Seville Solar Site

Project ID: Petra Geotech
Data File: SDF(239).cpt
CPT Date: 11/13/2012 12:23:46 PM
GW During Test: 33 ft

Sounding ID: CPT-04
Project No: 332-12
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qincs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato -	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N 60	SPT R-N1 60	Rel Den	Fin Ang deg	Und Shr tsf	OCR - -	Fin Ic	Nk - -	Vol Strn	Dry Stlmt 0.01	Liq Stlmt 0.00	Cycl SStn
0.33	88.2	141.4	166.6	1.2	0.0	1.4	6	clean SAND to silty SAND	125	5.0	18	28	76	48	-	-	10	16	N/A	0.01	N/A	N/A
0.49	121.5	194.8	254.8	3.1	0.0	2.5	5	silty SAND to sandy SILT	120	4.0	30	49	89	48	-	-	13	16	N/A	0.01	N/A	N/A
0.66	183.3	294.1	365.8	5.3	0.0	2.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	12.1	9.9	12	16	N/A	0.01	N/A	N/A
0.82	208.0	333.6	427.3	7.0	0.0	3.3	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	13.8	9.9	13	16	N/A	0.01	N/A	N/A
0.98	235.2	377.1	501.7	9.2	0.0	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.6	9.9	14	16	N/A	0.01	N/A	N/A
1.15	247.0	396.2	544.6	10.7	0.0	4.3	9	very stiff fine SOIL	120	2.0	100	100	95	48	-	-	14	30	N/A	0.01	N/A	N/A
1.31	224.7	360.4	510.7	10.0	0.0	4.4	9	very stiff fine SOIL	120	2.0	100	100	95	48	-	-	15	30	N/A	0.01	N/A	N/A
1.48	192.4	308.6	472.2	9.2	0.0	4.8	9	very stiff fine SOIL	120	2.0	96	100	95	48	-	-	17	30	N/A	0.01	N/A	N/A
1.64	146.0	234.2	403.2	7.5	0.1	5.1	9	very stiff fine SOIL	120	2.0	73	100	95	48	-	-	20	30	N/A	0.01	N/A	N/A
1.80	120.6	193.4	361.1	6.3	0.1	5.3	9	very stiff fine SOIL	120	2.0	60	97	89	48	-	-	22	30	N/A	0.01	N/A	N/A
1.97	107.0	171.6	335.7	5.6	0.0	5.3	9	very stiff fine SOIL	120	2.0	53	86	85	48	-	-	23	30	N/A	0.01	N/A	N/A
2.13	95.7	153.5	301.5	4.7	0.1	4.9	9	very stiff fine SOIL	120	2.0	48	77	81	48	-	-	23	30	N/A	0.01	N/A	N/A
2.30	80.6	129.3	293.6	4.5	0.1	5.6	9	very stiff fine SOIL	120	2.0	40	65	75	48	-	-	26	30	N/A	0.01	N/A	N/A
2.46	71.3	114.4	291.9	4.4	0.1	6.1	9	very stiff fine SOIL	120	2.0	36	57	71	48	-	-	29	30	N/A	0.01	N/A	N/A
2.62	66.0	105.9	291.6	4.3	0.1	6.5	9	very stiff fine SOIL	120	2.0	33	53	69	47	-	-	31	30	N/A	0.01	N/A	N/A
2.79	63.3	101.5	261.1	3.6	-0.1	5.7	9	very stiff fine SOIL	120	2.0	32	51	68	47	-	-	29	30	N/A	0.00	N/A	N/A
2.95	60.9	97.6	260.2	3.6	0.1	5.9	9	very stiff fine SOIL	120	2.0	30	49	66	47	-	-	30	30	N/A	0.00	N/A	N/A
3.12	72.7	116.5	301.0	4.6	0.0	6.3	9	very stiff fine SOIL	120	2.0	36	58	72	47	-	-	29	30	N/A	0.00	N/A	N/A
3.28	80.7	129.5	322.6	5.2	0.0	6.4	9	very stiff fine SOIL	120	2.0	40	65	76	47	-	-	28	30	N/A	0.00	N/A	N/A
3.45	87.3	140.0	308.9	4.9	-0.1	5.6	9	very stiff fine SOIL	120	2.0	44	70	78	47	-	-	25	30	N/A	0.00	N/A	N/A
3.61	102.2	163.8	284.9	4.3	-0.2	4.2	9	very stiff fine SOIL	120	2.0	51	82	83	48	-	-	20	30	N/A	0.00	N/A	N/A
3.77	136.8	219.4	258.8	2.7	-0.1	2.0	6	clean SAND to silty SAND	125	5.0	27	44	93	48	-	-	10	16	N/A	0.00	N/A	N/A
3.94	99.5	159.5	218.8	2.4	0.0	2.5	5	silty SAND to sandy SILT	120	4.0	25	40	82	47	-	-	14	16	N/A	0.00	N/A	N/A
4.10	110.2	176.8	221.4	2.3	0.0	2.1	6	clean SAND to silty SAND	125	5.0	22	35	86	48	-	-	12	16	N/A	0.00	N/A	N/A
4.27	117.5	188.5	237.7	2.6	0.0	2.2	6	clean SAND to silty SAND	125	5.0	24	38	86	48	-	-	12	16	N/A	0.00	N/A	N/A
4.43	142.5	228.5	275.8	3.1	0.0	2.2	6	clean SAND to silty SAND	125	5.0	28	46	94	48	-	-	11	16	N/A	0.00	N/A	N/A
4.59	154.0	246.9	297.1	3.5	0.0	2.3	6	clean SAND to silty SAND	125	5.0	31	49	95	48	-	-	11	16	N/A	0.00	N/A	N/A
4.76	156.4	250.8	300.8	3.6	0.0	2.3	6	clean SAND to silty SAND	125	5.0	31	50	95	48	-	-	11	16	N/A	0.00	N/A	N/A
4.92	162.1	260.0	319.0	4.1	0.0	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	10.7	9.9	11	16	N/A	0.00	N/A	N/A
5.09	161.0	258.2	324.6	4.4	0.0	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	10.6	9.9	12	16	N/A	0.00	N/A	N/A
5.25	180.0	288.6	353.4	4.8	-0.1	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.9	9.9	11	16	N/A	0.00	N/A	N/A
5.41	178.7	286.6	358.4	5.1	-0.1	2.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.6	9.9	12	16	N/A	0.00	N/A	N/A
5.58	168.2	269.7	354.8	5.3	-0.1	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.1	9.9	13	16	N/A	0.00	N/A	N/A
5.74	156.1	250.4	329.5	4.7	-0.1	3.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	10.3	9.9	13	16	N/A	0.00	N/A	N/A
5.91	150.7	241.7	316.1	4.4	0.0	2.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	10.0	9.9	13	16	N/A	0.00	N/A	N/A
6.07	160.9	258.1	325.2	4.4	0.0	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	10.6	9.9	12	16	N/A	0.00	N/A	N/A
6.23	164.9	262.5	330.6	4.6	0.0	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	10.9	9.9	12	16	N/A	0.00	N/A	N/A
6.40	170.8	268.5	343.6	5.0	0.0	2.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.3	9.9	13	16	N/A	0.00	N/A	N/A
6.56	187.2	290.8	354.7	5.0	0.0	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	12.4	9.9	11	16	N/A	0.00	N/A	N/A
6.73	198.7	304.8	359.4	4.9	0.0	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	13.1	9.9	10	16	N/A	0.00	N/A	N/A
6.89	202.1	306.6	363.5	5.1	0.0	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	13.4	9.9	10	16	N/A	0.00	N/A	N/A
7.05	194.3	291.4	350.2	5.0	0.0	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	12.8	9.9	11	16	N/A	0.00	N/A	N/A
7.22	201.3	298.5	355.0	5.0	0.0	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	13.3	9.9	10	16	N/A	0.00	N/A	N/A
7.38	224.2	328.9	386.7	5.7	0.0	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	14.8	9.9	10	16	N/A	0.00	N/A	N/A
7.55	234.6	340.5	411.6	6.7	0.0	2.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.5	9.9	11	16	N/A	0.00	N/A	N/A
7.71	248.7	357.3	439.3	7.7	0.0	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.4	9.9	11	16	N/A	0.00	N/A	N/A
7.87	251.7	357.9	438.6	7.7	0.0	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.6	9.9	11	16	N/A	0.00	N/A	N/A
8.04	252.3	355.1	424.3	7.1	0.0	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.7	9.9	11	16	N/A	0.00	N/A	N/A
8.20	238.8	332.8	392.1	6.2	0.0	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.8	9.9	10	16	N/A	0.00	N/A	N/A
8.37	238.3	329.0	386.1	6.0	0.0	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.8	9.9	10	16	N/A	0.00	N/A	N/A
8.53	246.9	337.6	386.0	5.8	0.2	2.3	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.3	9.9	9	16	N/A	0.00	N/A	N/A
8.69	250.6	339.5	381.8	5.5	0.2	2.2	6	clean SAND to silty SAND	125	5.0	50	68	95	48	-	-	9	16	N/A	0.00	N/A	N/A
8.86	251.5	337.4	386.9	5.9	0.2	2.4	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.6	9.9	9	16	N/A	0.00	N/A	N/A
9.02	243.9	324.3	382.9	6.2	0.2	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.1	9.9	10	16	N/A	0.00	N/A	N/A
9.19	231.7	305.4	370.2	6.2	0.2	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.3	9.9	11	16	N/A	0.00	N/A	N/A
9.35	220.9	288.7	357.5	6.2	0.2	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	14.6	9.9	12	16	N/A	0.00	N/A	N/A
9.51	211.9	274.6	355.2	6.5	0.2	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	14.0	9.9	13	16	N/A	0.00	N/A	N/A
9.68	187.3	240.7	329.1	6.1	0.2	3.3	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	12.4	9.9	14	16	N/A	0.00	N/A	N/A
9.84	133.8	170.6	276.7	5.0	0.2	3.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	9.8	9.9	18	16	N/A	0.00	N/A	N/A
10.01	94.7	119.7	268.2	4.8	0.2	5.1	9	very stiff fine SOIL	120	2.0	47	60	73	43	-	-	26	30	N/A	0.00	N/A	N/A
10.17	74.0	92.8	271.5	4.8	0.1	6.5	9	very stiff fine SOIL	120	2.0	37	46	65	42	-	-	32	30	N/A	0.00	N/A	N/A
10.34	62.2	77.3	253.5	4.2	0.1	6.8	9	very stiff fine SOIL	120	2.0	31	39	59	41	-	-	35	30	N/A	0.00	N/A	N/A
10.50	47.0	75.4	-	3.8	-0.1	8.2	9	very stiff fine SOIL	120	2.0	24	38	58	39	-	-	39	30	N/A	0.00	N/A	N/A
10.66	37.4	59.4	-	3.1	0.0	8.5	9	very stiff fine SOIL	120	2.0	19	30	50	38	-	-	43	30	N/A	0.00	N/A	N/A
10.83	35.1	54.9	-	2.9	0.0	8.4	3	silty CLAY to CLAY	115	1.5	23	37	-	-	2.4	9.9	44	15	N/A	0.00	N/A	N/A
10.99	35.0	54.0	-	2.8	0.0	8.3	3	silty CLAY to CLAY	115	1.5	23	36	-	-	2.4	9.9	44	15	N/A	0.00	N/A	N/A
11.16	36.1	54.9	-	3.1	0.0	8.8	3	silty CLAY to CLAY	115	1.5	24	37	-	-	2.5	9.9	45	15	N/A	0.00	N/A	N/A
11.32	38.8	58.1	-	3.4	0.0	8.8	3	silty CLAY to CLAY	115	1.5	26	39	-	-	2.7	9.9	44	15	N/A	0.00	N/A	N/A
11.48	41.7	61.6	-	3.4	0.0	8.3	9	very stiff fine SOIL	120	2.0	21	31	51	38	-	-	42	30	N/A	0.00	N/A	N/A
11.65	42.8	62.2	-	3.4	0.0	8.2	9	very stiff fine SOIL	120	2.0	21	31	51	38	-	-	41	30	N/A	0.00	N/A	N/A
11.81	52.5	75.3	-	3.9	0.0	7.5	9	very stiff fine SOIL	120	2.0	26	38	58	39	-	-	37	30	N/A	0.00	N/A	N/A
11.98	87.5	101.1	256.7	4.8	0.0	5.5	9	very stiff fine SOIL	120	2.0	44	51	67	42	-	-	29	30	N/A	0.00	N/A	N/A
12.14	93.7	107.5	292.6	6.0	-0.1	6.5	9	very stiff fine SOIL	120	2.0	47	54	69	42	-	-	30	30	N/A	0.00	N/A	N/A
12.30	76.4	87.0	283.4	5.5	0.0	7.3	9	very stiff fine SOIL	120	2.0	38	44	62	41	-	-	35	30	N/A	0.00	N/A	N/A
12.47	55.7	75.7	-	4.1	-0.2	7.5	9	very stiff fine SOIL	120	2.0	28	38	56	39	-	-	37	30	N/A	0.00	N/A	N/A
12.63	67.6	76.0	231.1	4.0	1.0	5.9	9	very stiff fine SOIL	120	2.0	34	38	58	40	-	-	33	30	N/A	0.00	N/A	N/A
12.80	74.8	83.6	253.0	4.7	0.0	6.3	9	very stiff fine SOIL	120	2.0	37	42	61	40	-	-	33	30	N/A	0.00	N/A	N/A
12.96	53.9	70.4	-	4.6	-0.1	8.7	9	very stiff fine SOIL	120	2.0	27	35	55	39	-	-	41	30	N/A	0.00	N/A	N/A
13.12	41.8	53.9	-	3.5	0.1	8.6	3	silty CLAY to CLAY	115	1.5	28	36	-	-	2.9	9.9	45	15	N/A	0.00	N/A	N/A
13.29	44.7	57.0	-	3.1	0.1	7.1	3	silty CLAY to CLAY	115	1.5	30	38	-	-	3.1	9.9	40	15	N/A	0.00	N/A	N/A
13.45	54.6	68.7	-	3.4	0.1	6.4	9	very stiff fine SOIL	120	2.0	27	34	55	38	-	-	36	30	N/A	0.00	N/A	N/A
13.62	65.1	70.5	225.6	3.9	0.1	6.0	9	very stiff fine SOIL	120	2.0	33	35	55	39	-	-	34	30	N/A	0.00	N/A	N/A
13.78	74.2	79.9	231.4	4.2	0.0	5.7	9	very stiff fine SOIL	120	2.0	37	40	60	40	-	-	32	30	N/A	0.00	N/A	N/A
13.94	61.0	74.0	-	4.1	0.1	6.8	9	very stiff fine SOIL	120	2.0	31	37	57	39	-	-	36	30	N/A	0.00	N/A	N/A
14.11	56.8	68.1	-	3.7	0.1	6.7	9	very stiff fine SOIL	120	2.0	28	34	54	38	-	-	36	30	N/A	0.00	N/A	N/A
14.27	107.4	113.6	206.2	3.7	0.7	3.4	5	silty SAND to sandy SILT	120	4.0	27	29	71	42	-	-	21	16	N/A	0.00	N/A	N/A
14.44	157.2	165.2	241.3	4.6	0.0	2.9	5	silty SAND to sandy SILT	120	4.0	39	41	84	44	-	-	16	16	N/A	0.00	N/A	N/A
14.60	185.5	193.9	268.5	5.4	0.1	2.9	5	silty SAND to sandy SILT	120	4.0	46	48	89	44	-	-	15	16	N/A	0.00	N/A	N/A
14.76	183.0	190.3	267.4	5.4	0.1	3.0	5	silty SAND to sandy SILT	120	4.0	46	49	88	44	-	-	15	16	N/A	0.00	N/A	N/A
14.93	160.5	165.9	256.5	5.3	0.1	3.3	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	10.6	9.9	17	16	N/A	0.00	N/A	N/A
15.09	121.1	124.5	241.4	5.0	0.2	4.1	9	very stiff fine SOIL	120	2.0	61	62	74	42	-	-	22	30	N/A	0.00	N/A	N/A
15.26	91.7	93.8	245.7	5.0	0.2	5.5	9	very stiff fine SOIL	120	2.0	46	47	65	41	-	-	29	30	N/A	0.00	N/A	N/A
15.42	66.7	73.1	-	5.0	0.2	7.6	9	very stiff fine SOIL	120	2.0	33	37	57	39	-	-	38	30	N/A	0.00	N/A	N/A

