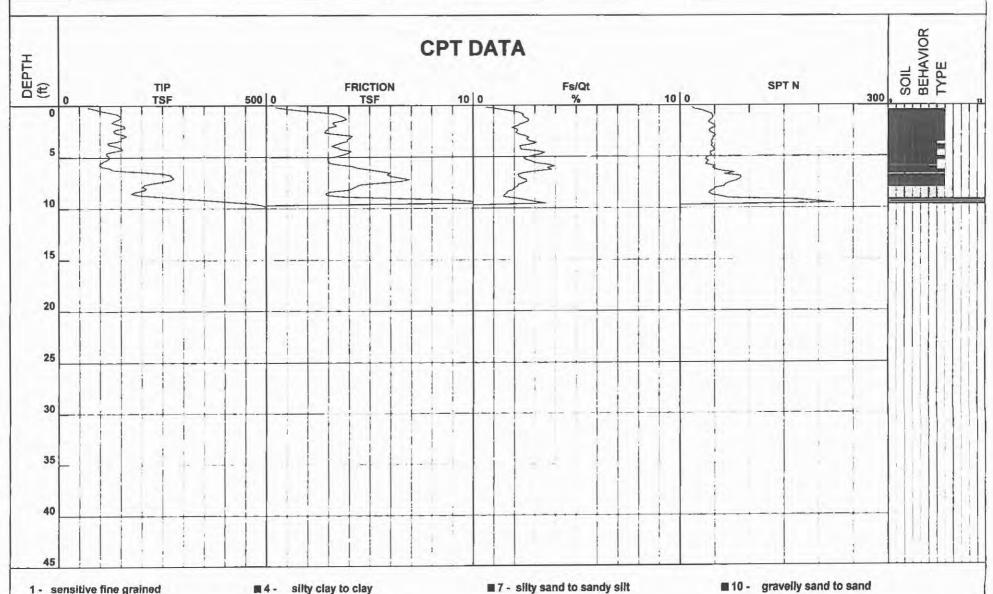
Location Job Number **Hole Number** Water Table Depth

Del Mar Heights 07-9487 CPT-26

Operator Cone Number **Date and Time** 0.00 ft

ML/CW DSG1023 11/28/2007 11:08:43 AM **Filename** GPS Maximum Depth Elevation

SDF(412).cpt 9.84 ft 217.0



1 - sensitive fine grained

silty clay to clay

organic material

麗 5 - clayey silt to silty clay

₹11 - very stiff fine grained (\*)

**3**clay ■ 6 - sandy silt to clayey silt

sand to silty sand sand

■ 12 - sand to clayey sand (\*)

Depth Increment

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



Location Job Number **Hole Number** Water Table Depth

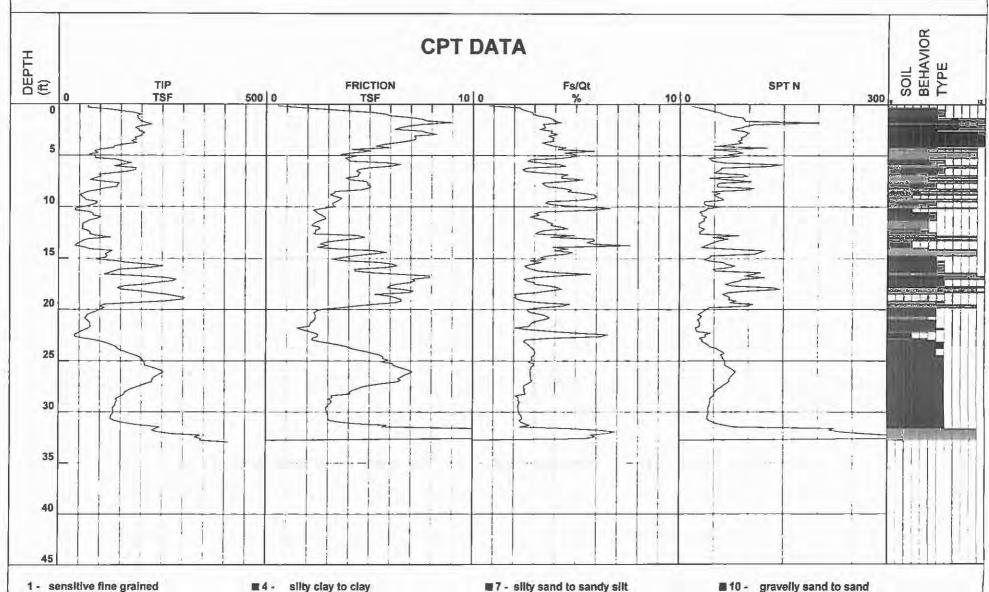
Del Mar Heights 07-9487 CPT-27

Operator Cone Number **Date and Time** 0.00 ft

ML/CW DSG1023 11/29/2007 9:34:41 AM

**Filename GPS Maximum Depth** Elevation

SDF(427).cpt 32.97 ft 216.7



organic material

₹ 11 - very stiff fine grained (\*)

**3**clay ■ 5 - clayey silt to silty clay ■ 6 - sandy silt to clayey silt sand to silty sand sand

■ 12 - sand to clayey sand (\*)

Depth Increment

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

## GEO TESTING INC

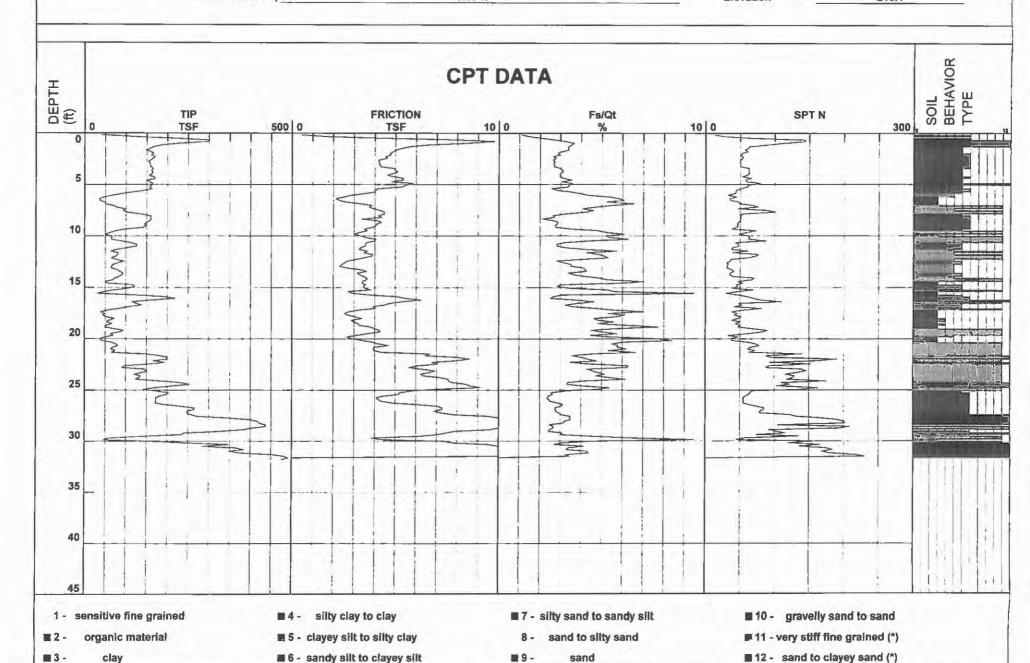
## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Operator Cone Number Date and Time 0.00 ft

ML/CW DSG1023 11/29/2007 11:10:20 AM Filename
GPS
Maximum Depth
Elevation

SDF(429).cpt 31.82 ft 215.1



Depth Increment

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

## GFOTESTINGUING

## **Geotechnical Exploration**

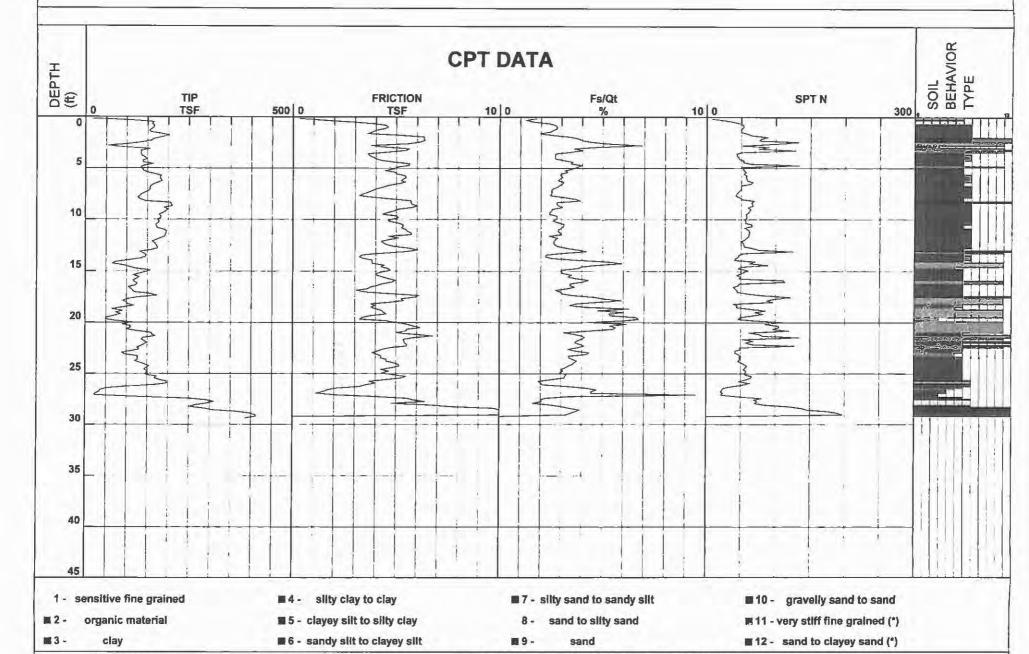
Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-29 Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/29/2007 12:59:48 PM Filename SDF(430).cpt

GPS

MaxImum Depth 29.36 ft

Elevation 213.7



## GH-TESTING INC

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-30

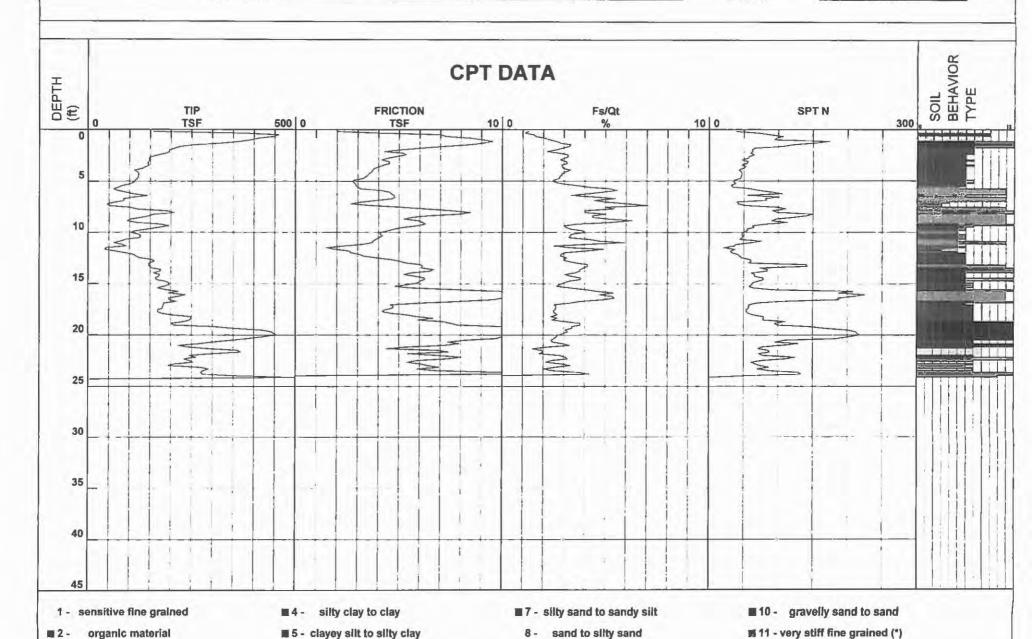
■ 6 - sandy silt to clayey silt

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 9:02:54 AM Filename GPS Maximum Depth Elevation

■ 12 - sand to clayey sand (\*)

SDF(410).cpt 24.28 ft

200.0



Depth Increment

■3 -

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

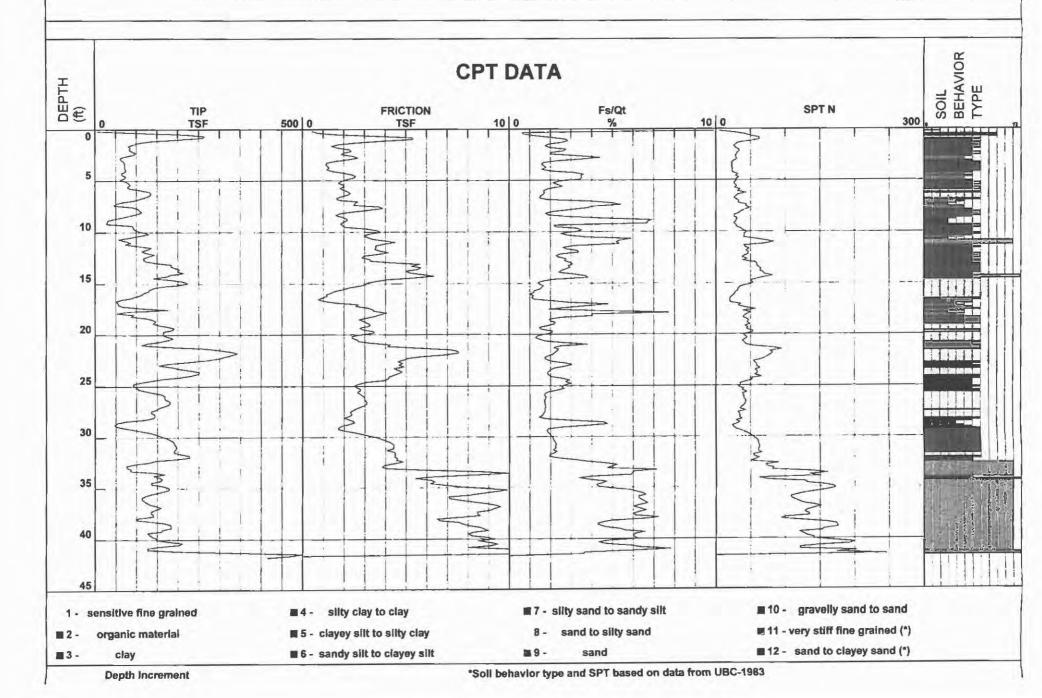
sand



Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-31

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 7:48:11 AM Filename GPS Maximum Depth Elevation SDF(409).cpt 41.83 ft 196.4

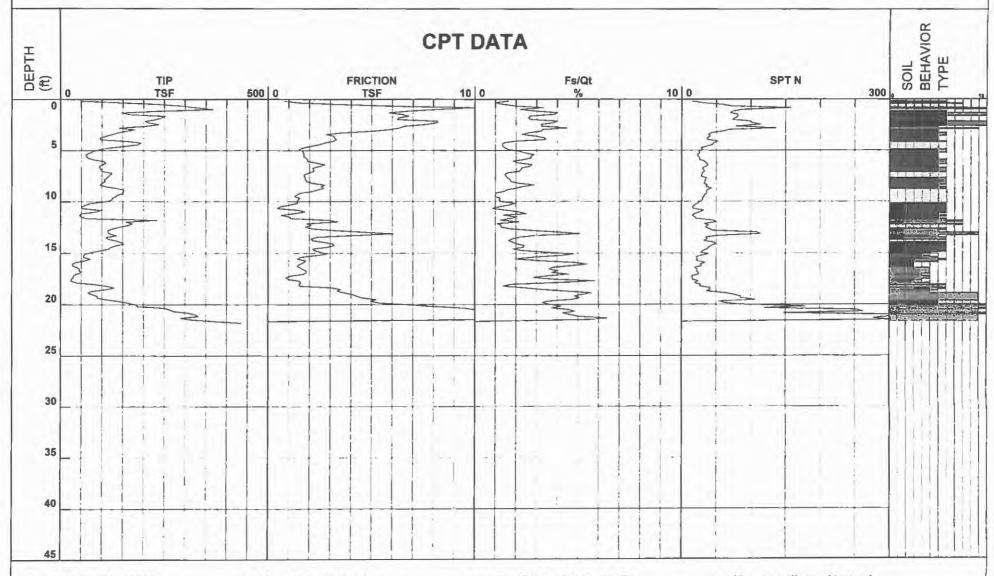




Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 GPT-32

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 4:59:07 PM Filename GPS Maximum Depth Elevation 21.82 ft 196.6



1 - sensitive fine grained

■ 4 - silty clay to clay

■ 7 - silty sand to sandy silt

■ 10 - gravelly sand to sand

m 2 - organic material

8 - sand to slity sand

≡ 11 - very stiff fine grained (\*)

■3 - clay

■ 5 - clayey silt to silty clay

■ 6 - sandy silt to clayey silt

9 - sand

■ 12 - sand to clayey sand (\*)

Depth Increment

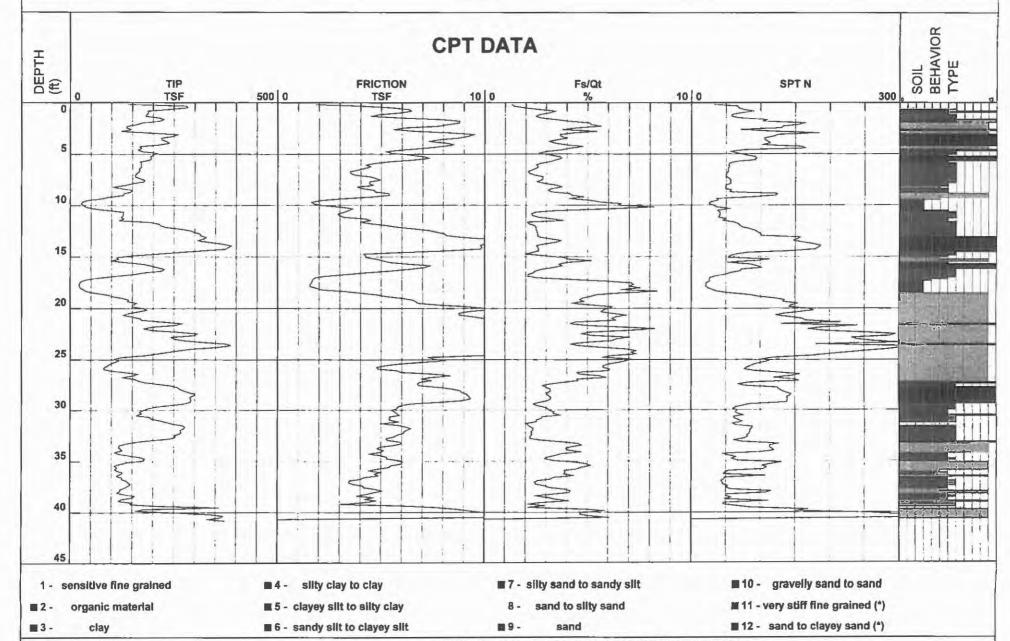
\*Soil behavior type and SPT based on data from UBC-1983



Location
Job Number
Hole Number
Water Table Depth

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 10:03:26 AM Filename
GPS
Maximum Depth
Elevation

SDF(411).cpt 40.85 ft 198.2



## GEO TESTINE INC.

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-34

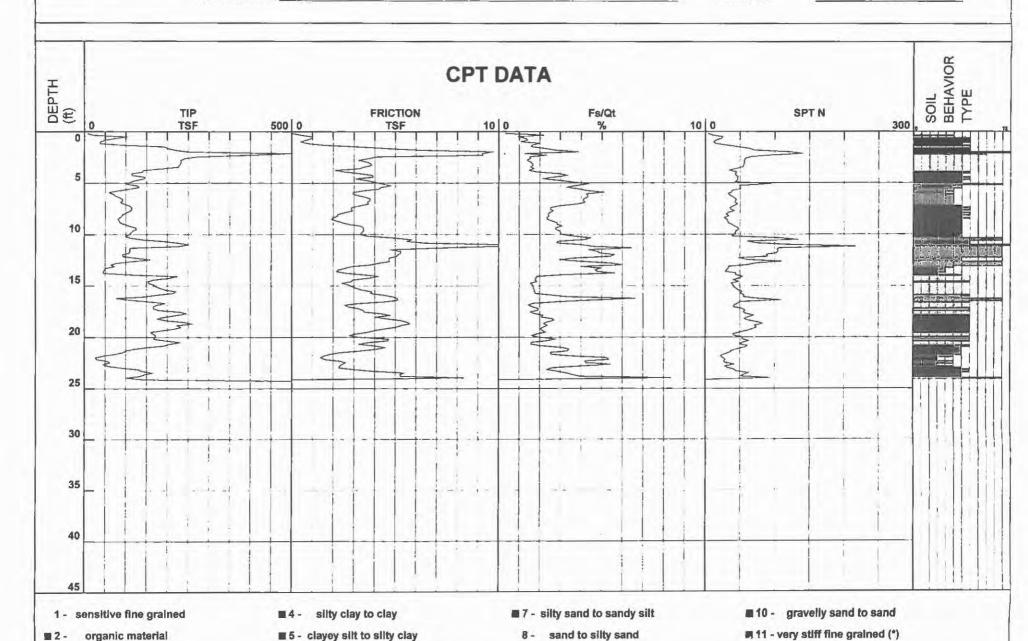
■ 6 - sandy silt to clayey silt

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 3:56:00 PM Filename GPS Maximum Depth Elevation

■12 - sand to clayey sand (\*)

SDF(406).cpt

202.4



Depth Increment

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

sand

■9-

# GED TESTING INC.

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

 Del Mar Heights

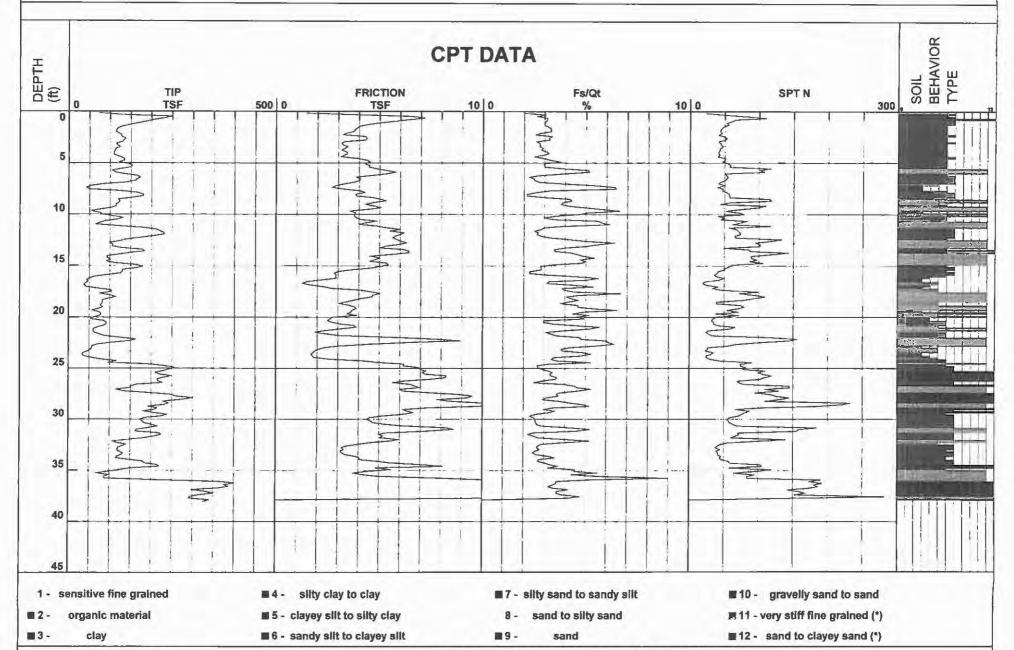
 per
 07-9487

 sber
 CPT-35

Operator
Cone Number
Date and Time
0.00 ft

ML/CW DSG1023 11/29/2007 10:27:51 AM Filename GPS Maximum Depth Elevation SDF(428).cpt

215.0



Location
Job Number
Hole Number
Water Table Depth

 Del Mar Heights

 per
 07-9487

 ber
 CPT-36

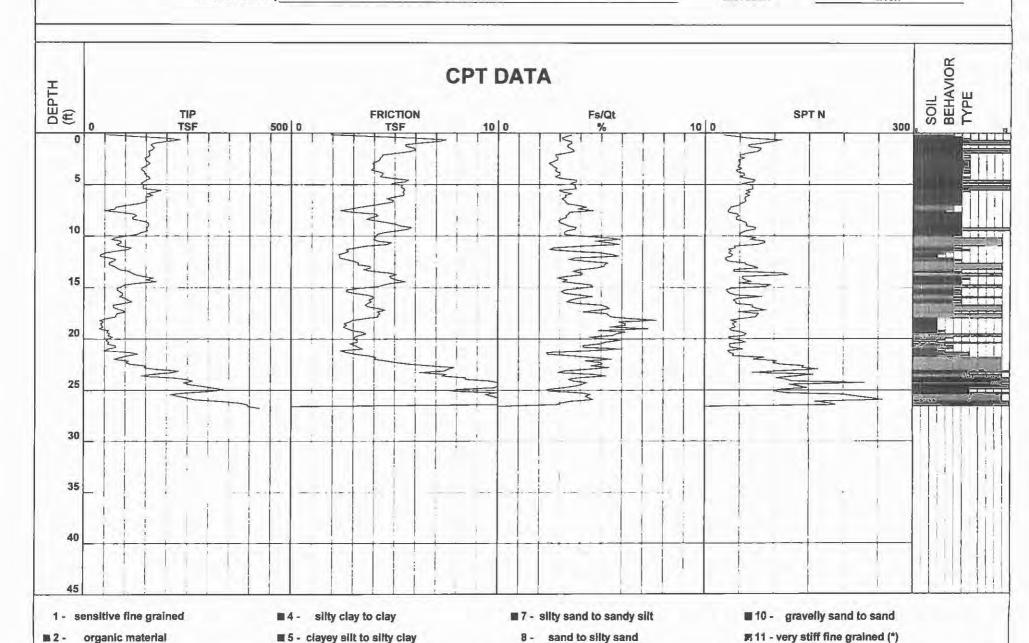
■ 6 - sandy silt to clayey silt

Operator
Cone Number
Date and Time
0.00 ft

ML/CW DSG1023 11/29/2007 9:01:38 AM Filename
GPS
Maximum Depth
Elevation

■ 12 - sand to clayey sand (\*)