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

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Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato -	* Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT N-N 60	SPT N-N1 60	Rel Den	Ftn Ang deg	Und Shr tsf	OCR - -	Fin Ic	Nk - -	Vol Strn	Dry Stlmt 0.01	Liq Stlmt 0.00	Cycl SStn
15.58	51.8	56.2	-	3.7	0.2	7.4	3	silty CLAY to CLAY	115	1.5	35	37	-	-	3.6	9.9	41	15	N/A	0.00	N/A	N/A
15.75	48.3	51.8	-	2.9	0.3	6.1	3	silty CLAY to CLAY	115	1.5	32	35	-	-	3.3	9.9	39	15	N/A	0.00	N/A	N/A
15.91	54.2	57.6	-	3.1	0.5	5.8	3	silty CLAY to CLAY	115	1.5	36	38	-	-	3.8	9.9	38	15	N/A	0.00	N/A	N/A
16.08	75.8	75.5	199.6	3.5	0.2	4.7	4	clayy SILT to silty CLAY	115	2.0	38	38	-	-	5.3	9.9	30	15	N/A	0.00	N/A	N/A
16.24	80.4	79.7	216.4	4.1	0.1	5.1	4	clayy SILT to silty CLAY	115	2.0	40	40	-	-	5.6	9.9	30	15	N/A	0.00	N/A	N/A
16.40	75.6	74.5	222.9	4.2	0.0	5.7	9	very stiff fine SOIL	120	2.0	38	37	57	39	-	-	33	30	N/A	0.00	N/A	N/A
16.57	61.0	62.4	-	4.1	0.1	6.8	9	very stiff fine SOIL	120	2.0	31	31	51	38	-	-	38	30	N/A	0.00	N/A	N/A
16.73	51.9	52.5	-	3.9	-0.1	7.6	3	silty CLAY to CLAY	115	1.5	35	35	-	-	3.6	9.9	43	15	N/A	0.00	N/A	N/A
16.90	52.1	52.2	-	3.8	0.0	7.3	3	silty CLAY to CLAY	115	1.5	35	35	-	-	3.6	9.9	42	15	N/A	0.00	N/A	N/A
17.06	53.9	53.5	-	3.4	0.1	6.4	3	silty CLAY to CLAY	115	1.5	36	36	-	-	3.7	9.9	39	15	N/A	0.00	N/A	N/A
17.23	54.9	53.9	-	3.6	0.2	6.6	3	silty CLAY to CLAY	115	1.5	37	36	-	-	3.8	9.9	40	15	N/A	0.00	N/A	N/A
17.39	118.0	113.1	190.0	3.4	0.1	2.9	5	silty SAND to sandy SILT	120	4.0	29	28	71	41	-	-	19	16	N/A	0.00	N/A	N/A
17.55	177.6	169.5	218.8	3.8	0.1	2.2	5	silty SAND to sandy SILT	120	4.0	44	42	84	43	-	-	13	16	N/A	0.00	N/A	N/A
17.72	219.7	208.6	249.7	4.4	0.1	2.0	6	clean SAND to silty SAND	125	5.0	44	42	91	44	-	-	11	16	N/A	0.00	N/A	N/A
17.88	249.4	235.7	276.9	5.1	0.1	2.0	6	clean SAND to silty SAND	125	5.0	50	47	95	45	-	-	10	16	N/A	0.00	N/A	N/A
18.05	263.8	248.1	296.9	6.0	0.1	2.3	6	clean SAND to silty SAND	125	5.0	53	50	95	45	-	-	11	16	N/A	0.00	N/A	N/A
18.21	229.6	214.9	273.0	5.7	0.2	2.5	5	silty SAND to sandy SILT	120	4.0	57	54	92	44	-	-	12	16	N/A	0.00	N/A	N/A
18.37	189.4	176.4	240.8	4.9	0.2	2.6	5	silty SAND to sandy SILT	120	4.0	47	44	86	43	-	-	14	16	N/A	0.00	N/A	N/A
18.54	141.4	131.1	209.2	4.2	0.2	3.0	5	silty SAND to sandy SILT	120	4.0	35	33	76	42	-	-	18	16	N/A	0.00	N/A	N/A
18.70	112.6	103.9	198.1	3.9	0.2	3.5	5	silty SAND to sandy SILT	120	4.0	28	26	68	41	-	-	22	16	N/A	0.00	N/A	N/A
18.87	103.2	94.9	193.4	3.7	0.2	3.6	5	silty SAND to sandy SILT	120	4.0	26	24	65	40	-	-	24	16	N/A	0.00	N/A	N/A
19.03	90.0	82.4	194.2	3.7	0.0	4.2	4	clayy SILT to silty CLAY	115	2.0	45	41	-	-	6.3	9.9	27	15	N/A	0.00	N/A	N/A
19.19	74.5	67.9	188.0	3.4	0.1	4.6	4	clayy SILT to silty CLAY	115	2.0	37	34	-	-	5.2	9.9	31	15	N/A	0.00	N/A	N/A
19.36	87.5	79.5	184.4	3.4	-0.1	3.9	4	clayy SILT to silty CLAY	115	2.0	44	40	-	-	6.1	9.9	26	15	N/A	0.00	N/A	N/A
19.52	153.7	138.9	196.4	3.6	0.1	2.4	5	silty SAND to sandy SILT	120	4.0	38	35	78	42	-	-	15	16	N/A	0.00	N/A	N/A
19.69	197.4	177.6	225.2	4.2	0.2	2.1	6	clean SAND to silty SAND	125	5.0	39	36	86	43	-	-	12	16	N/A	0.00	N/A	N/A
19.85	227.7	204.1	251.5	4.9	0.2	2.2	6	clean SAND to silty SAND	125	5.0	46	41	91	44	-	-	11	16	N/A	0.00	N/A	N/A
20.01	253.9	226.5	274.9	5.6	0.2	2.2	6	clean SAND to silty SAND	125	5.0	51	45	94	44	-	-	11	16	N/A	0.00	N/A	N/A
20.18	281.9	250.4	299.8	6.4	0.2	2.3	6	clean SAND to silty SAND	125	5.0	56	50	95	45	-	-	11	16	N/A	0.00	N/A	N/A
20.34	317.0	280.4	328.1	7.2	0.2	2.3	6	clean SAND to silty SAND	125	5.0	63	56	95	45	-	-	10	16	N/A	0.00	N/A	N/A
20.51	342.3	301.5	348.3	7.7	0.2	2.3	6	clean SAND to silty SAND	125	5.0	68	60	95	46	-	-	10	16	N/A	0.00	N/A	N/A
20.67	368.2	323.0	365.0	8.0	0.2	2.2	6	clean SAND to silty SAND	125	5.0	74	65	95	46	-	-	9	16	N/A	0.00	N/A	N/A
20.83	367.5	321.1	355.4	7.3	0.2	2.0	6	clean SAND to silty SAND	125	5.0	74	64	95	46	-	-	8	16	N/A	0.00	N/A	N/A
21.00	371.8	323.4	353.6	7.0	0.2	1.9	6	clean SAND to silty SAND	125	5.0	74	65	95	46	-	-	8	16	N/A	0.00	N/A	N/A
21.16	361.5	313.2	329.1	5.7	0.3	1.6	6	clean SAND to silty SAND	125	5.0	72	63	95	46	-	-	6	16	N/A	0.00	N/A	N/A
21.33	332.0	286.5	313.6	5.8	0.3	1.8	6	clean SAND to silty SAND	125	5.0	66	57	95	45	-	-	8	16	N/A	0.00	N/A	N/A
21.49	277.0	238.1	274.7	5.3	0.3	1.9	6	clean SAND to silty SAND	125	5.0	55	48	95	44	-	-	9	16	N/A	0.00	N/A	N/A
21.65	285.3	244.2	274.0	5.0	0.3	1.7	6	clean SAND to silty SAND	125	5.0	57	49	95	45	-	-	9	16	N/A	0.00	N/A	N/A
21.82	255.6	217.9	255.1	4.8	0.3	1.9	6	clean SAND to silty SAND	125	5.0	51	44	93	44	-	-	10	16	N/A	0.00	N/A	N/A
21.98	237.5	201.7	246.8	5.0	0.3	2.1	6	clean SAND to silty SAND	125	5.0	48	40	90	44	-	-	11	16	N/A	0.00	N/A	N/A
22.15	237.6	201.0	252.5	5.4	0.3	2.3	6	clean SAND to silty SAND	125	5.0	48	40	90	44	-	-	12	16	N/A	0.00	N/A	N/A
22.31	256.8	216.4	265.0	5.7	0.3	2.2	6	clean SAND to silty SAND	125	5.0	51	43	92	44	-	-	11	16	N/A	0.00	N/A	N/A
22.47	254.6	213.8	259.5	5.4	0.3	2.1	6	clean SAND to silty SAND	125	5.0	51	43	92	44	-	-	11	16	N/A	0.00	N/A	N/A
22.64	242.3	202.6	243.2	4.8	0.3	2.0	6	clean SAND to silty SAND	125	5.0	48	41	90	44	-	-	11	16	N/A	0.00	N/A	N/A
22.80	217.2	181.0	225.0	4.4	0.2	2.0	6	clean SAND to silty SAND	125	5.0	43	36	87	43	-	-	12	16	N/A	0.00	N/A	N/A
22.97	207.7	172.4	225.5	4.7	0.2	2.3	5	silty SAND to sandy SILT	120	4.0	52	43	85	43	-	-	13	16	N/A	0.00	N/A	N/A
23.13	238.0	196.8	261.6	6.3	0.2	2.6	5	silty SAND to sandy SILT	120	4.0	59	49	89	43	-	-	14	16	N/A	0.00	N/A	N/A
23.30	267.0	220.0	288.6	7.3	0.2	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	17.6	9.9	13	16	N/A	0.00	N/A	N/A
23.46	280.1	230.1	293.8	7.4	0.2	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	18.5	9.9	12	16	N/A	0.00	N/A	N/A
23.62	292.0	239.0	296.9	7.2	0.2	2.5	6	clean SAND to silty SAND	125	5.0	58	48	95	44	-	-	12	16	N/A	0.00	N/A	N/A
23.79	286.1	233.3	290.9	7.1	0.2	2.5	6	clean SAND to silty SAND	125	5.0	57	47	95	44	-	-	12	16	N/A	0.00	N/A	N/A
23.95	278.5	226.4	277.2	6.4	0.1	2.3	6	clean SAND to silty SAND	125	5.0	56	45	94	44	-	-	11	16	N/A	0.00	N/A	N/A
24.12	260.8	211.1	251.0	5.1	0.1	2.0	6	clean SAND to silty SAND	125	5.0	52	42	92	44	-	-	10	16	N/A	0.00	N/A	N/A
24.28	220.5	178.0	207.5	3.5	0.1	1.6	6	clean SAND to silty SAND	125	5.0	44	36	86	43	-	-	10	16	N/A	0.00	N/A	N/A
24.44	160.5	129.0	161.3	2.4	0.1	1.5	6	clean SAND to silty SAND	125	5.0	32	26	75	41	-	-	12	16	N/A	0.00	N/A	N/A
24.61	107.0	85.7	147.5	2.5	0.1	2.4	5	silty SAND to sandy SILT	120	4.0	27	21	62	39	-	-	20	16	N/A	0.00	N/A	N/A
24.77	77.5	61.9	162.3	2.9	0.1	3.8	4	clayy SILT to silty CLAY	115	2.0	39	31	-	-	5.4	9.9	29	15	N/A	0.00	N/A	N/A
24.94	57.8	38.9	-	2.9	0.0	5.2	3	silty CLAY to CLAY	115	1.5	39	26	-	-	4.0	9.9	41	15	N/A	0.00	N/A	N/A
25.10	47.3	31.6	-	2.7	0.1	5.8	3	silty CLAY to CLAY	115	1.5	32	21	-	-	3.2	9.9	46	15	N/A	0.00	N/A	N/A
25.26	49.9	33.1	-	2.4	-1.0	4.9	3	silty CLAY to CLAY	115	1.5	33	22	-	-	3.4	9.9	43	15	N/A	0.00	N/A	N/A
25.43	57.2	37.7	-	2.4	-0.2	4.4	4	clayy SILT to silty CLAY	115	2.0	28	19	-	-	3.9	9.9	39	15	N/A	0.00	N/A	N/A
25.59	65.3	42.8	-	2.7	0.0	4.2	4	clayy SILT to silty CLAY	115	2.0	33	21	-	-	4.5	9.9	36	15	N/A	0.00	N/A	N/A
25.76	73.0	57.2	161.8	2.9	0.0	4.1	4	clayy SILT to silty CLAY	115	2.0	37	29	-	-	5.1	9.9	31	15	N/A	0.00	N/A	N/A
25.92	78.9	61.7	167.3	3.1	0.0	4.1	4	clayy SILT to silty CLAY	115	2.0	39	31	-	-	5.5	9.9	30	15	N/A	0.00	N/A	N/A
26.08	80.1	62.4	174.4	3.4	-0.1	4.3	4	clayy SILT to silty CLAY	115	2.0	40	31	-	-	5.6	9.9	31	15	N/A	0.00	N/A	N/A
26.25	83.6	64.9	180.1	3.6	-0.1	4.4	4	clayy SILT to silty CLAY	115	2.0	42	32	-	-	5.8	9.9	31	15	N/A	0.00	N/A	N/A
26.41	80.8	62.5	185.3	3.8	-0.2	4.8	4	clayy SILT to silty CLAY	115	2.0	40	31	-	-	5.6	9.9	32	15	N/A	0.00	N/A	N/A
26.58	83.1	64.1	174.6	3.5	-0.3	4.2	4	clayy SILT to silty CLAY	115	2.0	42	32	-	-	5.8	9.9	30	15	N/A	0.00	N/A	N/A
26.74	86.5	66.6	194.7	4.2	-0.5	4.9	4	clayy SILT to silty CLAY	115	2.0	43	33	-	-	6.0	9.9	32	15	N/A	0.00	N/A	N/A
26.90	99.1	76.1	206.4	4.8	-0.8	4.9	4	clayy SILT to silty CLAY	115	2.0	50	38	-	-	6.9	9.9	30	15	N/A	0.00	N/A	N/A
27.07	151.8	116.2	218.0	5.6	-0.6	3.7	5	silty SAND to sandy SILT	120	4.0	38	29	72	40	-	-	22	16	N/A	0.00	N/A	N/A
27.23	211.0	160.9	238.1	6.2	0.0	3.0	5	silty SAND to sandy SILT	120	4.0	53	40	83	42	-	-	16	16	N/A	0.00	N/A	N/A
27.40	216.2	164.4	256.4	7.2	0.0	3.4	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	14.2	9.9	17	16	N/A	0.00	N/A	N/A
27.56	175.6	133.1	248.8	7.1	0.0	4.1	9	very stiff fine SOIL	120	2.0	88	67	76	41	-	-	22	30	N/A	0.00	N/A	N/A
27.72	148.6	112.4	231.8	6.3	0.0	4.3	9	very stiff fine SOIL	120	2.0	74	56	71	40	-	-	24	30	N/A	0.00	N/A	N/A
27.89	150.9	113.8	227.3	6.1	0.0	4.1	9	very stiff fine SOIL	120	2.0	75	57	71	40	-	-	23	30	N/A	0.00	N/A	N/A
28.05	174.8	131.4	244.4	6.9	-0.3	4.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.5	9.9	21	16	N/A	0.00	N/A	N/A
28.22	219.1	164.2	269.1	8.1	0.0	3.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	14.4	9.9	19	16	N/A	0.00	N/A	N/A
28.38	246.9	184.5	296.2	9.5	0.0	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.2	9.9	18	16	N/A	0.00	N/A	N/A
28.54	263.2	196.1	317.5	10.7	0.1	4.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	17.3	9.9	18	16	N/A	0.00	N/A	N/A
28.71	284.8	211.6	327.1	11.1	0.1	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	18.8	9.9	17	16	N/A	0.00	N/A	N/A
28.87	304.4	225.6	319.5	10.3	0.1	3.4	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	20.1	9.9	15	16	N/A	0.00	N/A	N/A
29.04	317.3	234.5	319.0	10.0	0.2	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	20.9	9.9	14	16	N/A	0.00	N/A	N/A
29.20	327.3	241.3	331.0	10.7	0.2	3.3	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	21.6	9.9	14	16	N/A	0.00	N/A	N/A
29.36	330.3	242.8	333.8	10.9	0.2	3.3	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	21.8	9.9	14	16	N/A	0.00	N/A	N/A
29.53	323.7	237.4	328.4	10.7	0.2	3.3	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	21.3	9.9	15	16	N/A	0.00	N/A	N/A
29.69	317.4	232.1	315.7	9.9	0.2	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	20.9	9.9	14	16	N/A	0.00	N/A	N/A
29.86	320.6	233.8	305.5	9.1	0.3	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	21.1	9.9	13	16	N/A	0.00	N/A	N/A
30.02	319.3	232.2	295.1	8.3	0.3	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	21.0	9.9	12	16	N/A	0.00	N/A	N/A
30.19	312.5	226.7	285.2	7.8	0.3	2.5	6	clean SAND to silty SAND	125	5.0	63	45	94	43	-	-	12	16	N/A	0.00	N/A	N/A
30.35	325.9	235.7	298.9	7.7	0.3	2.4	6	clean SAND to silty SAND	125	5.0	65	47	95	44	-	-	11	16	N/A	0.00	N/A	N/A
30.51	333.9	240.8	292.9	7.8	0.3	2.3	6	clean SAND to silty SAND	125	5.0	67	48	95	44	-	-	11	16	N/A	0.00	N/A	N/A
30.68	341.3	245.5	292.7	7.5	0.3	2.2	6	clean SAND to silty SAND	125	5.0	68	49	95	44	-	-	10	16	N/A	0.00	N/A	N/A
30.84	361.8	259.5	303.0	7.7	0.3	2.1	6	clean SAND to silty SAND	125	5.0	72	52	95	44	-	-	10	16	N/A	0.00	N/A	N/A