26.74 ft 216.7



Depth Increment

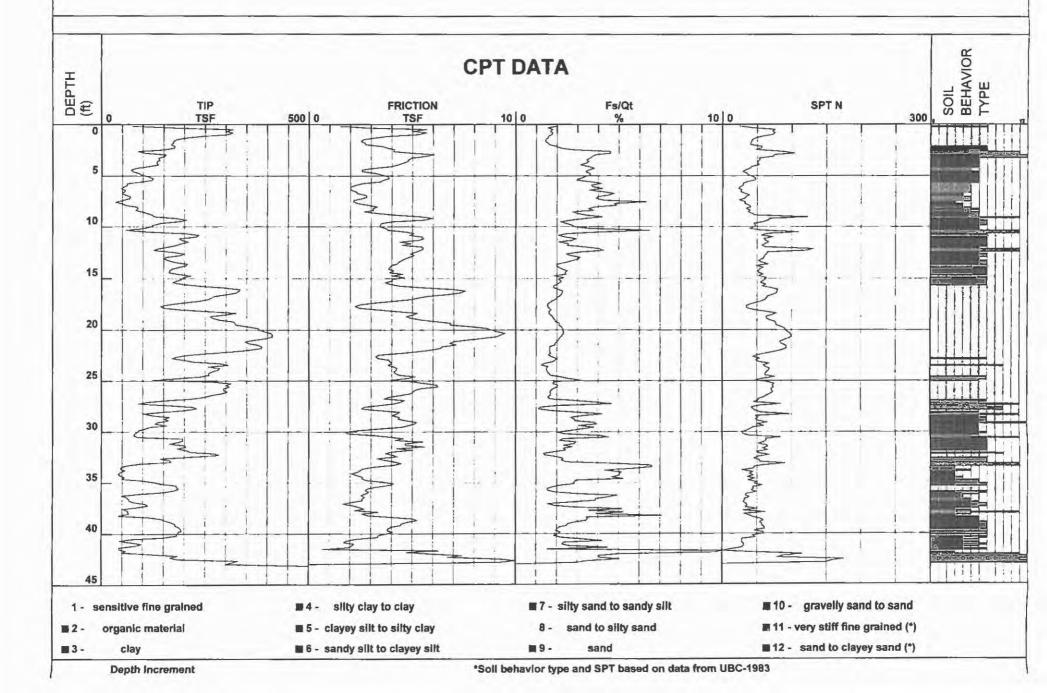
\*Soll behavior type and SPT based on data from UBC-1983

sand



Location
Job Number
Hole Number
Water Table Depth

on <u>Del Mar Heights</u> umber <u>07-9487</u> lumber <u>CPT-37</u> Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 11:34:41 AM Filename GPS Maximum Depth Elevation SDF(400).cpt 43.14 ft 203.1



## GEO TESTING INC.

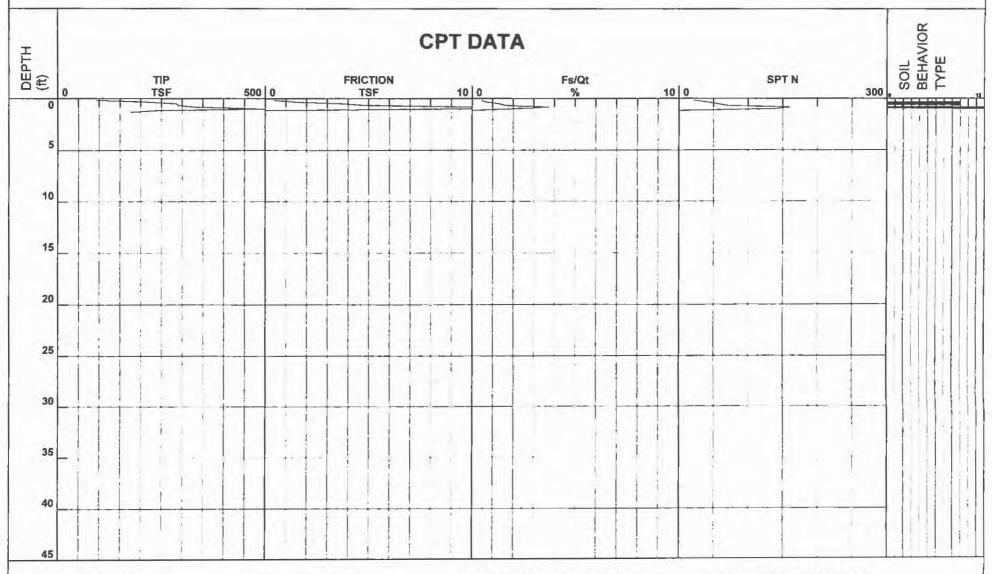
### **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-38

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 12:20:25 PM Filename SDF GPS Maximum Depth 1 Elevation 2

1.31 ft 202.1



1 - sensitive fine grained

■ 4 - silty clay to clay

■7 - silty sand to sandy silt

■ 10 - gravelly sand to sand

■ 2 - organic material

■ 5 - clayey silt to silty clay 8 - sand to silty sand

# 11 - very stiff fine grained (\*)

■3 - clay

■ 6 - sandy slit to clayey slit

19 - sand

■ 12 - sand to clayey sand (\*)

Depth Increment

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

## GEO TESTING INC.

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

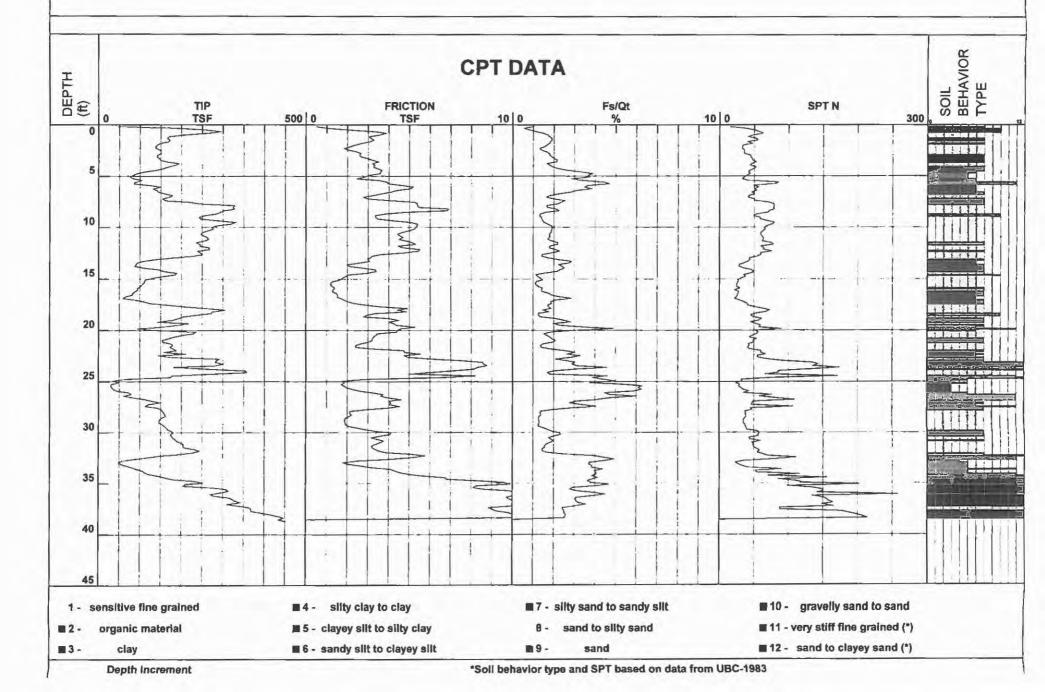
Del Mar Heights 07-9487 CPT-38A

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 12:33:42 PM Filename SDF(402).cpt

GPS

Maximum Depth 38.71 ft

Elevation 202.1

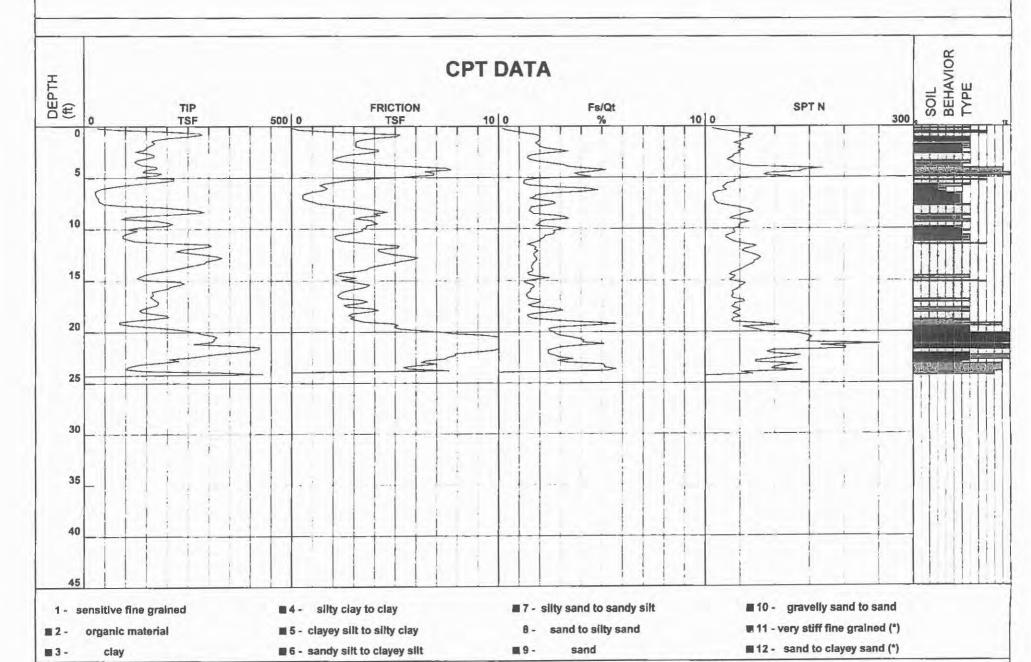




Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-39

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 3:29:02 PM Filename GPS Maximum Depth Elevation SDF(405).cpt 24.44 ft 200.1



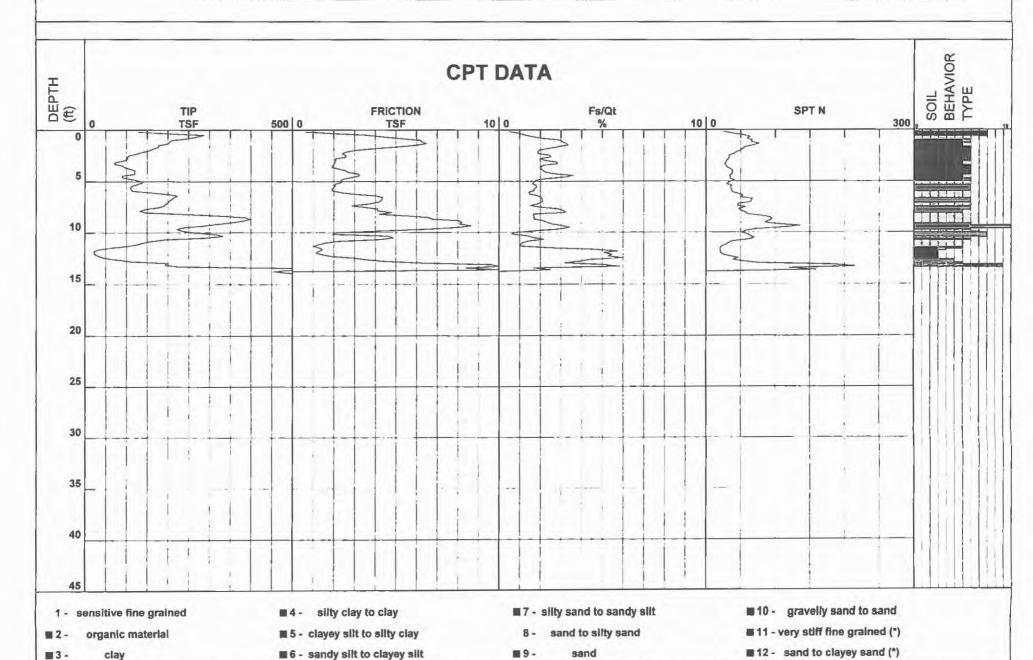
Location **Job Number Hole Number** 

Del Mar Heights 07-9487 CPT-40 Water Table Depth

Operator Cone Number **Date and Time** 0.00 ft

MLICW DSG1023 11/27/2007 4:28:54 PM Filename **GPS** Maximum Depth Elevation

SDF(407).cpt 13.94 ft 198.3



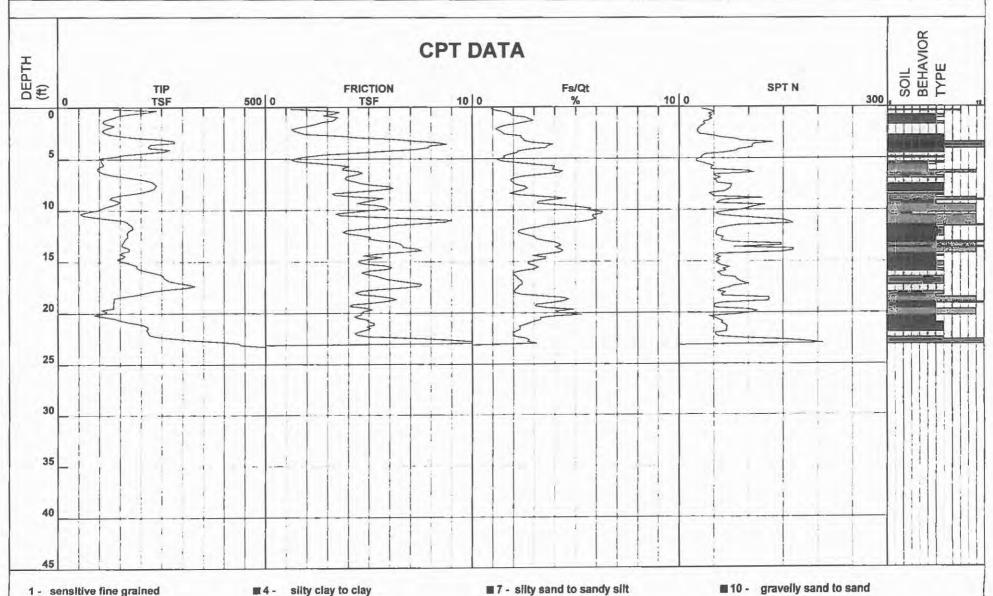
## GSC TENTING INC.

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-41

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 3:02:43 PM Filename GPS Maximum Depth Elevation SDF(404).cpt 23.29 ft 199.5



2 - organic material

■ 5 - clayey silt to silty clay

8 - sand to silty sand

■ 11 - very stiff fine grained (\*)

■3 - clay

■ 6 - sandy silt to clayey silt

8 - sand to silty sand

■ 12 - sand to clayey sand (\*)

Depth Increment

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

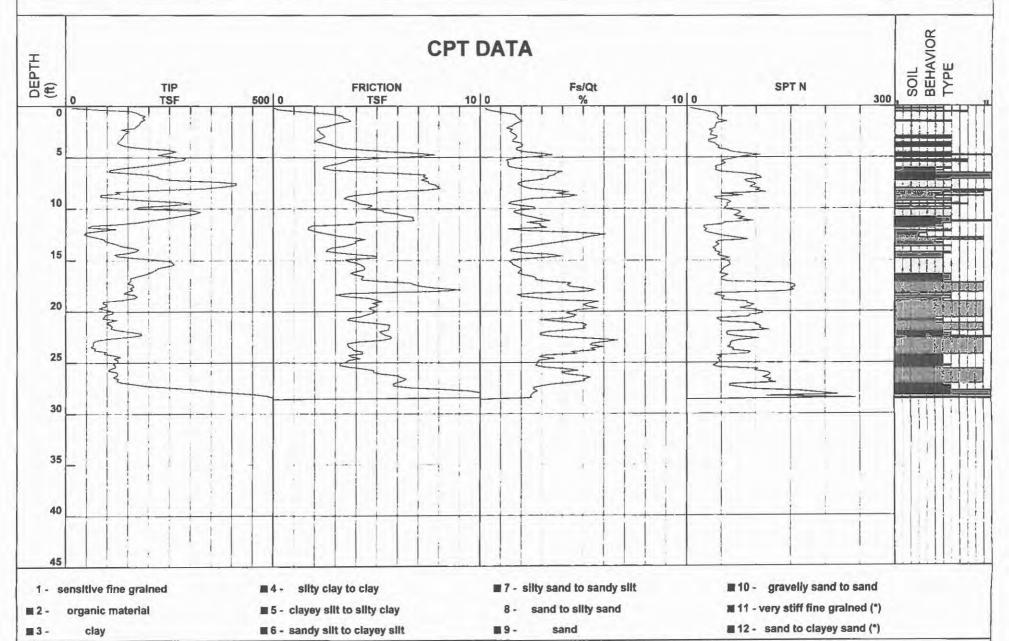
## GEO TESTING INC.

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-42

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 2:34:59 PM Filename GPS Maximum Depth Elevation SDF(403).cpt 28.71 ft 200.9





Location
Job Number
Hole Number
Water Table Depth

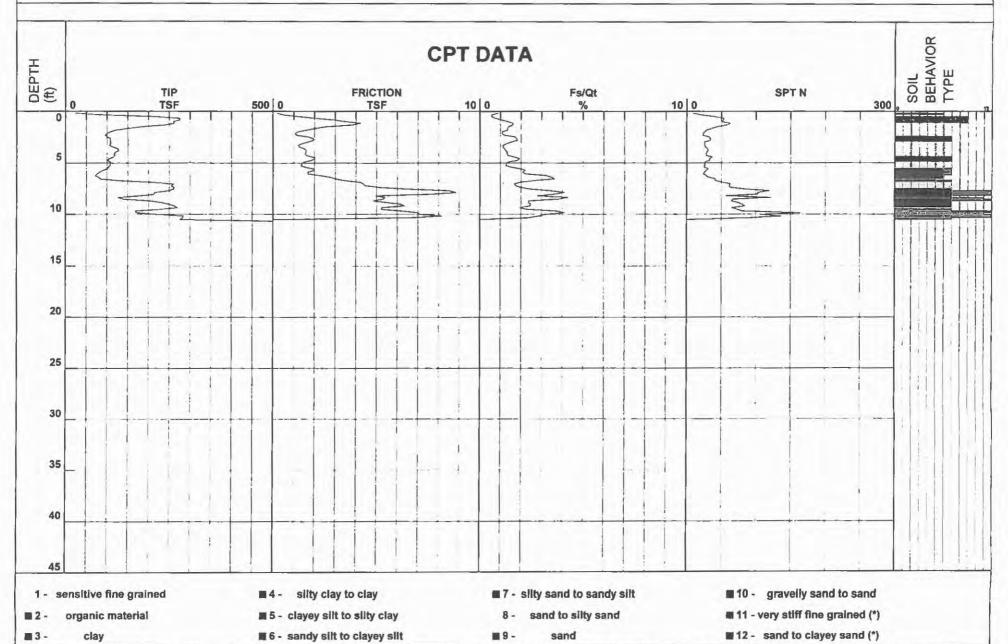
Del Mar Heights 07-9487 CPT-43

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 10:37:40 AM Filename SDF(398).cpt

GPS

Maximum Depth 10.66 ft

Elevation 202.6



Depth Increment

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

## GEO TESSING INC.

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights
07-9487
er CPT-43A

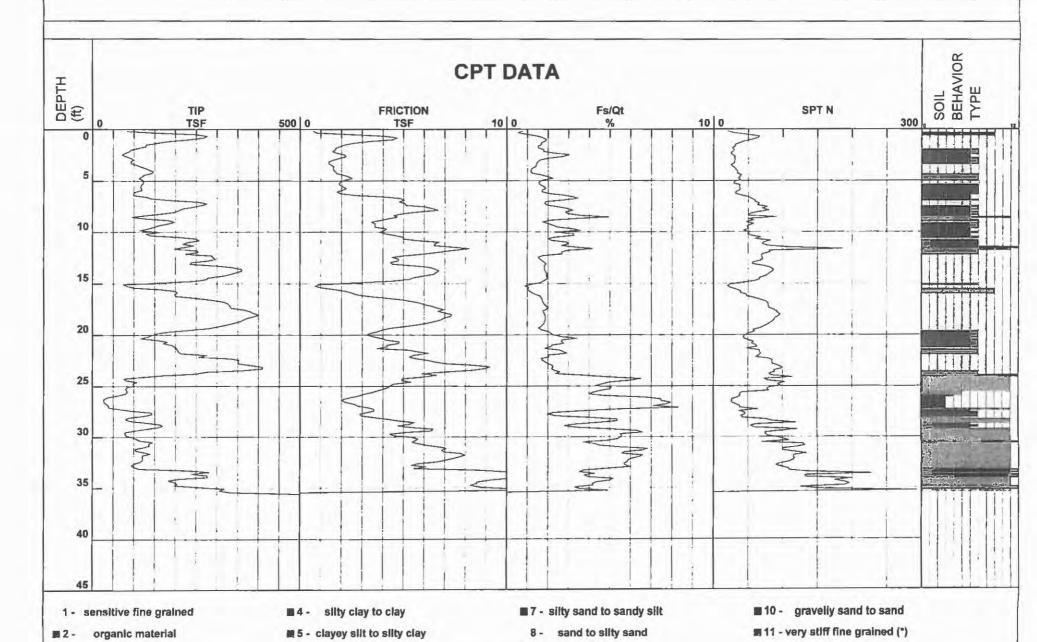
■ 6 - sandy sllt to clayey sllt

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/27/2007 10:53:20 AM Filename GPS Maximum Depth Elevation

■ 12 - sand to clayey sand (\*)

SDF(399).cpt 35.60 ft

202.6



■3 - clay

Depth Increment

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

bnse

## Gto Texanic Isc

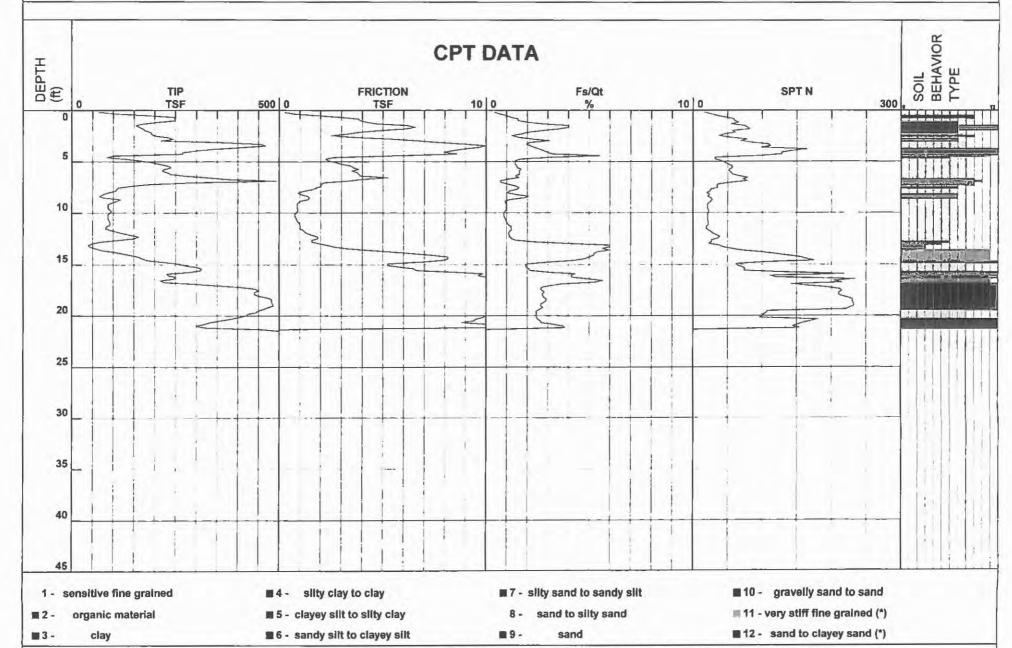
## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-44

Operator
Cone Number
Date and Time
0.00 ft

ML/CW DSG1023 11/27/2007 9:53:18 AM Filename GPS Maximum Depth Elevation SDF(397).cpt 21.49 ft 201.9

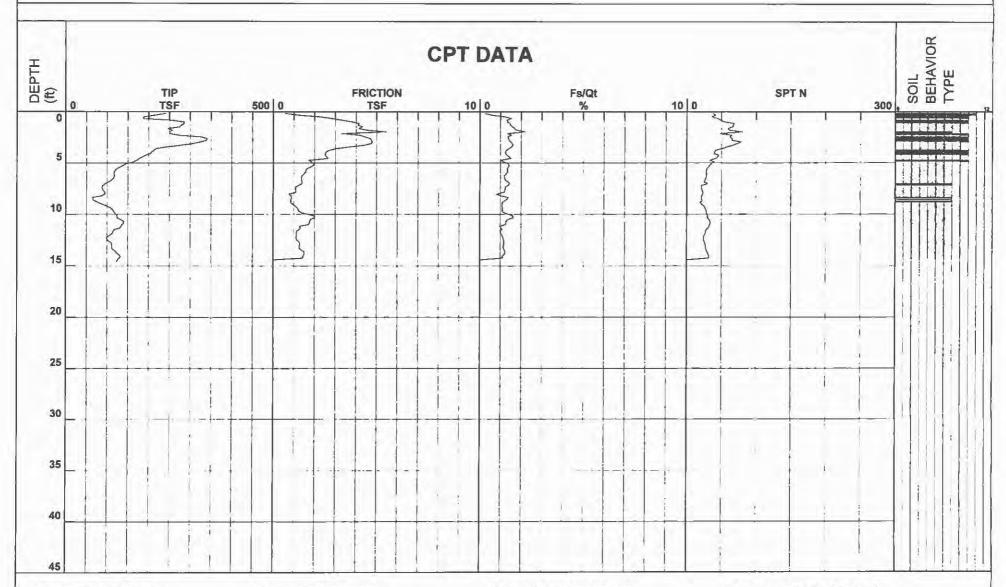


# Geo Testing Inc.

## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-45 Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/30/2007 7:55:32 AM Filename GPS Maximum Depth Elevation 14.60 ft 215.8



1 - sensitive fine grained

■ 4 - slity clay to clay

■7 - silty sand to sandy silt

■10 - gravelly sand to sand

■ 2 - organic material

8 - sand to silty sand

图 11 - very stiff fine grained (\*)

■3 - clay

■ 5 - clayey silt to silty clay ■ 6 - sandy silt to clayey silt

9 - sand

■ 12 - sand to clayey sand (\*)