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Project ID: Petra Geotech
Data File: SDF(239).cpt
CPT Date: 11/13/2012 12:23:46 PM
GW During Test: 33 ft

Sounding ID: CPT-04
Project No: 332-12
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato -	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N 60	SPT R-N1 60	Rel Den	Fin Ang deg	Und Shr tsf	OCR - -	Fin Ic	Nk - -	Vol Strn	Dry Stlmt 0.01	Liq Stlmt 0.00	Cycl SStn
31.01	384.4	274.9	312.7	7.7	0.3	2.0	6	clean SAND to silty SAND	125	5.0	77	55	95	44	-	-	9	16	N/A	0.00	N/A	N/A
31.17	353.9	252.4	305.2	8.3	0.3	2.4	6	clean SAND to silty SAND	125	5.0	71	50	95	44	-	-	11	16	N/A	0.00	N/A	N/A
31.33	358.3	254.9	314.0	9.0	0.3	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.8	9.9	11	16	N/A	0.00	N/A	N/A
31.50	358.6	254.4	321.9	9.8	0.2	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.8	9.9	12	16	N/A	0.00	N/A	N/A
31.66	373.1	264.1	338.5	10.8	0.2	2.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	24.6	9.9	13	16	N/A	0.00	N/A	N/A
31.83	384.3	271.3	350.5	11.6	0.2	3.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	25.3	9.9	13	16	N/A	0.00	N/A	N/A
31.99	380.8	268.2	344.4	11.2	0.2	3.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	25.1	9.9	13	16	N/A	0.00	N/A	N/A
32.15	382.5	268.7	331.6	10.0	0.2	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	25.2	9.9	11	16	N/A	0.00	N/A	N/A
32.32	388.0	271.9	323.3	9.1	0.2	2.4	6	clean SAND to silty SAND	125	5.0	78	54	95	44	-	-	10	16	N/A	0.00	N/A	N/A
32.48	392.7	274.5	317.7	8.4	0.1	2.2	6	clean SAND to silty SAND	125	5.0	79	55	95	44	-	-	10	16	N/A	0.00	N/A	N/A
32.65	392.0	273.2	319.2	8.7	0.1	2.2	6	clean SAND to silty SAND	125	5.0	79	55	95	44	-	-	10	16	N/A	0.00	N/A	N/A
32.81	397.1	276.1	323.7	8.9	0.2	2.3	6	clean SAND to silty SAND	125	5.0	79	55	95	44	-	-	10	16	N/A	0.00	N/A	N/A
32.97	404.5	280.5	328.5	9.2	0.1	2.3	6	clean SAND to silty SAND	125	5.0	81	56	95	44	-	-	10	16	N/A	0.00	N/A	N/A
33.14	410.3	284.2	331.5	9.2	0.2	2.3	6	clean SAND to silty SAND	125	5.0	82	57	95	44	-	-	10	16	0.00	-	0.00	0.0
33.30	437.2	302.4	333.5	8.2	0.2	1.9	6	clean SAND to silty SAND	125	5.0	87	60	95	45	-	-	8	16	0.00	-	0.00	0.0
33.47	429.9	297.0	335.0	8.8	0.2	2.0	6	clean SAND to silty SAND	125	5.0	86	59	95	44	-	-	9	16	0.00	-	0.00	0.0
33.63	428.2	295.4	331.4	8.5	0.2	2.0	6	clean SAND to silty SAND	125	5.0	86	59	95	44	-	-	9	16	0.00	-	0.00	0.0
33.79	398.1	274.2	312.1	8.0	0.2	2.0	6	clean SAND to silty SAND	125	5.0	80	55	95	44	-	-	9	16	0.00	-	0.00	0.0
33.96	358.0	246.3	294.5	8.0	0.2	2.2	6	clean SAND to silty SAND	125	5.0	72	49	95	44	-	-	11	16	0.00	-	0.00	0.0
34.12	332.9	228.8	279.5	7.6	0.2	2.3	6	clean SAND to silty SAND	125	5.0	67	46	94	43	-	-	11	16	0.00	-	0.00	0.0
34.29	327.8	224.9	275.0	7.4	0.2	2.3	6	clean SAND to silty SAND	125	5.0	66	45	94	43	-	-	11	16	0.00	-	0.00	0.0
34.45	311.1	213.2	269.1	7.5	0.3	2.4	5	silty SAND to sandy SILT	120	4.0	79	53	92	43	-	-	12	16	0.00	-	0.00	0.0
34.61	309.5	211.9	263.0	7.0	0.3	2.3	6	clean SAND to silty SAND	125	5.0	62	42	92	43	-	-	12	16	0.00	-	0.00	0.0
34.78	309.1	211.4	257.9	6.6	0.3	2.2	6	clean SAND to silty SAND	125	5.0	62	42	92	43	-	-	11	16	0.00	-	0.00	0.0
34.94	298.4	203.7	247.3	6.1	0.3	2.1	6	clean SAND to silty SAND	125	5.0	60	41	90	43	-	-	11	16	0.00	-	0.00	0.0
35.11	293.0	199.8	238.3	5.5	0.3	1.9	6	clean SAND to silty SAND	125	5.0	59	40	90	42	-	-	10	16	0.00	-	0.00	0.0
35.27	280.6	191.1	234.1	5.6	0.3	2.0	6	clean SAND to silty SAND	125	5.0	56	38	88	42	-	-	11	16	0.00	-	0.00	0.0
35.43	257.6	175.3	221.3	5.3	0.4	2.1	6	clean SAND to silty SAND	125	5.0	52	35	86	42	-	-	12	16	0.00	-	0.00	0.0
35.60	246.0	167.1	210.2	4.8	0.4	2.0	6	clean SAND to silty SAND	125	5.0	49	33	84	41	-	-	12	16	0.00	-	0.00	0.0
35.76	244.7	166.1	212.0	5.0	0.4	2.1	5	silty SAND to sandy SILT	120	4.0	61	42	84	41	-	-	12	16	0.00	-	0.00	0.0
35.93	232.3	157.4	200.7	4.5	0.4	2.0	6	clean SAND to silty SAND	125	5.0	46	31	82	41	-	-	12	16	0.00	-	0.00	0.0
36.09	217.0	146.9	184.8	3.8	0.4	1.8	6	clean SAND to silty SAND	125	5.0	43	29	80	41	-	-	12	16	0.00	-	0.00	0.0
36.26	191.6	129.6	170.3	3.4	0.4	1.8	5	silty SAND to sandy SILT	120	4.0	49	32	76	40	-	-	13	16	0.00	-	0.00	0.0
36.42	149.3	100.8	149.2	2.9	0.4	2.0	5	silty SAND to sandy SILT	120	4.0	37	25	67	39	-	-	16	16	0.22	-	0.00	1.4
36.58	83.3	56.2	154.5	3.1	0.4	3.8	4	clayy SILT to silty CLAY	115	2.0	42	28	-	-	5.7	9.9	31	15	0.15	-	0.00	0.3
36.75	47.1	22.7	-	2.6	0.4	5.7	3	silty CLAY to CLAY	115	1.5	31	15	-	-	3.2	7.1	53	15	-	-	0.00	-
36.91	27.5	13.2	-	1.8	0.5	7.2	3	silty CLAY to CLAY	115	1.5	18	9	-	-	1.8	4.0	70	15	-	-	0.00	-
37.08	20.4	9.8	-	1.0	0.9	5.2	3	silty CLAY to CLAY	115	1.5	14	7	-	-	1.3	2.9	72	15	-	-	0.00	-
37.24	18.9	9.1	-	0.8	0.9	4.8	3	silty CLAY to CLAY	115	1.5	13	6	-	-	1.2	2.6	73	15	-	-	0.00	-
37.40	23.9	11.4	-	1.6	0.8	7.2	3	silty CLAY to CLAY	115	1.5	16	8	-	-	1.8	3.4	74	15	-	-	0.00	-
37.57	34.1	16.2	-	2.3	0.7	7.2	3	silty CLAY to CLAY	115	1.5	23	11	-	-	2.3	5.0	65	15	-	-	0.00	-
37.73	67.5	32.1	-	2.9	0.5	4.4	3	silty CLAY to CLAY	115	1.5	45	21	-	-	4.6	9.9	41	15	-	-	0.00	-
37.90	82.9	39.3	-	3.2	-1.4	3.9	4	clayy SILT to silty CLAY	115	2.0	41	20	-	-	5.7	9.9	36	15	-	-	0.00	-
38.06	72.6	34.3	-	3.4	-5.9	4.8	3	silty CLAY to CLAY	115	1.5	48	23	-	-	5.0	9.9	42	15	-	-	0.00	-
38.22	74.0	35.0	-	3.1	-5.9	4.3	4	clayy SILT to silty CLAY	115	2.0	37	17	-	-	5.1	9.9	40	15	-	-	0.00	-
38.39	121.1	80.7	166.7	3.8	-1.6	3.2	5	silty SAND to sandy SILT	120	4.0	30	20	60	37	-	-	24	16	0.00	-	0.00	0.0
38.55	207.5	138.2	188.2	4.4	0.0	2.1	5	silty SAND to sandy SILT	120	4.0	52	35	78	40	-	-	14	16	0.00	-	0.00	0.0
38.72	278.7	185.5	226.3	5.4	-0.1	1.9	6	clean SAND to silty SAND	125	5.0	56	37	87	42	-	-	11	16	0.00	-	0.00	0.0
38.88	314.5	209.0	247.0	6.0	0.4	1.9	6	clean SAND to silty SAND	125	5.0	63	42	91	43	-	-	10	16	0.00	-	0.00	0.0
39.04	334.9	222.3	260.8	6.5	0.6	1.9	6	clean SAND to silty SAND	125	5.0	67	44	93	43	-	-	10	16	0.00	-	0.00	0.0
39.21	367.8	243.9	280.4	7.0	0.6	1.9	6	clean SAND to silty SAND	125	5.0	74	49	95	43	-	-	9	16	0.00	-	0.00	0.0
39.37	378.5	250.7	289.1	7.5	0.6	2.0	6	clean SAND to silty SAND	125	5.0	76	50	95	43	-	-	9	16	0.00	-	0.00	0.0
39.54	363.1	240.2	277.5	7.0	0.6	1.9	6	clean SAND to silty SAND	125	5.0	73	48	95	43	-	-	10	16	0.00	-	0.00	0.0
39.70	347.7	229.7	263.4	6.3	0.6	1.8	6	clean SAND to silty SAND	125	5.0	70	46	94	43	-	-	9	16	0.00	-	0.00	0.0
39.86	347.9	229.6	254.7	5.5	0.4	1.6	6	clean SAND to silty SAND	125	5.0	70	46	94	43	-	-	8	16	0.00	-	0.00	0.0
40.03	328.7	216.7	238.9	4.8	0.5	1.5	6	clean SAND to silty SAND	125	5.0	66	43	93	43	-	-	8	16	0.00	-	0.00	0.0
40.19	327.9	215.9	239.3	4.9	0.2	1.5	6	clean SAND to silty SAND	125	5.0	66	43	92	43	-	-	8	16	0.00	-	0.00	0.0
40.36	331.9	218.2	244.6	5.2	-0.9	1.6	6	clean SAND to silty SAND	125	5.0	66	44	93	43	-	-	9	16	0.00	-	0.00	0.0
40.52	341.2	224.1	251.3	5.5	-2.9	1.6	6	clean SAND to silty SAND	125	5.0	68	45	94	43	-	-	9	16	0.00	-	0.00	0.0
40.68	331.4	217.4	245.6	5.4	-4.0	1.6	6	clean SAND to silty SAND	125	5.0	66	43	93	43	-	-	9	16	0.00	-	0.00	0.0
40.85	325.1	213.0	245.3	5.6	-4.8	1.8	6	clean SAND to silty SAND	125	5.0	65	43	92	43	-	-	9	16	0.00	-	0.00	0.0
41.01	373.1	244.2	270.3	6.1	-4.8	1.6	6	clean SAND to silty SAND	125	5.0	75	49	95	43	-	-	8	16	0.00	-	0.00	0.0
41.18	397.0	259.5	282.7	6.3	-5.8	1.6	6	clean SAND to silty SAND	125	5.0	79	52	95	44	-	-	8	16	0.00	-	0.00	0.0
41.34	406.5	265.4	288.7	6.6	-5.9	1.6	6	clean SAND to silty SAND	125	5.0	81	53	95	44	-	-	8	16	0.00	-	0.00	0.0
41.50	410.8	267.9	286.4	6.2	-6.2	1.5	6	clean SAND to silty SAND	125	5.0	82	54	95	44	-	-	7	16	0.00	-	0.00	0.0
41.67	399.0	259.9	272.4	5.3	-3.9	1.3	6	clean SAND to silty SAND	125	5.0	80	52	95	44	-	-	6	16	0.00	-	0.00	0.0
41.83	379.1	246.7	259.2	4.9	-5.6	1.3	6	clean SAND to silty SAND	125	5.0	76	49	95	43	-	-	6	16	0.00	-	0.00	0.0
42.00	342.0	222.3	244.4	5.0	-6.4	1.5	6	clean SAND to silty SAND	125	5.0	68	44	93	43	-	-	8	16	0.00	-	0.00	0.0
42.16	370.6	240.6	256.0	5.0	-7.2	1.4	6	clean SAND to silty SAND	125	5.0	74	48	95	43	-	-	7	16	0.00	-	0.00	0.0
42.32	422.9	274.3	286.7	5.8	-8.1	1.4	6	clean SAND to silty SAND	125	5.0	85	55	95	44	-	-	6	16	0.00	-	0.00	0.0
42.49	428.2	277.4	287.1	5.7	-8.3	1.3	6	clean SAND to silty SAND	125	5.0	86	55	95	44	-	-	6	16	0.00	-	0.00	0.0
42.65	443.1	286.7	290.8	5.6	-8.4	1.3	6	clean SAND to silty SAND	125	5.0	89	57	95	44	-	-	5	16	0.00	-	0.00	0.0
42.82	454.6	293.8	294.8	5.6	-8.6	1.2	6	clean SAND to silty SAND	125	5.0	91	59	95	44	-	-	5	16	0.00	-	0.00	0.0
42.98	451.8	291.6	291.6	5.1	-8.6	1.1	6	clean SAND to silty SAND	125	5.0	90	58	95	44	-	-	5	16	0.00	-	0.00	0.0
43.15	414.6	267.3	271.3	4.9	-8.7	1.2	6	clean SAND to silty SAND	125	5.0	83	53	95	44	-	-	6	16	0.00	-	0.00	0.0
43.31	371.1	239.0	255.9	5.1	-8.7	1.4	6	clean SAND to silty SAND	125	5.0	74	48	95	43	-	-	7	16	0.00	-	0.00	0.0
43.47	342.8	220.5	250.5	5.8	-8.7	1.7	6	clean SAND to silty SAND	125	5.0	69	44	93	43	-	-	9	16	0.00	-	0.00	0.0
43.64	321.7	206.7	237.8	5.4	-8.7	1.7	6	clean SAND to silty SAND	125	5.0	64	41	91	42	-	-	9	16	0.00	-	0.00	0.0
43.80	324.5	208.3	235.1	5.1	-8.7	1.6	6	clean SAND to silty SAND	125	5.0	65	42	91	42	-	-	9	16	0.00	-	0.00	0.0
43.97	338.2	216.8	233.6	4.4	-8.6	1.3	6	clean SAND to silty SAND	125	5.0	68	43	93	43	-	-	7	16	0.00	-	0.00	0.0
44.13	343.9	220.3	246.9	5.5	-8.7	1.6	6	clean SAND to silty SAND	125	5.0	69	44	93	43	-	-	9	16	0.00	-	0.00	0.0
44.29	370.8	237.2	259.6	5.6	-8.5	1.5	6	clean SAND to silty SAND	125	5.0	74	47	95	43	-	-	8	16	0.00	-	0.00	0.0
44.46	418.9	267.7	290.9	6.8	-8.5	1.6	6	clean SAND to silty SAND	125	5.0	84	54	95	44	-	-	8	16	0.00	-	0.00	0.0
44.62	434.4	277.3	306.0	7.7	-2.1	1.8	6	clean SAND to silty SAND	125	5.0	87	55	95	44	-	-	8	16	0.00	-	0.00	0.0
44.79	447.3	285.2	319.6	8.6	-3.5	1.9	6	clean SAND to silty SAND	125	5.0	89	57	95	44	-	-	9	16	0.00	-	0.00	0.0
44.95	426.0	271.3	312.9	8.9	-3.6	2.1	6	clean SAND to silty SAND	125	5.0	85	54	95	44	-	-	9	16	0.00	-	0.00	0.0
45.11	411.4	261.8	302.6	8.5	-3.9	2.1	6	clean SAND to silty SAND	125	5.0	82	52	95	43	-	-	10	16	0.00	-	0.00	0.0
45.28	398.4	253.2	289.4	7.7	-4.1	1.9	6	clean SAND to silty SAND	125	5.0	80	51	95	43	-	-	9	16	0.00	-	0.00	0.0
45.44	400.4	254.2	287.3	7.4	-4.3	1.9	6	clean SAND to silty SAND	125	5.0	80	51	95	43	-	-	9	16	0.00	-	0.00	0.0
45.61	395.6	250.9	283.3	7.2	-4.4	1.8	6	clean SAND to silty SAND	125	5.0	79	50	95	43	-	-	9	16	0.00	-	0.00	0.0
45.77	371.1	235.1	273.1	7.2	-4.7	2.0	6	clean SAND to silty SAND	125	5.0	74	47	95	43	-	-	10	16	0.00	-	0.00	0.0
45.93	356.0	225.3	270.3	7.5	-4.6	2.1	6	clean SAND to silty SAND	125	5.0	71	45	94	43	-	-	11	16	0.00	-	0.00	0.0
46.10	368.6	233.0	274.6	7.5	-4.6	2.0	6	clean SAND to silty SAND	125	5.0	74	47	95	43	-	-	10	16	0.00	-	0.00	0.0
46.26	372.4	235.1	273.1	7.2	-4.6	2.0	6	clean SAND to silty SAND	125	5.0	74	47	95	43	-	-	10	16	0.00	-	0.00	0.0

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Seville Solar Site

Project ID: Petra Geotech
Data File: SDF(239).cpt
CPT Date: 11/13/2012 12:23:46 PM
GW During Test: 33 ft

Sounding ID: CPT-04
Project No: 332-12
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio -	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N 60	* SPT R-N1 60	* Rel Den -	* Ftn Ang deg	Und Shr tsf	* OCR - -	* Fin Ic	* Wk - -	* Vol Strn	* Dry Stlmt 0.01	* Liq Stlmt 0.00	* Cycl SStn
46.43	352.7	222.4	259.2	6.6	-4.7	1.9	6	clean SAND to silty SAND	125	5.0	71	44	93	43	-	-	10	16	0.00	-	0.00	0.0
46.59	329.8	207.8	245.6	6.2	-4.7	1.9	6	clean SAND to silty SAND	125	5.0	66	42	91	42	-	-	10	16	0.00	-	0.00	0.0
46.75	320.6	201.8	239.6	6.0	-4.7	1.9	6	clean SAND to silty SAND	125	5.0	64	40	90	42	-	-	10	16	0.00	-	0.00	0.0
46.92	336.5	211.6	251.4	6.6	-4.7	2.0	6	clean SAND to silty SAND	125	5.0	67	42	92	42	-	-	10	16	0.00	-	0.00	0.0
47.08	352.2	221.2	259.7	6.8	-4.6	1.9	6	clean SAND to silty SAND	125	5.0	70	44	93	43	-	-	10	16	0.00	-	0.00	0.0
47.25	358.9	225.2	267.3	7.3	-4.6	2.1	6	clean SAND to silty SAND	125	5.0	72	45	94	43	-	-	10	16	0.00	-	0.00	0.0
47.41	352.1	220.6	259.4	6.8	-4.7	1.9	6	clean SAND to silty SAND	125	5.0	70	44	93	43	-	-	10	16	0.00	-	0.00	0.0
47.57	365.4	228.7	260.4	6.4	-4.7	1.8	6	clean SAND to silty SAND	125	5.0	73	46	94	43	-	-	9	16	0.00	-	0.00	0.0
47.74	367.6	229.9	260.6	6.4	-4.7	1.7	6	clean SAND to silty SAND	125	5.0	74	46	94	43	-	-	9	16	0.00	-	0.00	0.0
47.90	363.1	226.8	253.1	5.8	-4.7	1.6	6	clean SAND to silty SAND	125	5.0	73	45	94	43	-	-	8	16	0.00	-	0.00	0.0
48.07	352.2	219.8	246.3	5.6	-4.7	1.6	6	clean SAND to silty SAND	125	5.0	70	44	93	42	-	-	9	16	0.00	-	0.00	0.0
48.23	347.1	216.4	240.7	5.3	-4.6	1.5	6	clean SAND to silty SAND	125	5.0	69	43	92	42	-	-	8	16	0.00	-	0.00	0.0
48.39	349.1	217.4	235.2	4.7	-4.6	1.4	6	clean SAND to silty SAND	125	5.0	70	43	93	42	-	-	7	16	0.00	-	0.00	0.0
48.56	356.2	221.5	228.3	3.9	-4.7	1.1	6	clean SAND to silty SAND	125	5.0	71	44	93	42	-	-	6	16	0.00	-	0.00	0.0
48.72	374.3	232.6	234.8	3.8	-5.0	1.0	6	clean SAND to silty SAND	125	5.0	75	47	95	43	-	-	5	16	0.00	-	0.00	0.0
48.89	375.4	233.0	233.4	3.7	-5.2	1.0	6	clean SAND to silty SAND	125	5.0	75	47	95	43	-	-	5	16	0.00	-	0.00	0.0
49.05	369.1	228.9	228.9	3.3	-5.4	0.9	6	clean SAND to silty SAND	125	5.0	74	46	94	43	-	-	5	16	0.00	-	0.00	0.0
49.22	378.5	234.4	236.1	3.9	-5.5	1.0	6	clean SAND to silty SAND	125	5.0	76	47	95	43	-	-	5	16	0.00	-	0.00	0.0
49.38	353.8	218.9	226.6	3.9	-5.7	1.1	6	clean SAND to silty SAND	125	5.0	71	44	93	42	-	-	6	16	0.00	-	0.00	0.0
49.54	317.7	196.4	209.7	3.7	-5.9	1.2	6	clean SAND to silty SAND	125	5.0	64	39	89	42	-	-	7	16	0.00	-	0.00	0.0
49.71	336.8	207.9	217.8	3.7	-5.8	1.1	6	clean SAND to silty SAND	125	5.0	67	42	91	42	-	-	6	16	0.00	-	0.00	0.0
49.87	329.4	203.2	213.0	3.6	-5.9	1.1	6	clean SAND to silty SAND	125	5.0	66	41	90	42	-	-	6	16	0.00	-	0.00	0.0
50.04	321.7	198.3	202.1	3.0	-5.9	0.9	6	clean SAND to silty SAND	125	5.0	64	40	90	42	-	-	6	16	0.00	-	0.00	0.0
50.20	342.1	210.6	216.6	3.5	-5.9	1.0	6	clean SAND to silty SAND	125	5.0	68	42	92	42	-	-	6	16	0.00	-	0.00	0.0
50.36	351.1	215.9	218.5	3.4	-5.3	1.0	6	clean SAND to silty SAND	125	5.0	70	43	92	42	-	-	5	16	0.00	-	0.00	0.0
50.53	338.8	208.1	208.1	2.8	-5.4	0.8	6	clean SAND to silty SAND	125	5.0	68	42	91	42	-	-	5	16	0.00	-	0.00	0.0
50.69	308.1	189.1	189.1	2.3	-5.6	0.7	6	clean SAND to silty SAND	125	5.0	62	38	88	42	-	-	5	16	0.00	-	0.00	0.0
50.86	314.1	192.5	192.9	2.6	-5.6	0.8	6	clean SAND to silty SAND	125	5.0	63	39	89	42	-	-	5	16	0.00	-	0.00	0.0
51.02	338.8	207.5	206.8	2.9	-5.6	0.9	6	clean SAND to silty SAND	125	5.0	68	42	91	42	-	-	5	16	0.00	-	0.00	0.0
51.18	331.2	202.7	202.7	2.4	-5.7	0.7	6	clean SAND to silty SAND	125	5.0	66	41	90	42	-	-	5	16	0.00	-	0.00	0.0
51.35	321.2	196.3	196.3	2.3	-5.8	0.7	6	clean SAND to silty SAND	125	5.0	64	39	89	42	-	-	5	16	0.00	-	0.00	0.0
51.51	308.6	188.4	188.4	2.1	-6.0	0.7	6	clean SAND to silty SAND	125	5.0	62	38	88	42	-	-	5	16	0.00	-	0.00	0.0
51.68	312.1	190.4	190.2	2.5	-6.0	0.8	6	clean SAND to silty SAND	125	5.0	62	38	88	42	-	-	5	16	0.00	-	0.00	0.0
51.84	344.9	210.1	210.1	3.0	-6.0	0.9	6	clean SAND to silty SAND	125	5.0	69	42	92	42	-	-	5	16	0.00	-	0.00	0.0
52.00	375.1	228.3	228.3	3.2	-6.2	0.9	6	clean SAND to silty SAND	125	5.0	75	46	94	43	-	-	5	16	0.00	-	0.00	0.0
52.17	378.4	230.1	230.1	3.4	-6.5	0.9	6	clean SAND to silty SAND	125	5.0	76	46	95	43	-	-	5	16	0.00	-	0.00	0.0
52.33	396.3	240.7	240.7	3.6	-6.6	0.9	6	clean SAND to silty SAND	125	5.0	79	48	95	43	-	-	5	16	0.00	-	0.00	0.0
52.50	394.0	239.1	240.0	4.0	-6.8	1.0	6	clean SAND to silty SAND	125	5.0	79	48	95	43	-	-	5	16	0.00	-	0.00	0.0
52.66	391.0	237.0	238.8	4.0	-7.0	1.0	6	clean SAND to silty SAND	125	5.0	78	47	95	43	-	-	5	16	0.00	-	0.00	0.0
52.82	380.7	230.6	231.7	3.8	-6.5	1.0	6	clean SAND to silty SAND	125	5.0	76	46	95	43	-	-	5	16	0.00	-	0.00	0.0
52.99	387.5	234.5	236.7	4.0	-6.6	1.0	6	clean SAND to silty SAND	125	5.0	78	47	95	43	-	-	5	16	0.00	-	0.00	0.0
53.15	400.5	242.1	242.1	4.0	-6.7	1.0	6	clean SAND to silty SAND	125	5.0	80	48	95	43	-	-	5	16	0.00	-	0.00	0.0
53.32	417.6	252.2	257.9	4.9	-6.8	1.2	6	clean SAND to silty SAND	125	5.0	84	50	95	43	-	-	6	16	0.00	-	0.00	0.0
53.48	432.3	260.8	260.8	4.3	-6.8	1.0	6	clean SAND to silty SAND	125	5.0	86	52	95	43	-	-	5	16	0.00	-	0.00	0.0
53.64	428.7	258.3	265.2	5.2	-6.8	1.2	6	clean SAND to silty SAND	125	5.0	86	52	95	43	-	-	6	16	0.00	-	0.00	0.0
53.81	409.6	246.6	267.9	6.2	-6.4	1.5	6	clean SAND to silty SAND	125	5.0	82	49	95	43	-	-	8	16	0.00	-	0.00	0.0
53.97	406.2	244.3	278.6	7.5	-6.4	1.9	6	clean SAND to silty SAND	125	5.0	81	49	95	43	-	-	9	16	0.00	-	0.00	0.0
54.14	401.4	241.2	283.5	8.3	-6.4	2.1	6	clean SAND to silty SAND	125	5.0	80	48	95	43	-	-	10	16	0.00	-	0.00	0.0
54.30	403.6	242.2	290.9	9.0	-6.4	2.2	6	clean SAND to silty SAND	125	5.0	81	48	95	43	-	-	11	16	0.00	-	0.00	0.0
54.46	413.4	247.9	294.6	9.0	-6.4	2.2	6	clean SAND to silty SAND	125	5.0	83	50	95	43	-	-	10	16	0.00	-	0.00	0.0
54.63	431.3	258.4	301.8	9.1	-6.4	2.1	6	clean SAND to silty SAND	125	5.0	86	52	95	43	-	-	10	16	0.00	-	0.00	0.0
54.79	459.7	275.2	322.3	10.3	-6.4	2.2	6	clean SAND to silty SAND	125	5.0	92	55	95	43	-	-	10	16	0.00	-	0.00	0.0
54.96	472.5	282.5	340.2	11.8	-6.5	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	31.1	9.9	11	16	0.00	-	0.00	0.0
55.12	474.6	283.6	339.2	11.6	-6.4	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	31.3	9.9	11	16	0.00	-	0.00	0.0
55.28	449.7	268.5	334.2	12.1	-6.4	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	29.6	9.9	12	16	0.00	-	0.00	0.0
55.45	425.6	253.8	317.5	11.2	-6.2	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	28.0	9.9	12	16	0.00	-	0.00	0.0
55.61	396.1	236.1	292.8	9.6	-6.1	2.5	6	clean SAND to silty SAND	125	5.0	73	47	95	43	-	-	12	16	0.00	-	0.00	0.0
55.78	370.4	220.6	268.3	8.1	-6.0	2.2	6	clean SAND to silty SAND	125	5.0	74	44	93	42	-	-	11	16	0.00	-	0.00	0.0
55.94	339.8	202.1	237.0	6.1	-6.0	1.8	6	clean SAND to silty SAND	125	5.0	68	40	90	42	-	-	10	16	0.00	-	0.00	0.0
56.11	340.2	202.2	224.7	4.8	-5.9	1.4	6	clean SAND to silty SAND	125	5.0	68	40	90	42	-	-	8	16	0.00	-	0.00	0.0
56.27	332.4	197.3	213.1	4.0	-5.9	1.2	6	clean SAND to silty SAND	125	5.0	66	39	89	42	-	-	7	16	0.00	-	0.00	0.0
56.43	338.6	200.9	214.1	3.9	-6.0	1.2	6	clean SAND to silty SAND	125	5.0	68	40	90	42	-	-	7	16	0.00	-	0.00	0.0
56.60	322.4	191.1	209.7	4.1	-6.0	1.3	6	clean SAND to silty SAND	125	5.0	64	38	88	41	-	-	8	16	0.00	-	0.00	0.0
56.76	286.3	169.5	189.8	3.6	-6.0	1.3	6	clean SAND to silty SAND	125	5.0	57	34	84	41	-	-	9	16	0.00	-	0.00	0.0
56.93	277.2	164.0	179.4	3.0	-6.0	1.1	6	clean SAND to silty SAND	125	5.0	55	33	83	41	-	-	8	16	0.00	-	0.00	0.0
57.09	327.4	193.4	201.2	3.2	-5.9	1.0	6	clean SAND to silty SAND	125	5.0	65	39	89	42	-	-	6	16	0.00	-	0.00	0.0
57.25	359.6	212.3	212.3	2.9	-5.8	0.8	6	clean SAND to silty SAND	125	5.0	72	42	92	42	-	-	5	16	0.00	-	0.00	0.0
57.42	346.6	204.4	204.4	2.8	-6.2	0.8	6	clean SAND to silty SAND	125	5.0	69	41	91	42	-	-	5	16	0.00	-	0.00	0.0
57.58	360.6	212.5	214.0	3.4	-6.4	0.9	6	clean SAND to silty SAND	125	5.0	72	42	92	42	-	-	5	16	0.00	-	0.00	0.0
57.75	380.4	223.9	227.0	3.8	-6.5	1.0	6	clean SAND to silty SAND	125	5.0	76	45	94	42	-	-	5	16	0.00	-	0.00	0.0
57.91	374.6	220.3	228.2	4.1	-6.8	1.1	6	clean SAND to silty SAND	125	5.0	75	44	93	42	-	-	6	16	0.00	-	0.00	0.0
58.07	393.9	231.4	237.3	4.3	-7.0	1.1	6	clean SAND to silty SAND	125	5.0	79	46	95	42	-	-	6	16	0.00	-	0.00	0.0
58.24	395.9	232.4	240.7	4.6	-7.0	1.2	6	clean SAND to silty SAND	125	5.0	79	46	95	42	-	-	6	16	0.00	-	0.00	0.0
58.40	363.1	212.9	235.3	5.3	-7.0	1.5	6	clean SAND to silty SAND	125	5.0	73	43	92	42	-	-	8	16	0.00	-	0.00	0.0
58.57	343.1	201.0	239.5	6.5	-7.0	1.9	6	clean SAND to silty SAND	125	5.0	69	40	90	42	-	-	10	16	0.00	-	0.00	0.0
58.73	320.7	187.7	236.8	6.9	-7.0	2.2	6	clean SAND to silty SAND	125	5.0	64	38	88	41	-	-	12	16	0.00	-	0.00	0.0
58.89	292.3	170.9	224.6	6.6	-6.7	2.3	5	silty SAND to sandy SILT	120	4.0	73	43	85	41	-	-	13	16	0.00	-	0.00	0.0
59.06	311.3	181.9	223.6	6.0	-6.8	2.0	6	clean SAND to silty SAND	125	5.0	62	36	87	41	-	-	11	16	0.00	-	0.00	0.0
59.22	342.3	199.8	217.0	4.3	-6.9	1.3	6	clean SAND to silty SAND	125	5.0	68	40	90	42	-	-	8	16	0.00	-	0.00	0.0
59.39	336.4	196.2	197.7	2.9	-6.9	0.9	6	clean SAND to silty SAND	125	5.0	67	39	89	42	-	-	5	16	0.00	-	0.00	0.0
59.55	339.9	198.1	207.6	3.6	-7.0	1.1	6	clean SAND to silty SAND	125	5.0	68	40	90	42	-	-	6	16	0.00	-	0.00	0.0
59.71	300.1	174.7	202.4	4.5	-7.0	1.5	6	clean SAND to silty SAND	125	5.0	60	35	85	41	-	-	10	16	0.00	-	0.00	0.0
59.88	278.7	162.1	201.7	5.1	-7.0	1.9	6	clean SAND to silty SAND	125	5.0	56	32	83	41	-	-	12	16	0.00	-	0.00	0.0