Location
Job Number
Hole Number
Water Table Depth

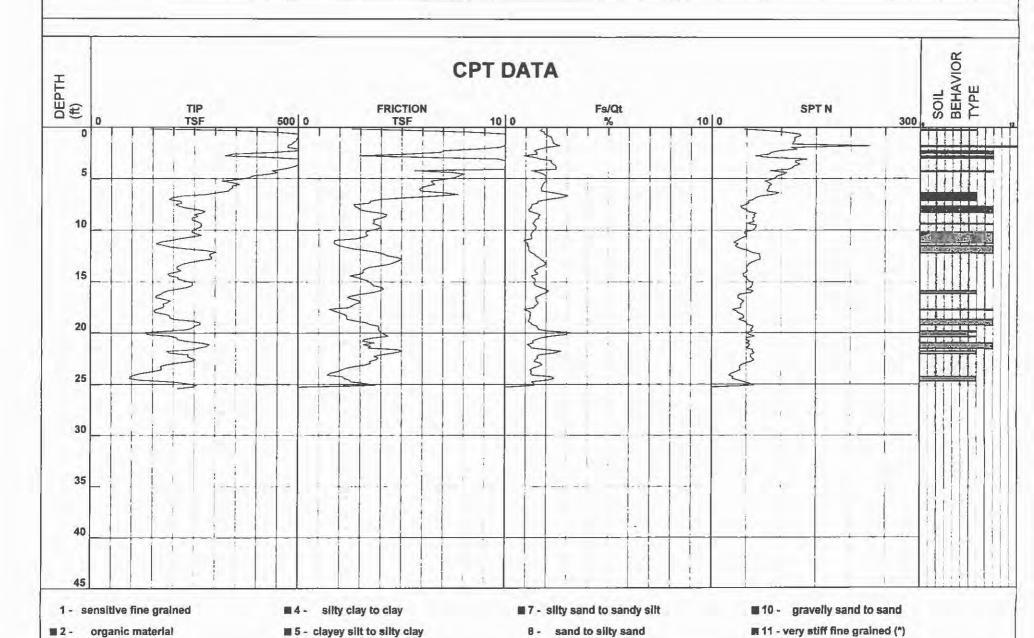
Del Mar Heights 07-9487 CPT-46

■ 6 - sandy silt to clayey silt

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/30/2007 8:16:25 AM Filename SI GPS Maximum Depth Elevation

m 12 - sand to clayey sand (\*)

25,43 ft 214.0



Depth Increment

clay

**3** -

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

sand

# Geo Tel fine Inc

## **Geotechnical Exploration**

Location Del Ma
Job Number 07Hole Number CP
Water Table Depth

 Del Mar Heights
 Operator

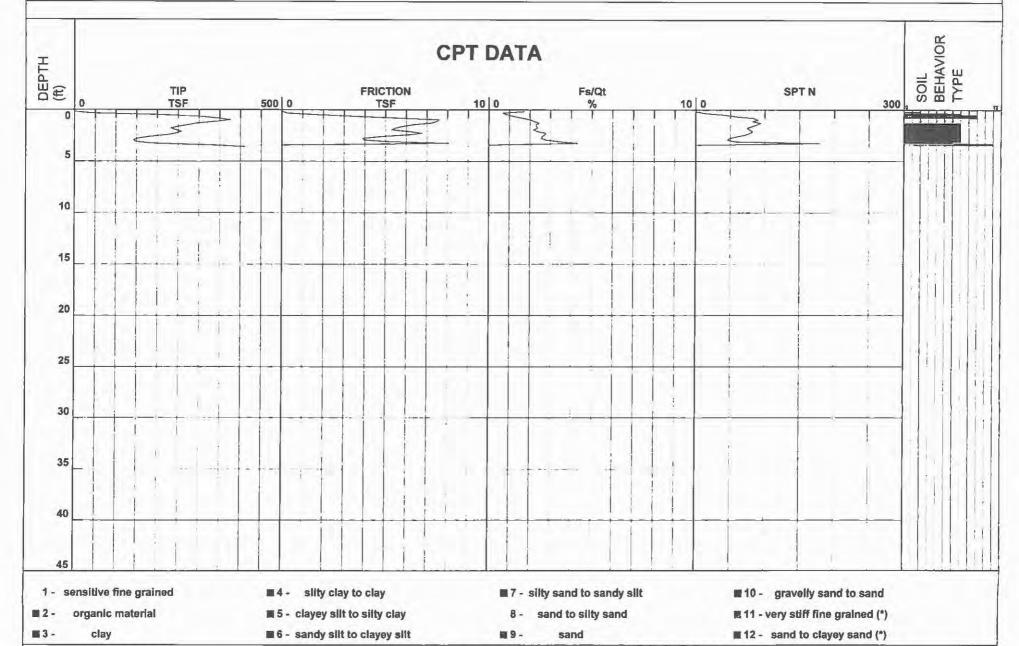
 07-9487
 Cone Number

 CPT-47
 Date and Time

 0.00 ft

ML/CW DSG1023 11/28/2007 3:17:36 PM Filename SC GPS Maximum Depth Elevation

3.61 ft 191.2



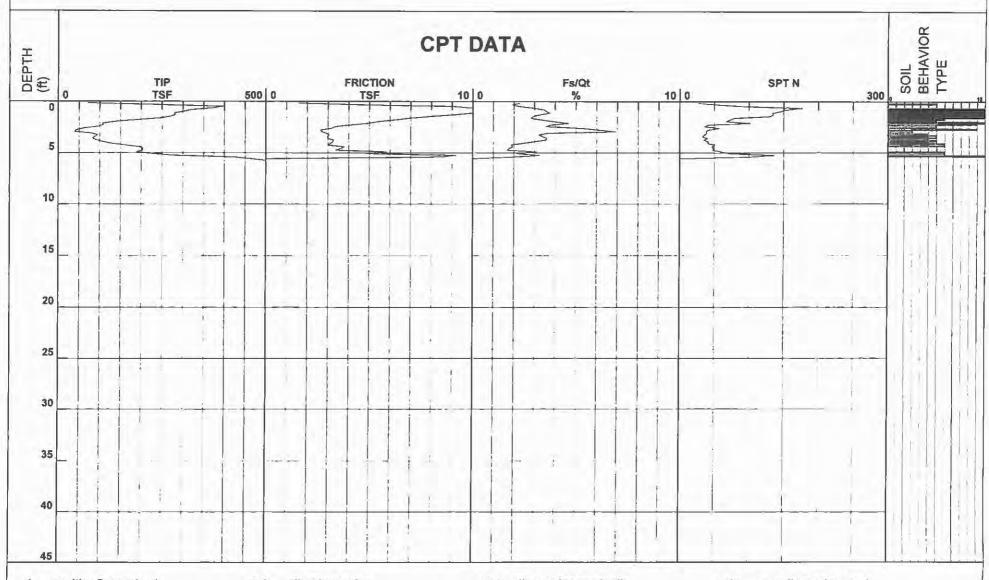
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## **Geotechnical Exploration**

Location
Job Number
Hole Number
Water Table Depth

Del Mar Heights 07-9487 CPT-48

Operator Cone Number Date and Time 0.00 ft ML/CW DSG1023 11/28/2007 3:38:43 PM Filename SDF(421).cpt
GPS
Maximum Depth 5.74 ft
Elevation 184.6



1 - sensitive fine grained

■ 4 - silty clay to clay

■ 7 - silty sand to sandy silt

■ 10 - gravelly sand to sand

■ 2 - organic material

■ 5 - clayey silt to silty clay

B - sand to silty sand

■ 11 - very stiff fine grained (\*)

■3 - clay

■ 6 - sandy slit to clayey slit

9 - sand

■ 12 - sand to clayey sand (\*)

## APPENDIX C

GEOPHYSICAL SURVEY REPORT SOUTHWEST GEOPHYSICS, INC.



### GEOPHYSICAL SURVEY SAN DIEGO CORPORATE CENTER LOTS 1 & 2, PHASE I SAN DIEGO, CALIFORNIA

### PREPARED FOR:

Geotechnical Exploration, Inc. 7420 Trade Street San Diego, CA 92121

### PREPARED BY:

Southwest Geophysics, Inc. 8057 Raytheon Road, Suite 9 San Diego, CA 92111

> April 29, 2011 Project No. 111120



YOUR SUBSURFACE SOLUTION

April 29, 2011 Project No. 111120

Mr. Dave Hespeler Geotechnical Exploration, Inc. 7420 Trade Street San Diego, CA 92121

Subject:

Geophysical Survey

San Diego Corporate Center

Lots 1 & 2, Phase I San Diego, California

#### Dear Mr. Hespeler:

In accordance with your authorization, we have performed a geophysical evaluation pertaining to the proposed San Diego Corporate Center located near the southwest corner of Del Mar Heights Road and El Camino Real in San Diego, California. Specifically, our services consisted of performing two seismic P-wave refraction profiles and two refraction microtremor (ReMi) profiles at the site. The purpose of the seismic study was to characterize the subsurface conditions at preselected locations in the project area.

We appreciate the opportunity to be of service on this project. Should you have any questions related to this report, please contact the undersigned at your convenience.

Sincerely,

SOUTHWEST GEOPHYSICS, INC.

Afrildo Iko Syahrial

Senior Staff Geophysicist

AIS/HV/hv

Distribution: Addressee (electronic)

Hans van de Vrugt, C.E.G., R.Gp. Principal Geologist/Geophysicist

Ham Vande Vugt



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Figure 5a - ReMi Results, RL-1 Figure 5b - ReMi Results, RL-2

#### 1. INTRODUCTION

In accordance with your authorization, we have performed a geophysical evaluation pertaining to the proposed San Diego Corporate Center located near the southwest corner of Del Mar Heights Road and El Camino Real in San Diego, California (Figure 1). Specifically, our services consisted of performing two seismic P-wave refraction profiles and two refraction microtremor (ReMi) profiles at the site. The purpose of the seismic study was to characterize the subsurface conditions at pre-selected locations in the project area.

#### 2. SCOPE OF SERVICES

Our scope of services included:

- Performance of two seismic P-wave refraction profiles, SL-1 and SL-2.
- Performance of two ReMi profiles, RL-1 and RL-2
- Compilation and analysis of the data collected.
- Preparation of this report presenting our findings and conclusions.

#### 3. SITE AND PROJECT DESCRIPTION

The project site consists of relatively flat rough graded pads located along the west side of El Camino Real, south of Del Mar Heights Road (Figures 1, 2 and 3). Annual grass covers much of the site. The general site conditions in the area of the seismic lines are depicted on Figures 2 and 3.

Based on our conversations with you, it is our understanding that your office is conducting a geotechnical evaluation for the site. Information acquired during our study are to be used in the design and construction of the proposed improvements.

#### 4. SURVEY METHODOLOGY

As previously indicated, the primary purpose of our services was to characterize the subsurface site conditions at pre-selected locations through the collection of seismic data. The following sections provide an overview of the methodologies used during our study.

#### 4.1. Seismic P-wave Refraction Survey

Two seismic P-wave refraction lines (SL-1 and SL-2) were conducted at the site, the locations of which were selected by your office. Shot points were conducted at each end of the lines, and at the midpoint. Shots consisted of impacting an aluminum plate, placed on the ground surface, with a 20-pound hammer in order to generate a seismic P-wave. The vibrations were recorded with 24 vertical component geophones. Each line was 240 feet in length. As a general rule, the effective depth of evaluation for a seismic refraction traverse is approximately one-third to one-fifth the length of the refraction line, depending on the site conditions. The locations of the profiles are depicted on Figure 2. The collected data were processed and analyzed using SIPwin (Rimrock Geophysics, 2003), a layer based refraction interpretation program.

#### 4.2. ReMi Survey

ReMi profiles were conducted in the same location as the seismic refraction spreads, and utilized the same geophone setup. The lines were approximately 230 feet long (excludes end shot locations). Fifteen records, 24 seconds long, were recorded. The data were downloaded and later processed using the SeisOpt® ReMi<sup>TM</sup> software (© Optim LLC, 2005), which uses the refraction microtremor method (Louie, 2001). The refraction microtremor technique uses the recorded surface waves (specifically Rayleigh waves) which are contained in the background noise to develop a shear wave velocity profile of the site down to a depth, in this case, of approximately 100 feet. Unlike the refraction method, described above, the ReMi method does not require an increase of material velocity with depth. Therefore, low velocity zones (velocity inversions) are detectable with ReMi. The results of the ReMi method are displayed as a one dimensional sounding.

#### 5. RESULTS AND CONCLUSIONS

The following is a summary of our findings:

#### 5.1. Seismic P-wave Refraction Survey

The results of the P-wave refraction survey indicate three distinct layers down to the depth explored (approximately 80 feet). Figure 4 presents the results from both SL-1 and SL-2. The velocities and depths calculated for these layers are generally consistent along the two profiles. Both profiles reveal a high velocity layer at a depth of roughly 55 to 60 feet below the ground surface.

#### ReMi Survey 5.2.

The ReMi results are depicted on Figures 5a and 5b. The results of the ReMi survey are fairly similar with slight variations in layer depths and velocities. The results are also generally consistent with the results of the P-wave refraction profiles, especially for the depth to the high velocity layer. It should be noted that the ReMi results tend to provide average velocities and depths along the survey area.

April 29, 2011

Based on our analysis, the average characteristic site S-wave velocity down to a depth of 100 feet is 1,430 and 1,565 feet/second for lines RL-1 and RL-2, respectively. This results in a site classification of C (IBC, 2000).