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

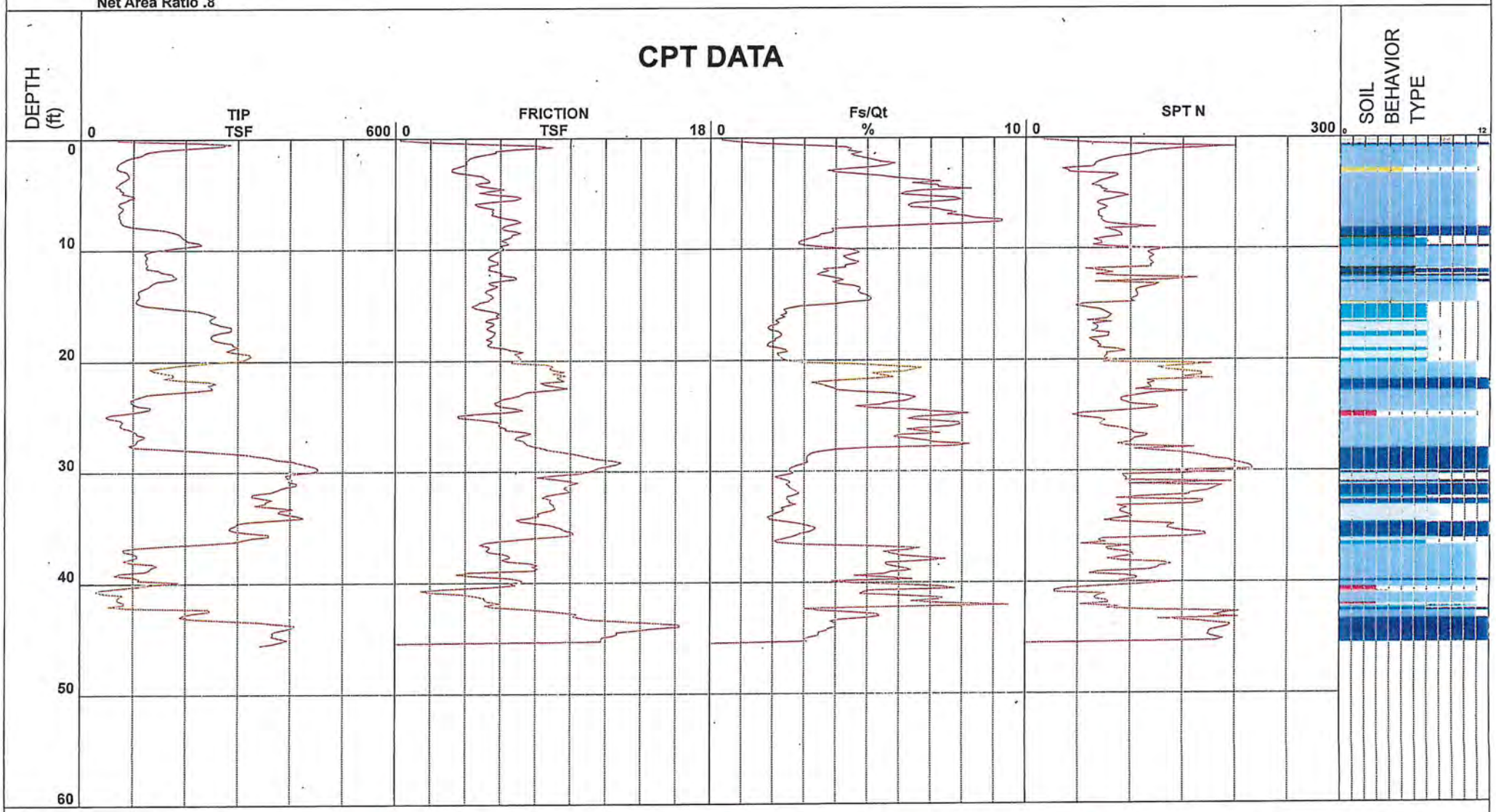
Middle Earth Geo Testing

Petra Inc

Project	Seville Solar Site	Operator	RA-JC	Filename	SDF(240).cpt
Job Number	332-12	Cone Number	DSG1104	GPS	
Hole Number	CPT-05	Date and Time	11/13/2012 1:49:54 PM	Maximum Depth	45.60 ft
EST GW Depth During Test					

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

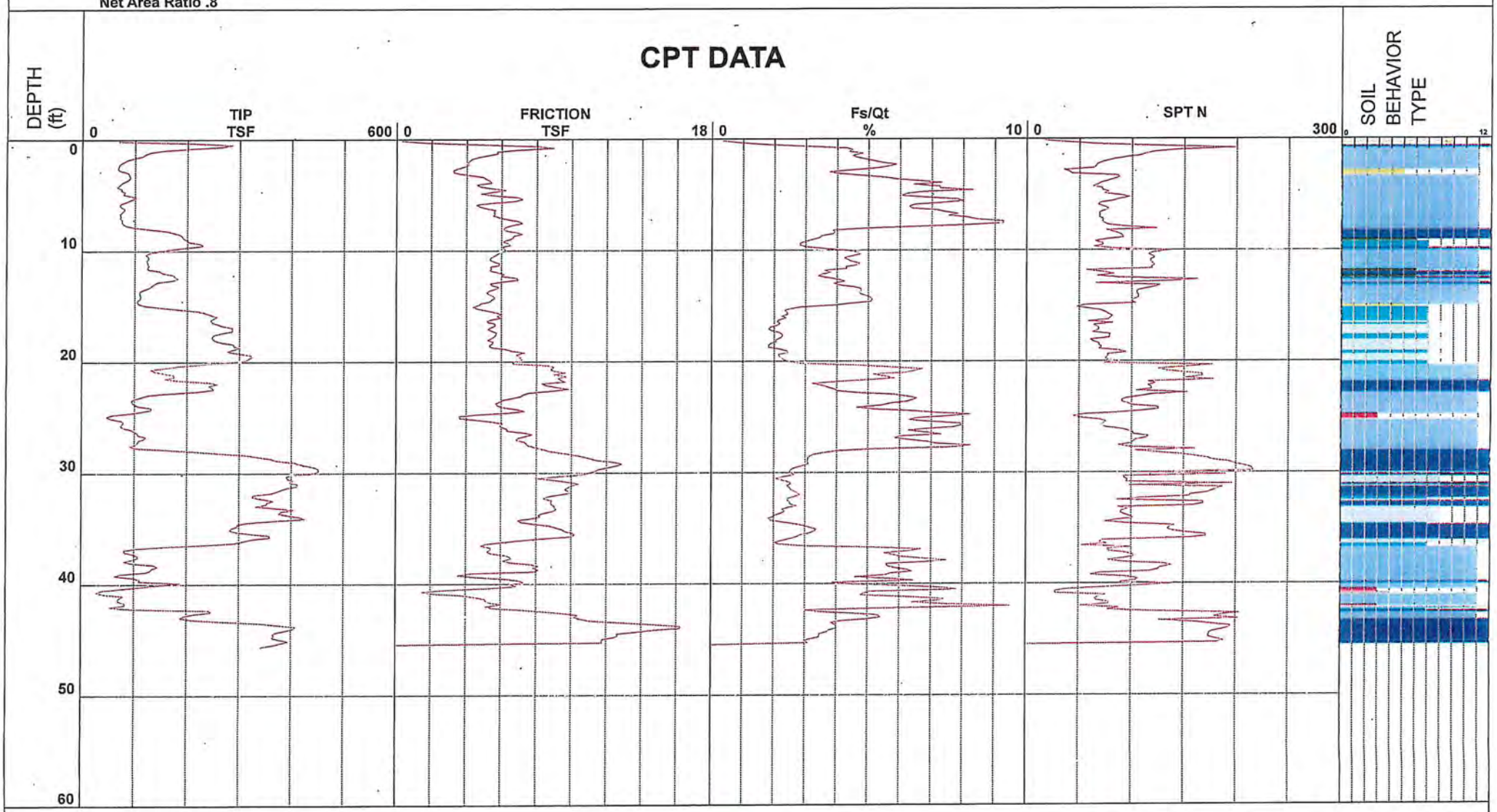
S*Soil behavior type and SPT based on data from UBC-1983

Petra Inc

Project	Seville Solar Site	Operator	RA-JC	Filename	SDF(240).cpt
Job Number	332-12	Cone Number	DSG1104	GPS	
Hole Number	CPT-05	Date and Time	11/13/2012 1:49:54 PM	Maximum Depth	45.60 ft
EST GW Depth During Test					

Net Area Ratio .8

CPT DATA



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8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

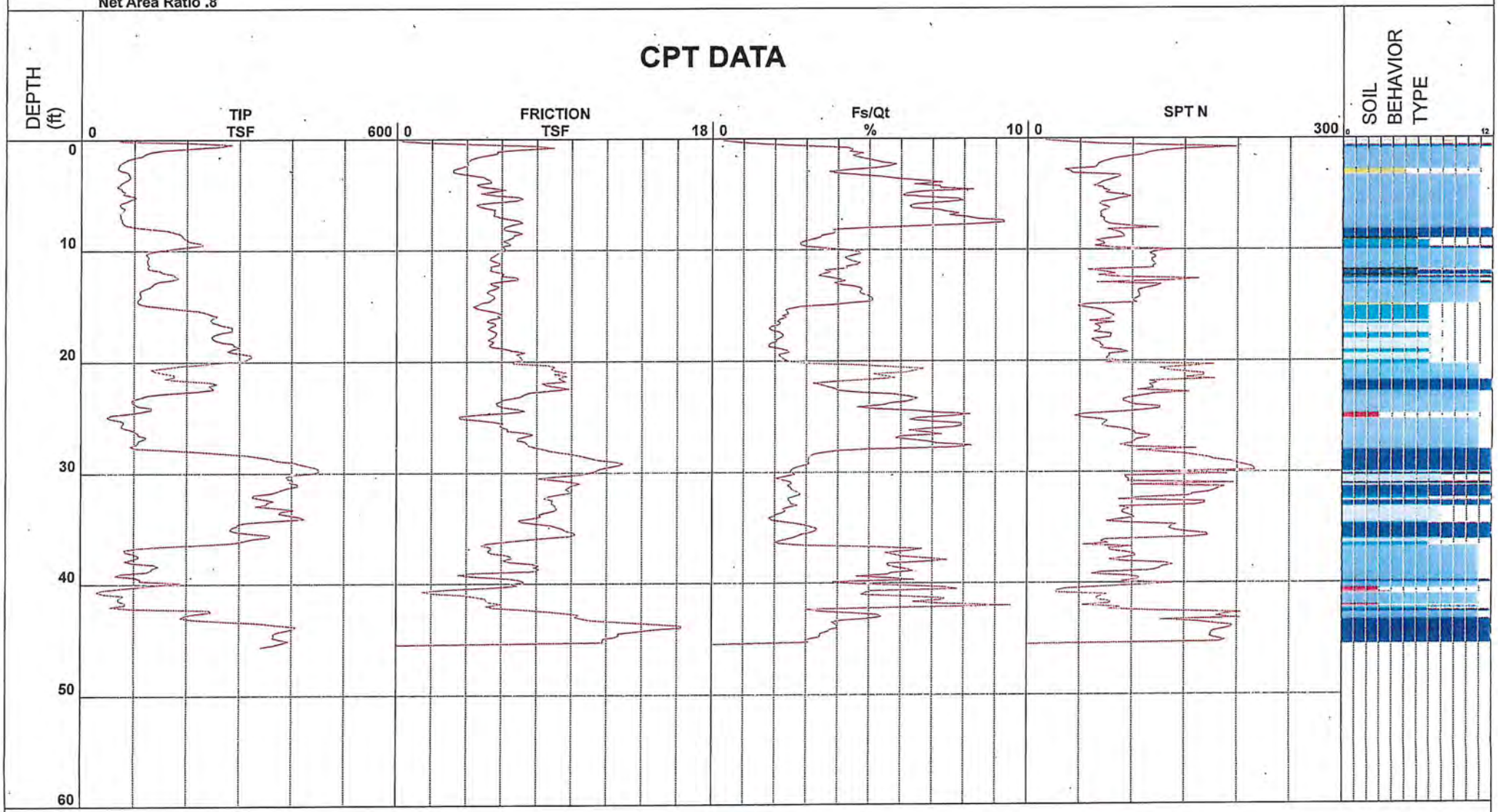
Cone Size 10cm squared

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

Petra Inc

Project	Seville Solar Site	Operator	RA-JC	Filename	SDF(240).cpt
Job Number	332-12	Cone Number	DSG1104	GPS	
Hole Number	CPT-05	Date and Time	11/13/2012 1:49:54 PM	Maximum Depth	45.60 ft
EST GW Depth During Test					

Net Area Ratio .8



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

Cone Size 10cm squared

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

Seville Solar Site

Project ID: Petra Geotech
Data File: SDF(240).cpt
CPT Date: 11/13/2012 1:49:54 PM
GW During Test: 33 ft

Sounding ID: CPT-05
Project No: 332-12
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qincs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato -	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N 60	SPT R-N1 60	Rel Den -	Fin Ang deg	Und Shr tsf	OCR - -	Fin Ic	Nk - -	Vol Strn	Dry Stlmt 0.00	Liq Stlmt 0.00	Cycl SStn -
0.33	206.6	331.3	331.3	1.7	0.0	0.8	6	clean SAND to silty SAND	125	5.0	41	66	95	48	-	-	5	16	N/A	0.00	N/A	N/A
0.49	284.9	456.9	460.0	4.8	0.0	1.7	6	clean SAND to silty SAND	125	5.0	57	91	95	48	-	-	5	16	N/A	0.00	N/A	N/A
0.66	265.3	425.4	503.9	8.0	0.0	3.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	17.6	9.9	10	16	N/A	0.00	N/A	N/A
0.82	207.9	333.5	474.1	8.9	0.0	4.3	9	very stiff fine SOIL	120	2.0	100	100	95	48	-	-	15	30	N/A	0.00	N/A	N/A
0.98	154.3	247.4	388.7	6.9	-0.1	4.5	9	very stiff fine SOIL	120	2.0	77	100	95	48	-	-	18	30	N/A	0.00	N/A	N/A
1.15	129.6	207.8	341.0	5.7	-0.1	4.4	9	very stiff fine SOIL	120	2.0	65	100	91	48	-	-	19	30	N/A	0.00	N/A	N/A
1.31	120.0	192.5	341.4	5.8	-0.1	4.8	9	very stiff fine SOIL	120	2.0	60	98	89	48	-	-	20	30	N/A	0.00	N/A	N/A
1.48	113.8	182.5	317.1	5.1	0.0	4.5	9	very stiff fine SOIL	120	2.0	57	91	87	48	-	-	20	30	N/A	0.00	N/A	N/A
1.64	99.9	160.3	297.4	4.6	-0.1	4.6	9	very stiff fine SOIL	120	2.0	50	80	83	48	-	-	21	30	N/A	0.00	N/A	N/A
1.80	87.4	140.2	283.7	4.3	-0.1	4.9	9	very stiff fine SOIL	120	2.0	44	70	78	48	-	-	23	30	N/A	0.00	N/A	N/A
1.97	80.5	129.2	279.6	4.1	0.0	5.1	9	very stiff fine SOIL	120	2.0	40	65	75	48	-	-	25	30	N/A	0.00	N/A	N/A
2.13	74.5	119.4	275.8	4.0	0.0	5.4	9	very stiff fine SOIL	120	2.0	37	60	73	48	-	-	26	30	N/A	0.00	N/A	N/A
2.30	70.0	112.2	280.9	4.1	0.0	5.9	9	very stiff fine SOIL	120	2.0	35	56	71	48	-	-	28	30	N/A	0.00	N/A	N/A
2.46	68.6	110.1	270.5	3.9	0.0	5.6	9	very stiff fine SOIL	120	2.0	34	55	70	48	-	-	29	30	N/A	0.00	N/A	N/A
2.62	67.0	107.5	255.6	3.5	-0.1	5.2	9	very stiff fine SOIL	120	2.0	33	54	69	47	-	-	27	30	N/A	0.00	N/A	N/A
2.79	72.6	116.5	241.3	3.2	0.0	4.4	9	very stiff fine SOIL	120	2.0	36	58	72	48	-	-	24	30	N/A	0.00	N/A	N/A
2.95	86.3	138.4	242.1	3.2	0.0	3.7	8	stiff SAND to clayy SAND	115	1.0	86	100	-	-	5.7	9.9	20	16	N/A	0.00	N/A	N/A
3.12	88.2	141.4	255.3	3.5	0.0	4.0	8	stiff SAND to clayy SAND	115	1.0	88	100	-	-	5.8	9.9	21	16	N/A	0.00	N/A	N/A
3.28	90.5	145.1	288.7	4.4	0.0	4.9	9	very stiff fine SOIL	120	2.0	45	73	79	48	-	-	23	30	N/A	0.00	N/A	N/A
3.45	91.5	146.7	311.6	5.0	-0.1	5.4	9	very stiff fine SOIL	120	2.0	46	73	80	48	-	-	24	30	N/A	0.00	N/A	N/A
3.61	86.7	139.0	317.2	5.1	-0.2	5.9	9	very stiff fine SOIL	120	2.0	43	70	78	47	-	-	26	30	N/A	0.00	N/A	N/A
3.77	80.7	129.4	327.7	5.3	-0.6	6.6	9	very stiff fine SOIL	120	2.0	40	65	75	47	-	-	29	30	N/A	0.00	N/A	N/A
3.94	73.9	118.5	334.3	5.4	-0.3	7.3	9	very stiff fine SOIL	120	2.0	37	59	73	46	-	-	31	30	N/A	0.00	N/A	N/A
4.10	71.2	114.2	301.1	4.6	-0.2	6.4	9	very stiff fine SOIL	120	2.0	36	57	71	46	-	-	29	30	N/A	0.00	N/A	N/A
4.27	65.6	105.2	311.5	4.8	-0.4	7.3	9	very stiff fine SOIL	120	2.0	33	53	69	45	-	-	32	30	N/A	0.00	N/A	N/A
4.43	75.0	120.2	335.3	5.4	0.0	7.3	9	very stiff fine SOIL	120	2.0	37	60	73	46	-	-	31	30	N/A	0.00	N/A	N/A
4.59	74.8	119.9	366.6	6.2	-0.3	8.3	9	very stiff fine SOIL	120	2.0	37	60	73	45	-	-	33	30	N/A	0.00	N/A	N/A
4.76	81.7	131.0	336.4	5.5	-0.6	6.8	9	very stiff fine SOIL	120	2.0	41	66	76	46	-	-	29	30	N/A	0.00	N/A	N/A
4.92	77.4	124.1	309.1	4.8	-0.3	6.2	9	very stiff fine SOIL	120	2.0	39	62	74	45	-	-	28	30	N/A	0.00	N/A	N/A
5.09	94.6	151.7	340.1	5.7	-0.2	6.1	9	very stiff fine SOIL	120	2.0	47	76	81	46	-	-	26	30	N/A	0.00	N/A	N/A
5.25	102.6	164.6	384.2	7.0	-0.5	6.8	9	very stiff fine SOIL	120	2.0	51	82	83	46	-	-	27	30	N/A	0.00	N/A	N/A
5.41	92.1	147.7	395.7	7.2	-0.3	7.8	9	very stiff fine SOIL	120	2.0	46	74	80	46	-	-	30	30	N/A	0.00	N/A	N/A
5.58	85.1	136.5	384.2	6.8	-0.2	8.0	9	very stiff fine SOIL	120	2.0	42	68	77	45	-	-	31	30	N/A	0.00	N/A	N/A
5.74	74.5	119.4	337.2	5.5	-0.2	7.4	9	very stiff fine SOIL	120	2.0	37	60	73	44	-	-	31	30	N/A	0.00	N/A	N/A
5.91	70.6	113.2	300.9	4.6	-0.2	6.5	9	very stiff fine SOIL	120	2.0	35	57	71	44	-	-	30	30	N/A	0.00	N/A	N/A
6.07	75.1	120.4	306.2	4.7	-0.2	6.3	9	very stiff fine SOIL	120	2.0	38	60	73	44	-	-	29	30	N/A	0.00	N/A	N/A
6.23	81.2	129.0	320.6	5.2	-0.2	6.4	9	very stiff fine SOIL	120	2.0	41	65	75	44	-	-	28	30	N/A	0.00	N/A	N/A
6.40	78.9	123.7	338.4	5.6	-0.3	7.2	9	very stiff fine SOIL	120	2.0	39	62	74	44	-	-	30	30	N/A	0.00	N/A	N/A
6.56	74.6	115.6	333.5	5.5	-0.4	7.4	9	very stiff fine SOIL	120	2.0	37	58	72	44	-	-	32	30	N/A	0.00	N/A	N/A
6.73	71.6	109.5	335.7	5.6	-0.2	7.9	9	very stiff fine SOIL	120	2.0	36	55	70	43	-	-	33	30	N/A	0.00	N/A	N/A
6.89	73.1	110.4	328.6	5.5	-0.4	7.6	9	very stiff fine SOIL	120	2.0	37	55	70	43	-	-	32	30	N/A	0.00	N/A	N/A
7.05	72.2	107.9	341.2	5.9	-0.2	8.2	9	very stiff fine SOIL	120	2.0	36	54	70	43	-	-	34	30	N/A	0.00	N/A	N/A
7.22	75.9	112.0	355.9	6.4	-0.3	8.4	9	very stiff fine SOIL	120	2.0	38	56	71	43	-	-	34	30	N/A	0.00	N/A	N/A
7.38	75.3	120.7	396.7	7.0	-0.3	9.3	9	very stiff fine SOIL	120	2.0	38	60	73	43	-	-	35	30	N/A	0.00	N/A	N/A
7.55	77.4	124.1	403.1	7.2	0.2	9.3	9	very stiff fine SOIL	120	2.0	39	62	74	43	-	-	35	30	N/A	0.00	N/A	N/A
7.71	81.7	116.7	357.3	6.7	-0.2	8.2	9	very stiff fine SOIL	120	2.0	41	58	72	43	-	-	33	30	N/A	0.00	N/A	N/A
7.87	98.7	139.5	334.5	6.3	-0.3	6.4	9	very stiff fine SOIL	120	2.0	49	70	78	44	-	-	27	30	N/A	0.00	N/A	N/A
8.04	129.3	180.9	325.6	6.1	-0.2	4.7	9	very stiff fine SOIL	120	2.0	65	90	87	45	-	-	21	30	N/A	0.00	N/A	N/A
8.20	159.0	220.2	333.6	6.1	-0.2	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	10.5	9.9	17	16	N/A	0.00	N/A	N/A
8.37	174.5	239.4	356.2	6.8	-0.2	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.5	9.9	16	16	N/A	0.00	N/A	N/A
8.53	185.2	251.7	366.8	7.2	-0.2	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	12.2	9.9	16	16	N/A	0.00	N/A	N/A
8.69	190.1	256.1	355.8	6.7	-0.2	3.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	12.6	9.9	15	16	N/A	0.00	N/A	N/A
8.86	192.2	256.6	353.8	6.6	-0.2	3.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	12.7	9.9	14	16	N/A	0.00	N/A	N/A
9.02	199.0	263.3	350.5	6.4	-0.1	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	13.1	9.9	14	16	N/A	0.00	N/A	N/A
9.19	203.3	266.7	344.1	6.1	-0.1	3.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	13.4	9.9	13	16	N/A	0.00	N/A	N/A
9.35	224.6	292.1	362.6	6.3	-0.1	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	14.8	9.9	12	16	N/A	0.00	N/A	N/A
9.51	230.2	296.9	366.7	6.5	-0.1	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.2	9.9	12	16	N/A	0.00	N/A	N/A
9.68	202.0	258.3	335.7	6.0	-0.1	3.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	13.3	9.9	13	16	N/A	0.00	N/A	N/A
9.84	170.6	216.5	318.5	6.1	-0.1	3.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.3	9.9	16	16	N/A	0.00	N/A	N/A
10.01	143.1	180.2	310.7	6.2	-0.1	4.4	9	very stiff fine SOIL	120	2.0	72	90	86	45	-	-	20	30	N/A	0.00	N/A	N/A
10.17	126.0	157.2	297.5	5.9	-0.2	4.7	9	very stiff fine SOIL	120	2.0	62	79	82	44	-	-	22	30	N/A	0.00	N/A	N/A
10.34	121.1	150.0	290.9	5.7	-0.2	4.7	9	very stiff fine SOIL	120	2.0	61	75	80	44	-	-	22	30	N/A	0.00	N/A	N/A
10.50	124.8	153.4	285.5	5.6	-0.2	4.5	9	very stiff fine SOIL	120	2.0	62	77	81	44	-	-	21	30	N/A	0.00	N/A	N/A
10.66	126.9	154.7	278.1	5.4	-0.2	4.2	9	very stiff fine SOIL	120	2.0	63	77	81	44	-	-	21	30	N/A	0.00	N/A	N/A
10.83	122.7	148.4	275.2	5.3	-0.2	4.4	9	very stiff fine SOIL	120	2.0	61	74	80	44	-	-	21	30	N/A	0.00	N/A	N/A
10.99	123.4	148.2	279.4	5.5	-0.2	4.5	9	very stiff fine SOIL	120	2.0	62	74	80	44	-	-	22	30	N/A	0.00	N/A	N/A
11.16	124.8	148.8	289.1	5.9	-0.2	4.7	9	very stiff fine SOIL	120	2.0	62	74	80	44	-	-	22	30	N/A	0.00	N/A	N/A
11.32	127.4	150.7	287.1	5.9	-0.2	4.6	9	very stiff fine SOIL	120	2.0	64	75	81	44	-	-	22	30	N/A	0.00	N/A	N/A
11.48	124.7	146.4	271.0	5.3	-0.2	4.3	9	very stiff fine SOIL	120	2.0	62	73	80	44	-	-	21	30	N/A	0.00	N/A	N/A
11.65	125.7	146.6	272.3	5.4	-0.2	4.3	9	very stiff fine SOIL	120	2.0	63	73	80	44	-	-	21	30	N/A	0.00	N/A	N/A
11.81	148.3	171.7	272.0	5.3	-0.2	3.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	9.8	9.9	19	16	N/A	0.00	N/A	N/A
11.98	152.8	175.8	284.0	5.8	-0.2	3.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	10.1	9.9	18	16	N/A	0.00	N/A	N/A
12.14	174.0	198.8	297.7	6.1	-0.3	3.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.5	9.9	16	16	N/A	0.00	N/A	N/A
12.30	175.9	199.7	293.5	6.0	-0.2	3.4	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.6	9.9	16	16	N/A	0.00	N/A	N/A
12.47	182.9	206.3	314.7	6.9	-0.3	3.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	12.1	9.9	17	16	N/A	0.00	N/A	N/A
12.63	170.3	190.9	311.4	6.9	-0.3	4.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.2	9.9	18	16	N/A	0.00	N/A	N/A
12.80	144.4	160.9	285.3	6.1	-0.3	4.3	9	very stiff fine SOIL	120	2.0	72	80	83	44	-	-	20	30	N/A	0.00	N/A	N/A
12.96	136.8	151.4	262.5	5.3	-0.3	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	9.0	9.9	20	16	N/A	0.00	N/A	N/A
13.12	132.5	145.8	264.8	5.5	-0.2	4.1	9	very stiff fine SOIL	120	2.0	66	73	79	43	-	-	21	30	N/A	0.00	N/A	N/A
13.29	128.6	140.6	273.9	5.8	-0.3	4.6	9	very stiff fine SOIL	120	2.0	64	70	78	43	-	-	23	30	N/A	0.00	N/A	N/A
13.45	119.0	129.3	268.4	5.7	-0.3	4.8	9	very stiff fine SOIL	120	2.0	60	65	75	43	-	-	24	30	N/A	0.00	N/A	N/A
13.62	111.0	119.8	257.5	5.3	-0.2	4.8	9	very stiff fine SOIL	120	2.0	55	60	73	42	-	-	25	30	N/A	0.00	N/A	N/A
13.78	109.6	117.7	252.4	5.1	-0.3	4.7	9	very stiff fine SOIL	120	2.0	55	59	72	42	-	-	25	30	N/A	0.00	N/A	N/A
13.94	110.8	118.2	255.9	5.3	-0.3	4.8	9	very stiff fine SOIL	120	2.0	55	59	73	42	-	-	25	30	N/A	0.00	N/A	N/A
14.11	111.5	118.2	261.7	5.5	-0.3	5.0	9	very stiff fine SOIL	120	2.0	56	59	73	42	-	-	25	30	N/A	0.00	N/A	N/A
14.27	110.4	116.4	263.2	5.6	-0.3	5.1	9	very stiff fine SOIL	120	2.0	53	58	72	42	-	-	26	30	N/A	0.00	N/A	N/A
14.44	106.0	111.2	258.3	5.4	-0.3	5.2	9	very stiff fine SOIL	120	2.0	53	56	70	42	-	-	27	30	N/A	0.00	N/A	N/A
14.60	104.8	109.3	254.2	5.3	-0.3	5.1	9	very stiff fine SOIL	120	2.0	52	55	70	42	-	-	27	30	N/A	0.00	N/A	N/A
14.76	109.1	113.0	238.4	4.8	-0.3	4.5	9	very stiff fine SOIL	120	2.0	55	57	71	42	-	-	24	30	N/A	0.00	N/A	N/A
14.93	119.7	123.4	233.7	4.7	-0.3	4.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	7.9	9.9	22	16	N/A	0.00	N/A	N/A
15.09	151.7	155.6	230.0	4.4	-0.3	2.9	5	silty SAND to sandy SILT	120	4.0	38	39	82	43	-	-	16	16	N/A	0.00	N/A	N/A
15.26	187.8	191.5	251.2	4.7	-0.3	2.5	5	silty SAND to sandy SILT	120	4.0	47	48	88	44	-	-	13	16	N/A	0.00	N/A	N/A
15.42	221.1	224.3	276.7	5.1	-0.3	2.3	6	clean SAND to silty SAND	125	5.0	44	45	94	45	-	-	11	16	N/A	0.00	N/A	N/A