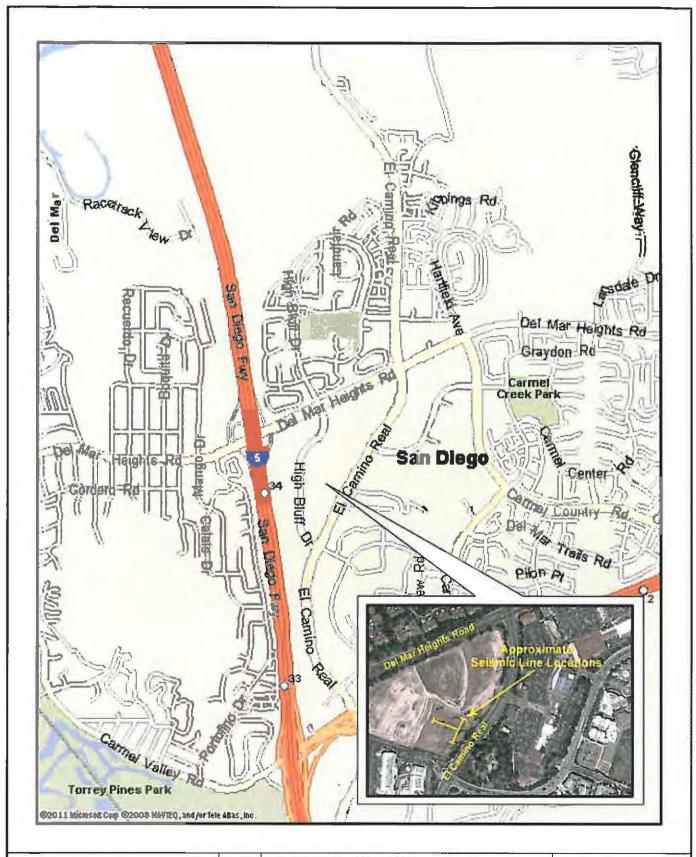
#### 6. LIMITATIONS

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface surveying will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Southwest Geophysics, Inc. should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

#### 7. SELECTED REFERENCES

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SITE LOCATION MAP

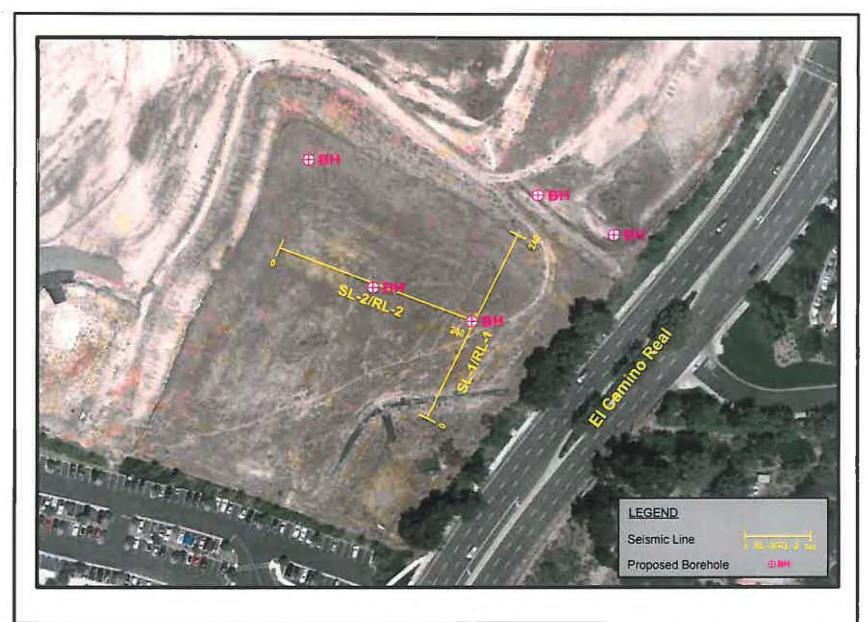


San Diego Corporate Center Lots 1 & 2, Phase I San Diego, California

Project No.: 111120

Date; 04/11





**LINE LOCATION MAP** 



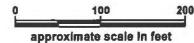
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Project No.: 1111020

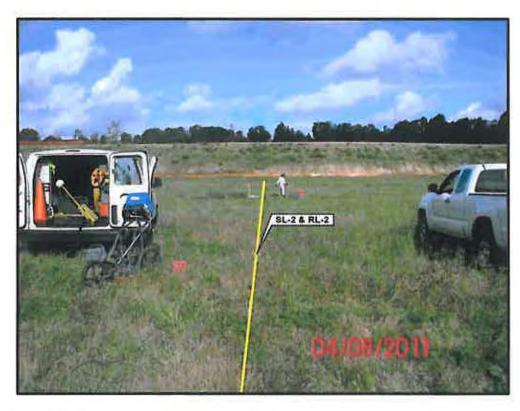
Date: 04/11



Figure 2







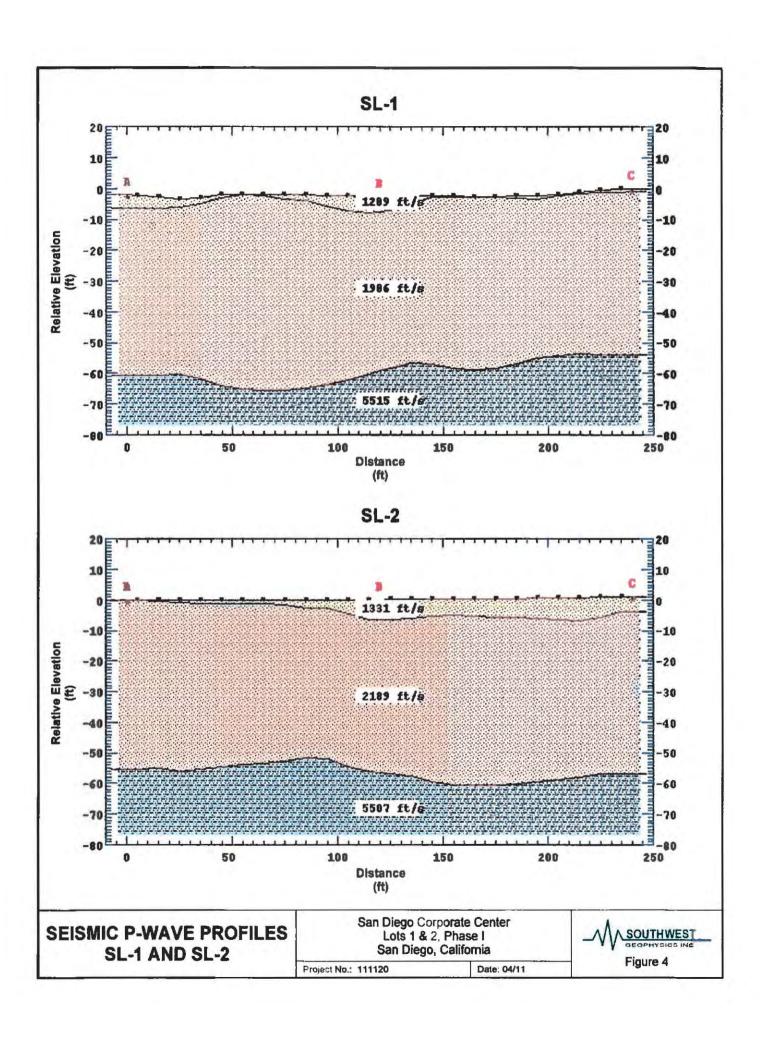
SITE PHOTOGRAPHS

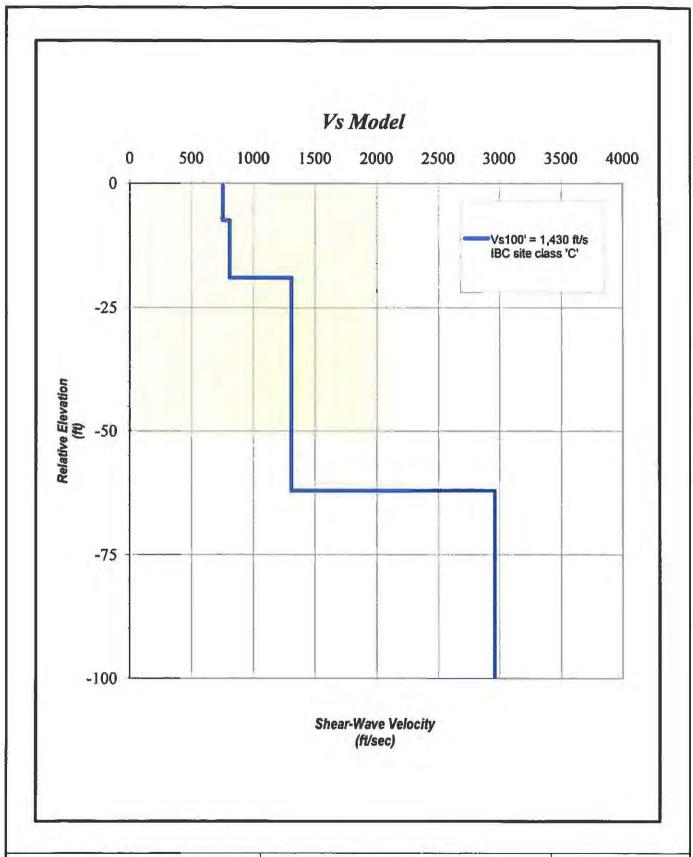
San Diego Corporate Center Lots 1 & 2. Phase I San Diego, California

Project No.: 111120

Date: 04/11







ReMi RESULTS RL-1

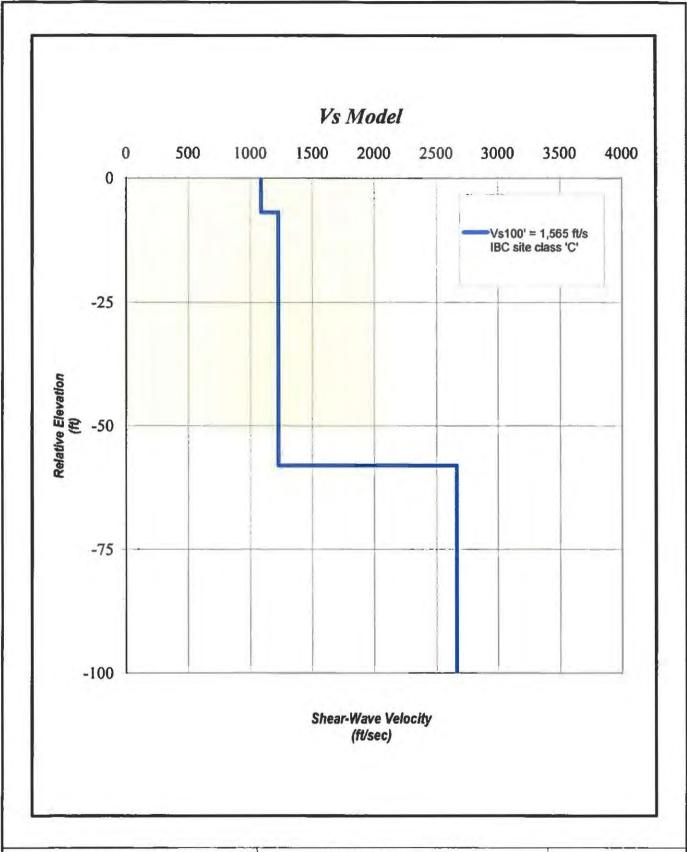
San Diego Corporate Center Lots 1 & 2, Phase I San Diego, California

Project No.: 111120

Date: 04/11



Figure 5a

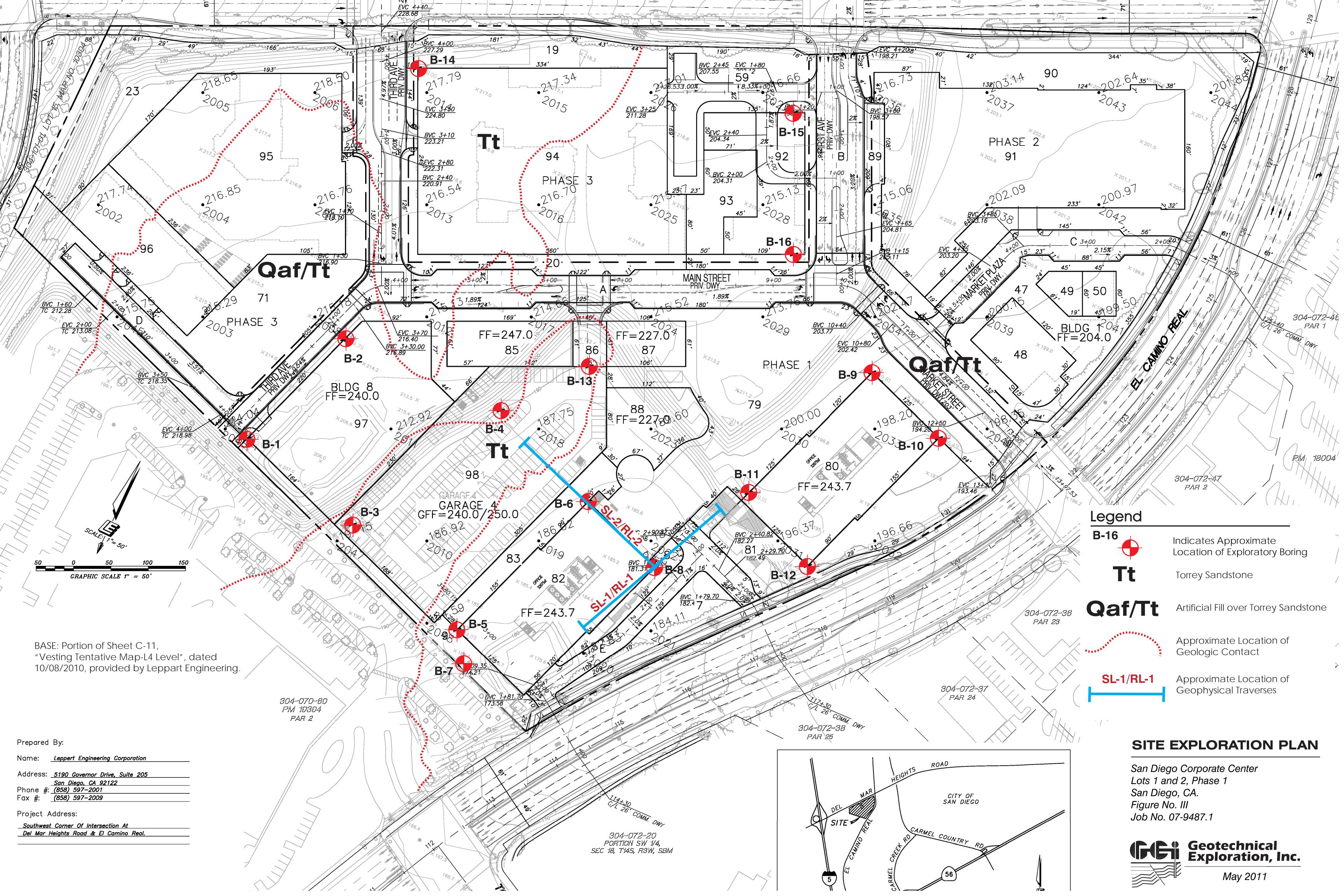


ReMi RESULTS RL-2 San Diego Corporate Center Lots 1 & 2. Phase I San Diego, California