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Seville Solar Site

Project ID: Petra Geotech
Data File: SDF(240).cpt
CPT Date: 11/13/2012 1:49:54 PM
GW During Test: 33 ft

Sounding ID: CPT-05
Project No: 332-12
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato -	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N 60	SPT R-N1 60	Rel Den -	Ftn Ang deg	Und Shr tsf	OCR - -	Fin Ic	Nk - -	Vol Strn	Dry Stlmt 0.00	Liq Stlmt 0.00	Cycl SStn
15.58	235.9	237.9	292.7	5.7	-0.3	2.4	6	clean SAND to silty SAND	125	5.0	47	48	95	45	-	-	11	16	N/A	0.00	N/A	N/A
15.75	245.6	246.4	301.7	6.0	-0.3	2.4	6	clean SAND to silty SAND	125	5.0	49	49	95	45	-	-	11	16	N/A	0.00	N/A	N/A
15.91	256.8	256.2	303.9	5.7	-0.3	2.2	6	clean SAND to silty SAND	125	5.0	51	51	95	45	-	-	10	16	N/A	0.00	N/A	N/A
16.08	250.5	248.6	301.9	5.9	-0.3	2.4	6	clean SAND to silty SAND	125	5.0	50	50	95	45	-	-	11	16	N/A	0.00	N/A	N/A
16.24	244.7	241.5	287.4	5.3	-0.3	2.2	6	clean SAND to silty SAND	125	5.0	49	48	95	45	-	-	10	16	N/A	0.00	N/A	N/A
16.40	247.5	243.0	285.4	5.1	-0.2	2.1	6	clean SAND to silty SAND	125	5.0	49	49	95	45	-	-	10	16	N/A	0.00	N/A	N/A
16.57	256.3	250.3	296.1	5.6	-0.2	2.2	6	clean SAND to silty SAND	125	5.0	51	50	95	45	-	-	10	16	N/A	0.00	N/A	N/A
16.73	267.4	259.9	302.6	5.6	-0.2	2.1	6	clean SAND to silty SAND	125	5.0	53	52	95	45	-	-	10	16	N/A	0.00	N/A	N/A
16.90	285.7	276.3	309.6	5.4	-0.2	1.9	6	clean SAND to silty SAND	125	5.0	57	55	95	46	-	-	9	16	N/A	0.00	N/A	N/A
17.06	286.5	275.6	305.9	5.2	-0.2	1.8	6	clean SAND to silty SAND	125	5.0	57	55	95	46	-	-	8	16	N/A	0.00	N/A	N/A
17.23	285.3	273.1	306.8	5.4	-0.2	1.9	6	clean SAND to silty SAND	125	5.0	57	55	95	46	-	-	9	16	N/A	0.00	N/A	N/A
17.39	263.9	251.4	296.4	5.7	-0.2	2.2	6	clean SAND to silty SAND	125	5.0	53	50	95	45	-	-	10	16	N/A	0.00	N/A	N/A
17.55	252.0	238.8	287.6	5.7	-0.1	2.3	6	clean SAND to silty SAND	125	5.0	50	48	95	45	-	-	11	16	N/A	0.00	N/A	N/A
17.72	247.2	233.1	283.0	5.6	-0.1	2.3	6	clean SAND to silty SAND	125	5.0	49	47	95	45	-	-	11	16	N/A	0.00	N/A	N/A
17.88	248.5	233.3	280.6	5.5	-0.1	2.2	6	clean SAND to silty SAND	125	5.0	50	47	95	45	-	-	11	16	N/A	0.00	N/A	N/A
18.05	253.6	236.9	278.7	5.2	-0.1	2.1	6	clean SAND to silty SAND	125	5.0	51	47	95	45	-	-	10	16	N/A	0.00	N/A	N/A
18.21	267.8	249.0	290.5	5.5	-0.1	2.1	6	clean SAND to silty SAND	125	5.0	54	50	95	45	-	-	10	16	N/A	0.00	N/A	N/A
18.37	288.4	266.9	300.8	5.5	-0.1	1.9	6	clean SAND to silty SAND	125	5.0	58	53	95	45	-	-	9	16	N/A	0.00	N/A	N/A
18.54	289.5	266.7	297.9	5.3	-0.1	1.8	6	clean SAND to silty SAND	125	5.0	58	53	95	45	-	-	8	16	N/A	0.00	N/A	N/A
18.70	299.7	274.8	305.0	5.4	-0.1	1.8	6	clean SAND to silty SAND	125	5.0	60	55	95	45	-	-	8	16	N/A	0.00	N/A	N/A
18.87	287.8	262.7	307.1	6.2	-0.1	2.2	6	clean SAND to silty SAND	125	5.0	58	53	95	45	-	-	10	16	N/A	0.00	N/A	N/A
19.03	276.8	251.5	305.2	6.6	-0.1	2.4	6	clean SAND to silty SAND	125	5.0	55	50	95	45	-	-	11	16	N/A	0.00	N/A	N/A
19.19	297.8	269.4	325.2	7.3	-0.1	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	19.7	9.9	11	16	N/A	0.00	N/A	N/A
19.36	320.4	288.7	330.6	6.8	-0.1	2.1	6	clean SAND to silty SAND	125	5.0	64	58	95	46	-	-	9	16	N/A	0.00	N/A	N/A
19.52	324.5	291.1	334.2	7.0	-0.1	2.2	6	clean SAND to silty SAND	125	5.0	65	58	95	46	-	-	9	16	N/A	0.00	N/A	N/A
19.69	318.0	284.0	330.1	7.1	-0.1	2.2	6	clean SAND to silty SAND	125	5.0	64	57	95	45	-	-	10	16	N/A	0.00	N/A	N/A
19.85	312.4	277.8	327.0	7.2	-0.1	2.3	6	clean SAND to silty SAND	125	5.0	62	56	95	45	-	-	10	16	N/A	0.00	N/A	N/A
20.01	276.4	244.8	300.5	6.7	-0.1	2.4	6	clean SAND to silty SAND	125	5.0	55	49	95	45	-	-	11	16	N/A	0.00	N/A	N/A
20.18	232.4	204.9	277.6	6.6	-0.1	2.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.3	9.9	14	16	N/A	0.00	N/A	N/A
20.34	186.1	163.5	303.8	8.6	-0.1	4.7	9	very stiff fine SOIL	120	2.0	93	82	83	43	-	-	21	30	N/A	0.00	N/A	N/A
20.51	158.4	138.6	311.8	9.0	-0.2	5.7	9	very stiff fine SOIL	120	2.0	79	69	78	42	-	-	26	30	N/A	0.00	N/A	N/A
20.67	131.2	114.4	312.1	8.8	-0.3	6.8	9	very stiff fine SOIL	120	2.0	66	57	71	41	-	-	30	30	N/A	0.00	N/A	N/A
20.83	139.0	120.6	313.3	9.0	-0.2	6.5	9	very stiff fine SOIL	120	2.0	70	60	73	41	-	-	29	30	N/A	0.00	N/A	N/A
21.00	156.2	135.0	324.2	9.7	-0.3	6.2	9	very stiff fine SOIL	120	2.0	78	68	77	42	-	-	27	30	N/A	0.00	N/A	N/A
21.16	175.0	150.7	307.6	9.0	-0.2	5.2	9	very stiff fine SOIL	120	2.0	88	75	81	42	-	-	24	30	N/A	0.00	N/A	N/A
21.33	175.7	150.7	321.6	9.7	-0.1	5.6	9	very stiff fine SOIL	120	2.0	88	75	81	42	-	-	25	30	N/A	0.00	N/A	N/A
21.49	158.1	135.1	312.5	9.2	-0.1	5.9	9	very stiff fine SOIL	120	2.0	79	68	77	42	-	-	26	30	N/A	0.00	N/A	N/A
21.65	187.2	159.3	313.1	9.4	-0.3	5.0	9	very stiff fine SOIL	120	2.0	94	80	82	42	-	-	23	30	N/A	0.00	N/A	N/A
21.82	241.7	205.0	323.2	9.6	-0.2	4.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.9	9.9	18	16	N/A	0.00	N/A	N/A
21.98	257.2	217.4	304.8	8.3	0.0	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	17.0	9.9	15	16	N/A	0.00	N/A	N/A
22.15	242.1	203.8	303.7	8.6	0.1	3.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.9	9.9	18	16	N/A	0.00	N/A	N/A
22.31	247.8	208.0	314.3	9.2	0.0	3.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.3	9.9	17	16	N/A	0.00	N/A	N/A
22.47	250.5	209.5	325.5	9.8	0.0	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.5	9.9	17	16	N/A	0.00	N/A	N/A
22.64	219.5	182.9	300.4	8.8	0.0	4.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	14.4	9.9	19	16	N/A	0.00	N/A	N/A
22.80	160.9	133.6	271.5	7.5	0.0	4.7	9	very stiff fine SOIL	120	2.0	80	67	77	41	-	-	23	30	N/A	0.00	N/A	N/A
22.97	126.1	104.3	270.1	7.3	0.1	5.8	9	very stiff fine SOIL	120	2.0	63	52	68	40	-	-	29	30	N/A	0.00	N/A	N/A
23.13	113.1	93.3	268.0	7.1	-0.1	6.3	9	very stiff fine SOIL	120	2.0	57	47	65	39	-	-	32	30	N/A	0.00	N/A	N/A
23.30	100.7	72.0	-	6.6	0.0	6.6	9	very stiff fine SOIL	120	2.0	50	36	56	39	-	-	36	30	N/A	0.00	N/A	N/A
23.46	95.1	67.5	-	6.1	-0.4	6.5	9	very stiff fine SOIL	120	2.0	48	34	54	39	-	-	36	30	N/A	0.00	N/A	N/A
23.62	95.1	67.1	-	5.9	-0.2	6.3	9	very stiff fine SOIL	120	2.0	48	34	54	39	-	-	36	30	N/A	0.00	N/A	N/A
23.79	99.8	81.2	235.1	5.7	-0.3	5.8	9	very stiff fine SOIL	120	2.0	50	41	60	39	-	-	32	30	N/A	0.00	N/A	N/A
23.95	106.4	86.2	235.6	5.8	0.0	5.5	9	very stiff fine SOIL	120	2.0	53	43	62	39	-	-	30	30	N/A	0.00	N/A	N/A
24.12	131.8	106.4	238.2	6.1	-0.2	4.7	9	very stiff fine SOIL	120	2.0	66	53	69	40	-	-	26	30	N/A	0.00	N/A	N/A
24.28	131.5	105.8	255.1	6.9	0.0	5.3	9	very stiff fine SOIL	120	2.0	66	53	69	40	-	-	27	30	N/A	0.00	N/A	N/A
24.44	113.5	91.0	270.1	7.3	0.0	6.5	9	very stiff fine SOIL	120	2.0	57	46	64	39	-	-	32	30	N/A	0.00	N/A	N/A
24.61	80.8	60.1	-	6.4	0.0	7.3	3	silty CLAY to CLAY	115	1.5	59	40	-	-	6.2	9.9	40	15	N/A	0.00	N/A	N/A
24.77	57.0	38.4	-	4.7	-0.3	8.4	3	silty CLAY to CLAY	115	1.5	38	26	-	-	3.9	9.9	50	15	N/A	0.00	N/A	N/A
24.94	47.4	31.7	-	3.6	-0.1	7.8	3	silty CLAY to CLAY	115	1.5	32	21	-	-	3.2	9.9	52	15	N/A	0.00	N/A	N/A
25.10	55.6	36.9	-	3.6	0.1	6.7	3	silty CLAY to CLAY	115	1.5	37	25	-	-	3.8	9.9	46	15	N/A	0.00	N/A	N/A
25.26	74.0	48.9	-	4.7	0.0	6.4	3	silty CLAY to CLAY	115	1.5	49	33	-	-	5.1	9.9	43	15	N/A	0.00	N/A	N/A
25.43	79.5	52.2	-	5.5	0.0	7.1	3	silty CLAY to CLAY	115	1.5	53	35	-	-	5.5	9.9	41	15	N/A	0.00	N/A	N/A
25.59	76.7	50.1	-	6.1	-0.1	8.1	3	silty CLAY to CLAY	115	1.5	51	33	-	-	5.3	9.9	44	15	N/A	0.00	N/A	N/A
25.76	74.2	48.1	-	5.9	-0.5	8.1	3	silty CLAY to CLAY	115	1.5	49	32	-	-	5.1	9.9	45	15	N/A	0.00	N/A	N/A
25.92	78.5	50.6	-	6.0	-0.1	7.8	3	silty CLAY to CLAY	115	1.5	52	34	-	-	5.4	9.9	44	15	N/A	0.00	N/A	N/A
26.08	93.3	59.8	-	6.3	-0.1	6.9	3	silty CLAY to CLAY	115	1.5	62	40	-	-	6.5	9.9	39	15	N/A	0.00	N/A	N/A
26.25	100.2	63.8	-	6.3	-0.1	6.4	9	very stiff fine SOIL	120	2.0	50	32	52	38	-	-	37	30	N/A	0.00	N/A	N/A
26.41	106.2	67.2	-	7.3	0.0	7.0	9	very stiff fine SOIL	120	2.0	53	34	54	38	-	-	38	30	N/A	0.00	N/A	N/A
26.58	106.3	66.8	-	7.8	-0.1	7.4	9	very stiff fine SOIL	120	2.0	53	33	54	38	-	-	39	30	N/A	0.00	N/A	N/A
26.74	121.8	93.5	262.0	7.3	-0.2	6.1	9	very stiff fine SOIL	120	2.0	61	47	65	39	-	-	31	30	N/A	0.00	N/A	N/A
26.90	118.8	90.9	253.7	6.9	0.0	5.9	9	very stiff fine SOIL	120	2.0	59	45	64	39	-	-	31	30	N/A	0.00	N/A	N/A
27.07	108.1	66.7	-	6.9	0.0	6.4	9	very stiff fine SOIL	120	2.0	54	33	54	38	-	-	36	30	N/A	0.00	N/A	N/A
27.23	106.5	65.4	-	7.3	0.0	7.0	9	very stiff fine SOIL	120	2.0	53	33	53	38	-	-	38	30	N/A	0.00	N/A	N/A
27.40	103.9	63.4	-	7.4	0.0	7.3	9	very stiff fine SOIL	120	2.0	52	32	52	38	-	-	39	30	N/A	0.00	N/A	N/A
27.56	91.4	55.4	-	7.5	-0.1	8.4	3	silty CLAY to CLAY	115	1.5	61	37	-	-	6.3	9.9	44	15	N/A	0.00	N/A	N/A
27.72	103.2	62.2	-	7.9	0.3	7.8	9	very stiff fine SOIL	120	2.0	52	31	51	38	-	-	41	30	N/A	0.00	N/A	N/A
27.89	167.6	126.0	274.1	8.4	0.6	5.1	9	very stiff fine SOIL	120	2.0	84	63	75	41	-	-	25	30	N/A	0.00	N/A	N/A
28.05	216.9	162.6	279.4	8.7	0.0	4.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	14.3	9.9	20	16	N/A	0.00	N/A	N/A
28.22	269.5	201.5	300.5	9.5	0.0	3.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	17.7	9.9	16	16	N/A	0.00	N/A	N/A
28.38	311.8	232.4	320.2	10.1	0.1	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	20.5	9.9	14	16	N/A	0.00	N/A	N/A
28.54	335.8	249.6	334.3	10.6	0.0	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	22.1	9.9	14	16	N/A	0.00	N/A	N/A
28.71	360.4	267.2	348.3	11.0	0.0	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.8	9.9	13	16	N/A	0.00	N/A	N/A
28.87	370.8	274.1	355.9	11.4	0.0	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	24.4	9.9	13	16	N/A	0.00	N/A	N/A
29.04	405.1	298.7	379.6	12.4	0.0	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	26.7	9.9	12	16	N/A	0.00	N/A	N/A
29.20	415.9	305.8	388.7	12.9	0.0	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	27.4	9.9	12	16	N/A	0.00	N/A	N/A
29.36	431.2	316.2	391.2	12.6	0.1	2.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	28.4	9.9	12	16	N/A	0.00	N/A	N/A
29.53	447.4	327.2	392.2	12.1	0.1	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	29.5	9.9	11	16	N/A	0.00	N/A	N/A
29.69	450.9	328.9	388.1	11.6	0.1	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	29.8	9.9	10	16	N/A	0.00	N/A	N/A
29.86	452.1	328.9	385.7	11.4	0.1	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	29.8	9.9	10	16	N/A	0.00	N/A	N/A
30.02	441.5	320.4	376.7	11.0	0.1	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	29.1	9.9	10	16	N/A	0.00	N/A	N/A
30.19	399.8	289.3	352.7	10.6	0.1	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	26.4	9.9	11	16	N/A	0.00	N/A	N/A
30.35	389.6	281.2	332.6	9.2	0.2	2.4	6	clean SAND to silty SAND	125	5.0	78	56	95	44	-	-	10	16	N/A	0.00	N/A	N/A
30.51	393.5	283.3	322.7	8.1	0.3	2.1	6	clean SAND to silty SAND	125	5.0	79	57	95	44	-	-	9	16	N/A	0.00	N/A	N/A
30.68	403.5	289.6	337.1	9.1	0.3	2.3	6	clean SAND to silty SAND	125	5.0	81	58	95	44	-	-	10	16	N/A	0.00	N/A	N/A
30.84	395.5	283.1	340.2	9.9	0.4	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	26.1	9.9	11	16	N/A	0.00	N/A	N/A