Project No.: 111120

Date: 04/11

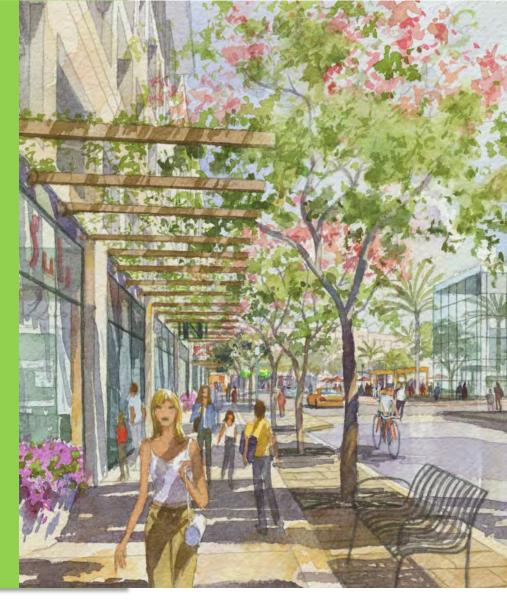
SOUTHWEST
SECRET STORE
Figure 5b



# Appendix Q

# TRANSPORTATION DEMAND MANAGEMENT PLAN

# Transportation Demand Management Plan



# One Paseo

A Mixed-Use Development Del Mar Heights Road & El Camino Real San Diego, CA 92130

By: Kilroy Realty Corporation

Prepared by: Marcela Escobar-Eck Atlantis Group Land Use Consultants

May 2014 FINAL

# **One Paseo – Transportation Demand Management**

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# Transportation Demand Management (TDM) and San Diego Region Jurisdictions<sup>1</sup>

The San Diego region has grown rapidly over the last 40 years, with a population increase of nearly 60 percent. According to the 2050 Regional Growth Forecast, the population will continue to grow by an additional 33 percent, reaching 4.4 million residents in the next 40 years. Meeting the transportation needs of this growing population requires a comprehensive and multimodal approach. Some solutions include capital projects like new rail infrastructure, High Occupancy Vehicle (HOV) lanes, managed lanes, and bicycle network improvements. Other solutions include enhanced or increased public transit services such as Bus Rapid Transit, trolley, and commuter rail. While these projects require considerable time and resources to plan and implement, programs and services that reduce or manage travel demand (Transportation Demand Management or TDM) are cost effective, flexible, and can be executed in shorter time frames. While TDM will not eliminate the need for new transportation infrastructure or services, it does contribute to the effective and efficient use of the region's transportation infrastructure.

In October 2011 the San Diego Association of Governments (SANDAG) adopted the 2050 Regional Transportation Plan (RTP) and the Sustainable Communities Strategy (SCS). These comprehensive documents were tiered-off of State climate change and smart growth Bill SB 375 and AB 36 the Global warming Bill.

# **Defining TDM**

TDM refers to a variety of strategies that change travel behavior (how, when, and where people travel) in order to improve transportation system efficiency and achieve key regional objectives, such as reduced traffic congestion, increased safety and mobility, and energy conservation and emission reductions (Victoria Transport Policy Institute). Typical TDM programs reduce Single Occupant Vehicle (SOV) trips through ridesharing initiatives such as carpooling and vanpooling; alternative work schedules and teleworking; and the use of transit, biking, and walking to work. However, TDM strategies should not be limited to just commuting trips. TDM strategies,

programs, and plans are most effective when considered for all trips and at all geographic levels--from a specific site, to a neighborhood, city, and regional or state levels – creating a comprehensive and coordinated approach.

"iCommute" is the TDM program in the RTP for the San Diego region's Sustainable Communities Strategy. iCommute programs encourage and incentivize sustainable transportation choices by providing free online ride matching services, a regional vanpool

TDM is a key component of the 2050 Regional Transportation Plan and Sustainable Communities Strategies as a cost effective means for easing traffic congestion and reducing air pollution, while improving the commute for thousands of San Diego region residents.

program, transit support, bicycle encouragement programs, the Guaranteed Ride Home program, and School Pool. Participation by commuters and employers in TDM programs is voluntary in the San Diego region. In the early 1990's TDM regulations in the San Diego region required employer trip reduction plans. These regulations were enacted when the federal government designated the region's air quality as "severe." In 1995 the Federal government reclassified the region's air quality designation from "severe" to "serious", and the TDM regulations were rescinded.

<sup>&</sup>lt;sup>1</sup> Integrating Transportation Demand Management Into the Planning and Development Process (SANDAG Publication May 2012)

The SANDAG study calls for design strategies that encourage active transportation (walking and biking to transit or work) and recreation for neighborhoods, streets and outdoor spaces.

Key strategies include the following:

- Mixed land uses in city neighborhoods
- Improved access to transit and transit facilities
- Improved access to recreational facilities such as parks, plazas and open spaces
- Improved access to full-service grocery stores
- Accessible, pedestrian-friendly streets with high connectivity, traffic calming, landscaping and public amenities
- Facilitate biking for transportation and recreation through bicycle networks and infrastructure

The overall design and project goals incorporated into the One Paseo project achieve these fundamental strategies.

"When TDM supporting amenities are provided within developments, it becomes much easier for tenants to change their transportation choice. For example, when office buildings offer showers and secure bike parking they will see an increase in walking and biking. Carpooling and vanpooling increase when priority parking spaces are set aside for HOVs."

- SANDAG 2050 Regional Transportation Plan adopted October 28, 2011

# TRANSPORTATION DEMAND MANAGEMENT (TDM) ONE PASEO

Commuters base their travel choices on a desire to save time and money, reduce stress, improve the environment and their health, and other considerations. The One Paseo TDM strategy is to address these personal and business motivations with targeted outreach, education and public awareness campaigns combined with the resources and incentives needed to change travel behavior.

# **Goals and Objectives**

- Reduce peak hour congestion.
- Provide for a balanced approach to mobility.
- Enhance safety and convenience for vehicles, bicyclists, and pedestrians.
- Reduce parking demand.
- Maximize the functionality of current and future parking supply.
- Execute sustainability practices detailed in LEED for Neighborhood Development.
- Reduce greenhouse gas emissions.
- Support Kilroy Realty Corporation's sustainability program.
- Facilitate a coordinated transportation approach with the overall neighborhood.

# **Integrating Transportation Demand Management into the Project**

TDM deals directly with the basic demand for travel by affecting mode, time of day, frequency, and path of travel. TDM includes a broad range of synergistic actions to reduce single occupant vehicular travel. These strategies are intended to improve the efficiency of the existing transportation system by encouraging use of alternate travel modes to the single-occupancy vehicle (SOV).

# **Strategies**

- Ridesharing, Preferential Carpool Parking and Parking Strategies.
- Parking cash-out incentives (Cash incentive in lieu of free parking for choosing not to drive to work alone).
- Pedestrian and Bicycle connections and circulation Improvements.
- Cycling Support Services, storage and amenities.
- Electric Vehicle Charging Stations.
- Shuttle Program to closest Coaster station.
- Transportation Coordinator/TDM Sustainability Coordinator.
- Tenant/Resident/Staff best practices education such as staggered work hours.
- Public Transit Enhancements for the future.
- Carsharing/Bikesharing promotions.
- Trip Reduction Membership Program.

## **TDM PLAN RECOMMENDATIONS**

### **OVERVIEW**

The project's goal is to provide safe, appealing, and comfortable street environments to encourage pedestrian use. This is accomplished in part via street features, such as human-scaled buildings and street widths, wide sidewalks, buildings that are pulled up to the sidewalk to create a continuous street wall, retail storefronts and other uses, and interesting street furniture and trees which will create a safe, inviting, and well-used public realm with visual interest.

Specifically, the project site design and features support the use of alternative modes of transportation by encouraging on-site amenities, programs, and incentives such as the use of car sharing/van pool vehicles, bicycle lockers, food and child care services, links to guaranteed ride home programs, and commuter benefits.

### **MEASURES**

# Ridesharing, Preferential Carpool Parking and Parking Strategies

Carpool preferential parking will be offered on-site in a variety of locations throughout the development. Carpool and/or shared-use vehicle parking spaces will be provided to encourage peak hour rideshare commuting equivalent to 10% of the total automobile parking for each office building on the site. Signage indicating such parking spaces will be provided, and the parking spaces will be within 200 feet of entrances to the buildings served. A One Paseo Master Association (Association) parking permit will be required (one per carpool), and participants must apply for a carpool placard through the Association. The program is open to residents, tenants and employees.

Shared parking strategies were utilized in the development of the overall site plan. The mix of three land uses planned for the site makes it natural and more efficient for the use of shared parking, consistent with the Shared-Parking section of the City's Land Development Code, Section 142.0545. As an example of shared parking, the peak times in activity for businesses such as an office and a cinema are essentially the opposite of one another as is their demand for parking. For mixed-use development, not sharing parking and building separate parking facilities for each use is a waste of space and resources that could be used to enhance the project and add amenities.

The City of San Diego approved the number of parking spaces to be built for the completed project site and at the end of its first phase of development based on a Shared Parking Analysis<sup>2</sup>. The objective is to properly serve future residents, tenants and customers but not overbuild parking spaces. In order to do so, a Shared Parking Model was approved by the City of San Diego which projects parking demand based on a number of factors (proposed program data, site conditions, market demand, current information from the Urban Land Institute Shared Parking 2<sup>nd</sup> Edition 2005, and focused parking studies of specific land uses).

<sup>&</sup>lt;sup>2</sup> One Paseo – San Diego, California Shared Parking Analysis – Final Walker Project No. 37-8142.00 dated 12/16/2011

# Pedestrian and Bicycle Circulation Improvements

In the built environment, places are defined by their blocks and streets. Blocks need to be walkable in length and organized into a fine-grained pattern for an increased sense of location and direction. Pedestrian-friendly blocks typically range somewhere between 300 and 600 feet, with longer blocks broken by paseos (refer to General Plan Policies UD-C.6d). One Paseo is comprised of five pedestrianfriendly blocks, each made up of varying uses to create a multi-functional walkable environment.

Paseos, defined as "a slow, easy stroll outdoors along a street or series of streets", are spaces specifically for pedestrians integrated into the overall circulation network, and connect to the larger more public open spaces. They reduce the overall block length, extend retail and dining opportunities, and reinforce the pedestrian scale at sidewalk level (refer to General Plan Policies UD-C.6d). These types of spaces offer connections to residential lobbies, parking facilities and other types of open spaces throughout the project.

The bicycle is an important means of transportation. As an alternative to the automobile, a well-planned bicycle network can promote a low-cost, quiet, non-polluting, and healthy mode of transportation. The project's vision aims to provide a safe and convenient bicycle route network that encourages bicycle use and provides ample amenities for cyclists. Consistent with the LEED for Neighborhood Development Rating System (LEED-ND), the project is designed to connect the on-site bicycle network<sup>3</sup> to the existing community bicycle network of at least 5 continuous miles in length within 1/4 mile bicycling distance of the project boundary.

Class II Bike Lane: These facilities are often referred to as bike lanes. Bike lanes provide a striped and stenciled lane for one-way travel on a street or highway. When properly designed, bike lanes help improve the visibility of bicyclists. Class II bike lanes will be provided along Del Mar Heights Road and El Camino Real along the project boundary.

Class III Bike Route: Generally referred to as a bike route, it provides for shared use with pedestrian or motor vehicle traffic and is identified only by signing. This is recommended when there is enough rightof-way for bicyclists and motorists to safely pass. Class III bike routes will be provided within the interior of the project boundary.



# Bicycle Parking

Bicycle parking will be fully accessible and convenient. Primary bicycle parking areas will be concentrated along major building entrances, and public plazas. The locations are predominantly adjacent to existing or proposed bicycle routes. The proposed locations will facilitate a seamless transition from bikeway to secure bike parking so riders will not need to dismount and "walk" their bikes. Great care should be taken in designing and implementing bicycle parking areas to preserve aesthetics and maintain community values. Bike racks and lockers should also be installed near building entrances within the core of Main Street. Secondary internal drives should also be outfitted with bicycle parking to provide for direct access to commuters.

<sup>3 (</sup>LEED-ND Rating System) bicycle network a continuous network consisting of any combination of physically designated instreet bicycle lanes at least 5 feet wide, off-street bicycle paths or trails at least 8 feet wide for a two-way path and at least 5 feet wide for a one-way path, and/or streets designed for a target speed of 25 miles per hour or slower.

The following measures are suggested:

- Adopt a standard bicycle rack design for future installations. At a minimum, a favorable bike rack style includes the following: a stable structure and an anchored, permanent foundation; a design that prevents bicycles from being tipped over; a design to accommodate a wide range of bike styles; and space to secure the frame and one or both tires.
- Develop a systematic bicycle rack replacement program to phase out obsolete rack styles. To
  encourage cyclists to park in the primary bicycle parking areas, rack replacement or installation
  within these areas should be prioritized.
- Introduce secure bicycle parking (e.g., bike lockers, bike rooms, etc.) within residential and office buildings and the proposed parking garages. It is envisioned that office building bicycle parking will be provided free of charge to tenants participating in the OPCommute program on a first-come-first serve basis or through a lottery. Secure bicycle parking within parking/office structures will be accessible only to those who have the service, likely on a bi-annual basis. All secure bicycle parking facilities will contain bike racks within a locked perimeter barrier accessible only to participants in the program. Secure, enclosed bicycle storage areas must be locked and easily accessible to residents and/or workers.



# **Bicycle Support Services & Amenities**

<u>Education</u> – Measures taken to increase awareness of the bicycle network on-site as well as in the community, how to safely ride a bike, and how to properly maintain a functioning bike.

- Bike Network Awareness Publicize and distribute the Regional bike network plan San Diego Regional Bike Map, and <a href="http://www.ridethecity.com/sandiego">http://www.ridethecity.com/sandiego</a> provide information on the OPCommute Web site to include an online form for reporting maintenance issues; increase content and frequency of presentations on the bicycle network and viability as a work/school commute mode.
- Safe Cycling Offer presentations throughout the year (May 2 Bike to Work Day, June 3 Dump the Pump Day, October Rideshare Month) focused on bicycle safety and offer incentives to encourage attendance; develop marketing campaigns to address common safety concerns or to target specific markets (e.g., incoming tenants, community events, etc.).

# **Amenities**

- Bicycle Maintenance Support the expansion of low-cost, on-site bicycle maintenance through Bike Cart/Bike Concierge service, which includes provision of permanent high-visibility location to store equipment and perform repairs; increase advertisement of bike repair workshops (e.g., Bike 101); provide bike tire air stations. A Bike Cart/Bike Concierge service will be located in block "C" of the One Paseo project.
- Showers and lockers in office buildings for employees, who bike, walk or run to work.
- Direction on how to bike to nearest transit stop and bike trail linkages.



# **Electric Vehicle Charging Stations**

Electric charging stations will be a part of the long-range parking strategy for the project; while Electric Vehicle Charging Stations are not a direct TDM measure, they do assist in supporting the project's overall sustainability goals. More importantly, one of the most successful vehicle sharing programs in the region, Car2Go, is wholly dependant on a successful and broad base network of EV charging stations. Although Car2Go does not currently include Carmel Valley in its service area, the goal is to be ready when electric vehicle car-sharing programs such as Car2Go do expand their current service areas in the region.



# Shuttle Program

Provide an on-site shuttle program that will be phased in as the project reaches final build-out phase. Initial implementation of the shuttle program will include convenient shuttles running during midday intervals to provide mobility options to the Employment Center in Carmel Valley (e.g. High Bluff Drive and El Camino Real).

The shuttle will include an am/pm peak time route that would generally run from the project site to the closest transit connection, initially the Sorrento Valley Coaster Station. The frequency of operation and the route will be evaluated periodically to gauge the benefit of ridership in relation to operational costs. The frequency of operation and the route may be adjusted from time to time based on market demand for the service.

A shuttle stop may be added to serve children from the One Paseo project to their designated local public school once the residential portion of the project is builtout and a sufficient market demand exists to serve the children that may reside in the project.

# **Parking Cash-out**

Encourage employers (through education and leasing agreements) to provide a "parking cash-out" option to employees who do not drive. Financial incentives for ridesharing are currently available to reduce costs through the SANDAG commute program, and employers are allowed to offer payroll tax savings for transportation assistance up to \$245 a month per employee for transit passes or vanpool vouchers (as of 2013 published incentive rates). Pre-tax programs offer savings to employers as well as employees. Transit subsidies can be deducted as a business expense. When funds are removed from paychecks before taxes are applied, employers save on payroll taxes.

## Tenant/Resident/Staff Resources

Provide links to regional plans and best practices by government agencies and third parties via a website targeted for tenants, residents and staff via a specific web-site link associated with the project. The website could be: *OPCommute.com* initially.

# Provide Information regarding:

- Flexible Work Schedule/Telecommuting Policies to reduce peak hour Single Occupancy Vehicle (SOV) trips.
- Biking links
- Walking, Carpooling, Vanpooling, Shuttles, E-Charge, What's New

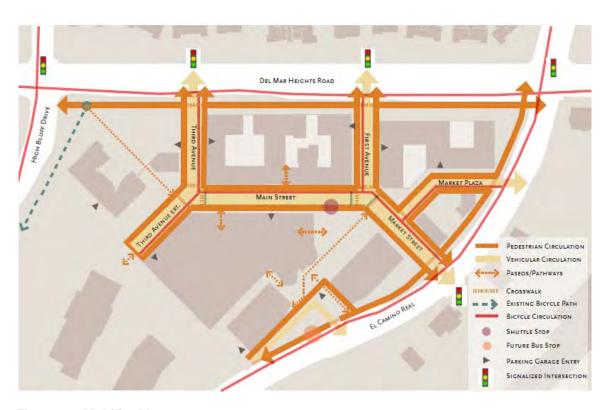


Figure 1a: Mobility Plan



Figure 1b: Bicycle Circulation

# **Transportation Coordinator/TDM Sustainability Coordinator**

Work with local established advocacy groups such as Circulate San Diego, Bike San Diego and the San Diego County Bicycle Coalition to promote and manage alternative transportation programs. SANDAG has also established a successful commute program which offers assistance and tools to commuters and employers. Consideration will be given to utilizing the service bureau of one of these organizations inlieu of funding an on-site transportation/TDM Sustainability coordinator (Coordinator).

The Coordinator will provide the following services with overall goal to reduce SOV trips during peak hours:

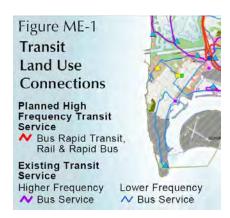
- Provide marketing and outreach for all TDM programs including presentations to tenants, staff and community members at large.
  - Create flyers
  - \* Letters to employees
- Act as the primary point of contact for residents, employees and tenants, and patrons of One Paseo wanting to travel using an alternative mode.
- Promote services and resources available through OPCommute.com such as:
  - o Emergency Ride Home Guarantee
  - Ride Matcher resources
- Offer individualized trip planning to residents, employees and tenants of One Paseo. Trip
  planning is a customer-based service through which the coordinator can suggest and possibly
  arrange commute options, ranging from a rideshare match to recommending bike routes. Given

the close proximity of two train stations to the site, trip planning via the Coaster and Amtrak should be considered.

Conduct annual surveys and provide reports to assess user satisfaction and quantify TDM
effectiveness. Typical measures of effectiveness include the following: Eco-vehicle ride share
program utilization; preferential carpool parking utilization; pedestrian and bicycle counts;
transit/shuttle ridership; bicycle parking utilization, number of employees participating in a
parking cash out program, parking occupancy counts; and number of public relations events
held.

### **Transit Enhancements**

City of San Diego General Plan Mobility Element Figure ME-1 Transit Land Use Connections





The Transit Planning function is not controlled by the project applicant: it is controlled by SANDAG as the regional planning agency. However, a Bus Rapid Transit line is identified in the current 2050 Regional Transportation Plan (RTP) and a *Lower Frequency Bus Service* (identified in Figure ME-1 pg. ME-5 of the General Plan) has traditionally served the perimeter of the site.

According to SANDAG, "As part of the 2050 revenue constrained plan, Rapid Bus Route #473 runs from Oceanside to UTC via Highway 101 Coastal Communities and Carmel Valley. It has both a peak and off-peak headway of 10 minutes, is to be built in the 2030 period, and its capital improvements cost is \$127 million."

The project is ranked 19 of 53 transit projects in the 2050 RTP. Figure 1 shows a proposed bus stop location that would be provided to serve the Bus Rapid Transit line proposed along El Camino Real on the perimeter of the project.

A second transit route, #653, will run Peak Period Bus Rapid Transit on the I-5. (15 minute headways) by 2035, will connect Mid-city to Palomar Airport Road. However, it is unknown at this time if this BRT on the I-805/I-5 will have a stop in Carmel Valley. If it were to stop at Del Mar Heights Rd and the I-5, it would be approximately ½ mile walking distance from One Paseo to a potential I-5 BRT station. This route will provide access to the Oceanside, and Solana Beach Coaster stations, where riders would have access to both rail (Amtrak, Coaster, Trolley and Sprinter) and local bus lines.

# Carsharing/Bikesharing

Carsharing is gaining momentum in the United States, especially in urban areas and near college and corporate employment campuses. Carsharing is promoted as an alternative to vehicle ownership and is particularly well suited for occasional use, and to allow the commuter to travel the "last mile" between the transit terminal and the workplace and back. This strategy is similar to a rental car service and is effective as long as vehicles are reliable and accessible and pick-up locations are convenient.

Carsharing has the potential to expand as more participants become familiar with the program and understand the benefits. User costs typically consist of an annual membership fee, a nominal hourly rental cost, and a user fee per mile driven. These costs cover all vehicle charges including fuel and insurance. Special rates are common for longer distance trips or for extended periods of time. Carsharing is commonly available to licensed drivers 18 years of age or older, whereas traditional car rentals are typically accessible only to clients 21 or 25 years and older.

San Diego also became the first city in the United States with an all-electric car-sharing system in 2013. By providing ample EV charging stations and preferential parking locations, the probability of encouraging alternatives to vehicle ownership and single occupancy vehicle trips is greatly increased.

Renting out bicycles is the latest San Diego initiative to reduce automobile use. Bike-sharing programs have increased in popularity around the world as some commuters have left their cars behind in favor of riding to work and cities have tried to use the programs to ease traffic congestion. As with car-sharing, bike-sharing can provide the means to travel the "last mile" between the transit terminal and the workplace and back. Bike-rental systems have been successful in several cities throughout the United States. The University of California Transportation Center estimated there were 165 cities with sharing programs in the world that use 237,000 bikes as of May 2011. San Diego's bike-share program is expected to be run completely by private entities and cost taxpayers nothing. The San Diego County Bicycle Coalition participated in San Diego's recent steps to build the nation's largest bike-friendly business improvement district program, already showing a positive impact on neighborhood commercial districts.

With the extensive commitment to bicycle infrastructure provided at the One Paseo project, it is anticipated that it will be an ideal location for implementing a bike-share program within the Carmel Valley area.

## **Trip Reduction Membership Program**

The One Paseo Association will have the option to implement TDM elements as standalone initiatives (e.g., reduced rate transit pass options, carpool program, etc.) or consolidate them to one "umbrella" trip reduction program. Successful examples of a consolidated program include Stanford University's Commute Club and the City of San Diego's Transportation Alternatives Program (TAP).

A single trip reduction membership program could provide the following benefits:

- Provide consistent branding of the program and streamlined, cost-effective marketing.
- Bundle incentives and provides equitable membership benefits.
- Reduce confusion and redundancy of multiple programs.
- Simplify TDM evaluation and reporting of performance indicators. It is difficult to isolate the
  effectiveness of a singular TDM strategy when many are offered. TDM is best viewed as a
  combination of complementary components.
- Heighten profile of commitment to sustainable practices, employee work/life balance, and the quality of the life throughout the community of Carmel Valley.

The Transportation/TDM Sustainability Coordinator will work to coordinate all of the following TDM strategies to track and enhance the effectiveness of these measures.

# **TDM PLAN RECOMMENDATIONS TABLE**

RECOMMENDATION	TARGETED AUDIENCE	PHASING
Ridesharing, Preferential Carpool Parking and Parking Strategies	Entire Community	100% within scope of development for each project phase
Pedestrian and Bicycle Circulation Improvements	Entire Community	100% within scope of development for each project phase
Bicycle Parking	Entire Community	100% within scope of development for each project phase
Bicycle Support Services	Entire Community	Phase 2
Electronic Vehicle Charging Stations	Entire Community	100% within scope of development for each project phase
Shuttle Program	Entire Community	Project Build-out (unless regional funding sources become available with earlier demand for service)
TENANT/RESIDENT/STAFF RESOURCES		Incremental with build out of each phase
TDM Resource Website	Entire Community	Upon Introduction of final office phase or final residential phase
		Controlled by Regional funding
Transit Enhancements	Entire Community	sources – Not within control of project developer
Carsharing/Bikesharing	Entire Community	Market driven by third party provider willing to expand programs based or market demand
<ul> <li>Trip Reduction</li> <li>Membership Program</li> </ul>	Entire Community	Final Project Phase

## **REFERENCES**

1. Integrating Transportation Demand Management into the Planning and Development Process a reference for cities (May 2012)

http://www.sandag.org/uploads/publicationid/publicationid 1663 14425.pdf

2. Parking and Transportation Demand Management

www.greatcommunities.org

3. LEED 2009 for Neighborhood Development Rating System [Created by the Congress for the New Urbanism, Natural Resources Defense Council, and the U.S. Green Building Council (Updated October 2013)]