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Seville Solar Site

Project ID: Petra Geotech
Data File: SDF(240).cpt
CPT Date: 11/13/2012 1:49:54 PM
GW During Test: 33 ft

Sounding ID: CPT-05
Project No: 332-12
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qincs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato -	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N 60	+ SPT R-N1 60	+ Rel Den -	+ Ftn Ang deg	Und Shr tsf	+ OCR - -	+ Fin Ic	+ Nk - -	+ Vol Strn	+ Dry Stlmt 0.00	+ Liq Stlmt 0.00	* Cycl SStn
31.01	411.4	293.7	352.4	10.4	0.4	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	27.1	9.9	11	16	N/A	0.00	N/A	N/A
31.17	410.8	292.6	346.1	9.9	0.5	2.4	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	27.1	9.9	10	16	N/A	0.00	N/A	N/A
31.33	392.4	278.7	336.5	9.8	0.5	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	25.9	9.9	11	16	N/A	0.00	N/A	N/A
31.50	380.9	269.9	328.6	9.6	0.5	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	25.1	9.9	11	16	N/A	0.00	N/A	N/A
31.66	372.4	263.2	326.5	9.8	0.5	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	24.5	9.9	12	16	N/A	0.00	N/A	N/A
31.83	360.5	254.1	322.6	9.9	0.5	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.8	9.9	12	16	N/A	0.00	N/A	N/A
31.99	327.6	230.4	302.2	9.3	0.5	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	21.6	9.9	13	16	N/A	0.00	N/A	N/A
32.15	325.2	228.2	293.2	8.6	0.5	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	21.4	9.9	13	16	N/A	0.00	N/A	N/A
32.32	343.9	240.7	297.0	8.4	0.5	2.5	6	clean SAND to silty SAND	125	5.0	69	48	95	43	-	-	12	16	N/A	0.00	N/A	N/A
32.48	365.2	254.9	310.4	8.9	0.5	2.4	6	clean SAND to silty SAND	125	5.0	73	51	95	44	-	-	11	16	N/A	0.00	N/A	N/A
32.65	352.5	245.4	304.1	8.8	0.5	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.2	9.9	12	16	N/A	0.00	N/A	N/A
32.81	352.0	244.5	303.5	8.8	0.5	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.2	9.9	12	16	N/A	0.00	N/A	N/A
32.97	331.5	229.7	297.5	9.0	0.5	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	21.8	9.9	13	16	N/A	0.00	N/A	N/A
33.14	367.2	254.1	310.6	9.0	0.5	2.5	6	clean SAND to silty SAND	125	5.0	73	51	95	44	-	-	11	16	0.00	-	0.00	0.0
33.30	404.4	279.5	327.3	9.1	0.5	2.3	6	clean SAND to silty SAND	125	5.0	81	56	95	44	-	-	10	16	0.00	-	0.00	0.0
33.47	380.6	262.7	314.5	8.9	0.5	2.4	6	clean SAND to silty SAND	125	5.0	76	53	95	44	-	-	11	16	0.00	-	0.00	0.0
33.63	376.2	259.3	307.4	8.4	0.5	2.3	6	clean SAND to silty SAND	125	5.0	75	52	95	44	-	-	10	16	0.00	-	0.00	0.0
33.79	393.8	271.1	311.3	8.1	0.5	2.1	6	clean SAND to silty SAND	125	5.0	79	54	95	44	-	-	9	16	0.00	-	0.00	0.0
33.96	415.0	285.4	321.8	8.2	0.5	2.0	6	clean SAND to silty SAND	125	5.0	83	57	95	44	-	-	9	16	0.00	-	0.00	0.0
34.12	425.0	291.8	321.4	7.8	0.5	1.8	6	clean SAND to silty SAND	125	5.0	85	58	95	44	-	-	8	16	0.00	-	0.00	0.0
34.29	366.6	251.4	286.7	7.0	0.5	1.9	6	clean SAND to silty SAND	125	5.0	73	50	95	44	-	-	9	16	0.00	-	0.00	0.0
34.45	315.1	215.8	266.4	7.1	0.5	2.3	6	clean SAND to silty SAND	125	5.0	63	43	92	43	-	-	12	16	0.00	-	0.00	0.0
34.61	297.3	203.4	268.6	7.9	0.4	2.7	5	silty SAND to sandy SILT	120	4.0	74	51	90	43	-	-	13	16	0.00	-	0.00	0.0
34.78	296.2	202.4	279.8	8.8	0.5	3.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	19.5	9.9	15	16	0.00	-	0.00	0.0
34.94	286.5	195.6	281.7	9.1	0.4	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	18.8	9.9	16	16	0.00	-	0.00	0.0
35.11	282.5	192.6	285.5	9.5	0.4	3.4	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	18.6	9.9	16	16	0.00	-	0.00	0.0
35.27	292.4	199.1	289.3	9.6	0.4	3.3	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	19.2	9.9	16	16	0.00	-	0.00	0.0
35.43	319.9	217.6	302.6	10.1	0.4	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	21.1	9.9	15	16	0.00	-	0.00	0.0
35.60	357.4	242.9	315.3	10.2	0.4	2.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.5	9.9	13	16	0.00	-	0.00	0.0
35.76	358.8	243.6	311.7	9.8	0.4	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.6	9.9	13	16	0.00	-	0.00	0.0
35.93	327.0	221.8	283.6	8.4	0.4	2.6	5	silty SAND to sandy SILT	120	4.0	82	55	93	43	-	-	12	16	0.00	-	0.00	0.0
36.09	307.7	208.5	260.0	7.0	0.4	2.3	6	clean SAND to silty SAND	125	5.0	62	42	91	43	-	-	12	16	0.00	-	0.00	0.0
36.26	290.4	196.5	240.2	5.9	0.4	2.1	6	clean SAND to silty SAND	125	5.0	58	39	89	42	-	-	11	16	0.00	-	0.00	0.0
36.42	240.8	162.7	212.0	5.1	0.4	2.2	5	silty SAND to sandy SILT	120	4.0	60	41	83	41	-	-	13	16	0.00	-	0.00	0.0
36.58	165.7	111.9	189.8	4.8	0.4	3.0	5	silty SAND to sandy SILT	120	4.0	41	28	71	39	-	-	19	16	0.00	-	0.00	0.0
36.75	104.8	50.5	-	5.4	0.4	5.2	4	clayy SILT to silty CLAY	115	2.0	52	25	-	-	7.3	9.9	37	15	-	-	0.00	-
36.91	80.7	38.8	-	5.4	0.4	6.9	3	silty CLAY to CLAY	115	1.5	54	26	-	-	5.6	9.9	46	15	-	-	0.00	-
37.08	82.8	39.7	-	5.2	0.3	6.4	3	silty CLAY to CLAY	115	1.5	55	26	-	-	5.7	9.9	44	15	-	-	0.00	-
37.24	97.9	46.9	-	5.4	0.2	5.6	3	silty CLAY to CLAY	115	1.5	65	31	-	-	6.8	9.9	39	15	-	-	0.00	-
37.40	106.9	51.1	-	6.2	0.3	5.9	3	silty CLAY to CLAY	115	1.5	71	34	-	-	7.4	9.9	39	15	-	-	0.00	-
37.57	107.3	51.2	-	6.5	0.2	6.2	3	silty CLAY to CLAY	115	1.5	72	34	-	-	7.4	9.9	39	15	-	-	0.00	-
37.73	98.4	46.8	-	6.6	0.1	6.8	3	silty CLAY to CLAY	115	1.5	66	31	-	-	6.8	9.9	43	15	-	-	0.00	-
37.90	81.5	38.7	-	6.1	-0.1	7.7	3	silty CLAY to CLAY	115	1.5	54	26	-	-	5.6	9.9	48	15	-	-	0.00	-
38.06	97.6	46.2	-	6.5	0.1	6.8	3	silty CLAY to CLAY	115	1.5	65	31	-	-	6.7	9.9	43	15	-	-	0.00	-
38.22	137.2	91.7	248.4	7.7	0.1	5.7	9	very stiff fine SOIL	120	2.0	69	46	64	38	-	-	30	30	0.00	-	0.00	0.0
38.39	145.3	97.0	256.0	8.1	0.3	5.7	9	very stiff fine SOIL	120	2.0	73	48	66	38	-	-	30	30	0.00	-	0.00	0.0
38.55	133.7	62.9	-	7.8	0.4	5.9	4	clayy SILT to silty CLAY	115	2.0	67	31	-	-	8.3	9.9	36	15	-	-	0.00	-
38.72	131.3	61.7	-	8.1	0.4	6.3	3	silty CLAY to CLAY	115	1.5	69	41	-	-	9.1	9.9	37	15	-	-	0.00	-
38.88	122.9	57.7	-	7.9	0.4	6.5	3	silty CLAY to CLAY	115	1.5	82	38	-	-	8.5	9.9	38	15	-	-	0.00	-
39.04	74.5	34.9	-	4.3	0.4	5.9	3	silty CLAY to CLAY	115	1.5	50	23	-	-	5.1	9.9	45	15	-	-	0.00	-
39.21	63.3	29.6	-	3.5	0.7	5.8	3	silty CLAY to CLAY	115	1.5	42	20	-	-	4.3	9.4	48	15	-	-	0.00	-
39.37	100.3	46.7	-	4.6	1.6	4.7	4	clayy SILT to silty CLAY	115	2.0	50	23	-	-	6.9	9.9	36	15	-	-	0.00	-
39.54	111.4	51.8	-	6.4	0.6	5.9	3	silty CLAY to CLAY	115	1.5	74	35	-	-	7.7	9.9	38	15	-	-	0.00	-
39.70	109.2	50.7	-	7.0	0.0	6.6	3	silty CLAY to CLAY	115	1.5	73	34	-	-	7.6	9.9	41	15	-	-	0.00	-
39.86	187.9	124.2	234.2	7.3	-0.1	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	12.3	9.9	22	16	0.00	-	0.00	0.0
40.03	144.6	95.5	222.9	6.5	0.4	4.6	9	very stiff fine SOIL	120	2.0	72	48	65	38	-	-	27	30	0.00	-	0.00	0.0
40.19	113.3	52.3	-	6.9	0.4	6.2	3	silty CLAY to CLAY	115	1.5	76	35	-	-	7.9	9.9	39	15	-	-	0.00	-
40.36	75.1	34.6	-	5.5	0.3	7.6	3	silty CLAY to CLAY	115	1.5	50	23	-	-	5.2	9.9	50	15	-	-	0.00	-
40.52	38.7	17.8	-	3.0	0.3	8.3	3	silty CLAY to CLAY	115	1.5	26	12	-	-	2.8	5.5	66	15	-	-	0.00	-
40.68	28.8	13.2	-	1.5	0.6	5.5	3	silty CLAY to CLAY	115	1.5	19	9	-	-	1.9	4.0	85	15	-	-	0.00	-
40.85	44.3	20.3	-	2.2	0.6	5.1	3	silty CLAY to CLAY	115	1.5	30	14	-	-	3.0	6.3	53	15	-	-	0.00	-
41.01	79.7	36.4	-	3.8	0.5	4.9	3	silty CLAY to CLAY	115	1.5	53	24	-	-	5.5	9.9	41	15	-	-	0.00	-
41.18	72.4	33.0	-	4.6	0.9	6.5	3	silty CLAY to CLAY	115	1.5	48	22	-	-	5.0	9.9	48	15	-	-	0.00	-
41.34	68.8	31.3	-	5.1	0.8	7.7	3	silty CLAY to CLAY	115	1.5	46	21	-	-	4.7	9.9	52	15	-	-	0.00	-
41.50	70.2	31.9	-	5.1	0.7	7.5	3	silty CLAY to CLAY	115	1.5	47	21	-	-	4.8	9.9	51	15	-	-	0.00	-
41.67	82.5	37.4	-	5.3	0.6	6.6	3	silty CLAY to CLAY	115	1.5	55	25	-	-	5.7	9.9	46	15	-	-	0.00	-
41.83	82.0	37.1	-	6.0	0.5	7.6	3	silty CLAY to CLAY	115	1.5	55	25	-	-	5.6	9.9	48	15	-	-	0.00	-
42.00	53.9	24.3	-	5.1	0.3	9.9	3	silty CLAY to CLAY	115	1.5	38	16	-	-	3.7	7.7	62	15	-	-	0.00	-
42.16	92.5	41.7	-	5.6	0.6	6.2	3	silty CLAY to CLAY	115	1.5	62	28	-	-	6.4	9.9	43	15	-	-	0.00	-
42.32	243.0	158.3	237.1	7.2	0.5	3.0	5	silty SAND to sandy SILT	120	4.0	61	40	82	41	-	-	17	16	0.00	-	0.00	0.0
42.49	246.2	160.2	256.9	8.5	0.3	3.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.2	9.9	18	16	0.00	-	0.00	0.0
42.65	213.3	138.6	272.2	9.6	0.3	4.6	9	very stiff fine SOIL	120	2.0	100	69	78	40	-	-	23	30	0.00	-	0.00	0.0
42.82	196.6	127.7	285.7	10.4	0.3	5.3	9	very stiff fine SOIL	120	2.0	98	64	75	40	-	-	26	30	0.00	-	0.00	0.0
42.98	187.9	121.9	282.8	10.2	0.3	5.5	9	very stiff fine SOIL	120	2.0	94	61	74	40	-	-	26	30	0.00	-	0.00	0.0
43.15	212.3	137.6	287.3	10.6	0.3	5.0	9	very stiff fine SOIL	120	2.0	100	69	78	40	-	-	24	30	0.00	-	0.00	0.0
43.31	266.2	172.3	296.0	11.1	-0.1	4.2	9	very stiff fine SOIL	120	2.0	100	86	85	41	-	-	20	30	0.00	-	0.00	0.0
43.47	338.4	218.8	331.6	12.9	-0.3	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	22.3	9.9	17	16	0.00	-	0.00	0.0
43.64	371.1	239.7	359.5	14.7	0.4	4.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	24.4	9.9	17	16	0.00	-	0.00	0.0
43.80	408.5	263.6	385.4	16.2	0.4	4.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	26.9	9.9	16	16	0.00	-	0.00	0.0
43.97	404.6	260.9	384.1	16.2	0.4	4.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	26.7	9.9	16	16	0.00	-	0.00	0.0
44.13	389.7	251.0	362.7	14.7	0.4	3.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	25.7	9.9	16	16	0.00	-	0.00	0.0
44.29	371.3	239.0	347.2	13.7	0.4	3.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	24.5	9.9	16	16	0.00	-	0.00	0.0
44.46	364.7	234.5	332.5	12.6	0.4	3.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	24.0	9.9	15	16	0.00	-	0.00	0.0
44.62	366.3	235.3	333.4	12.7	0.3	3.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	24.1	9.9	15	16	0.00	-	0.00	0.0
44.79	363.1	233.0	329.7	12.5	0.3	3.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.9	9.9	15	16	0.00	-	0.00	0.0
44.95	377.1	241.8	326.1	11.8	0.3	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	24.8	9.9	14	16	0.00	-	0.00	0.0
45.11	394.1	252.5	330.4	11.7	0.3	3.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	26.0	9.9	13	16	0.00	-	0.00	0.0
45.28	379.9	243.1	326.0	11.8	0.3	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	25.0	9.9	14	16	0.00	-	0.00	0.0

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

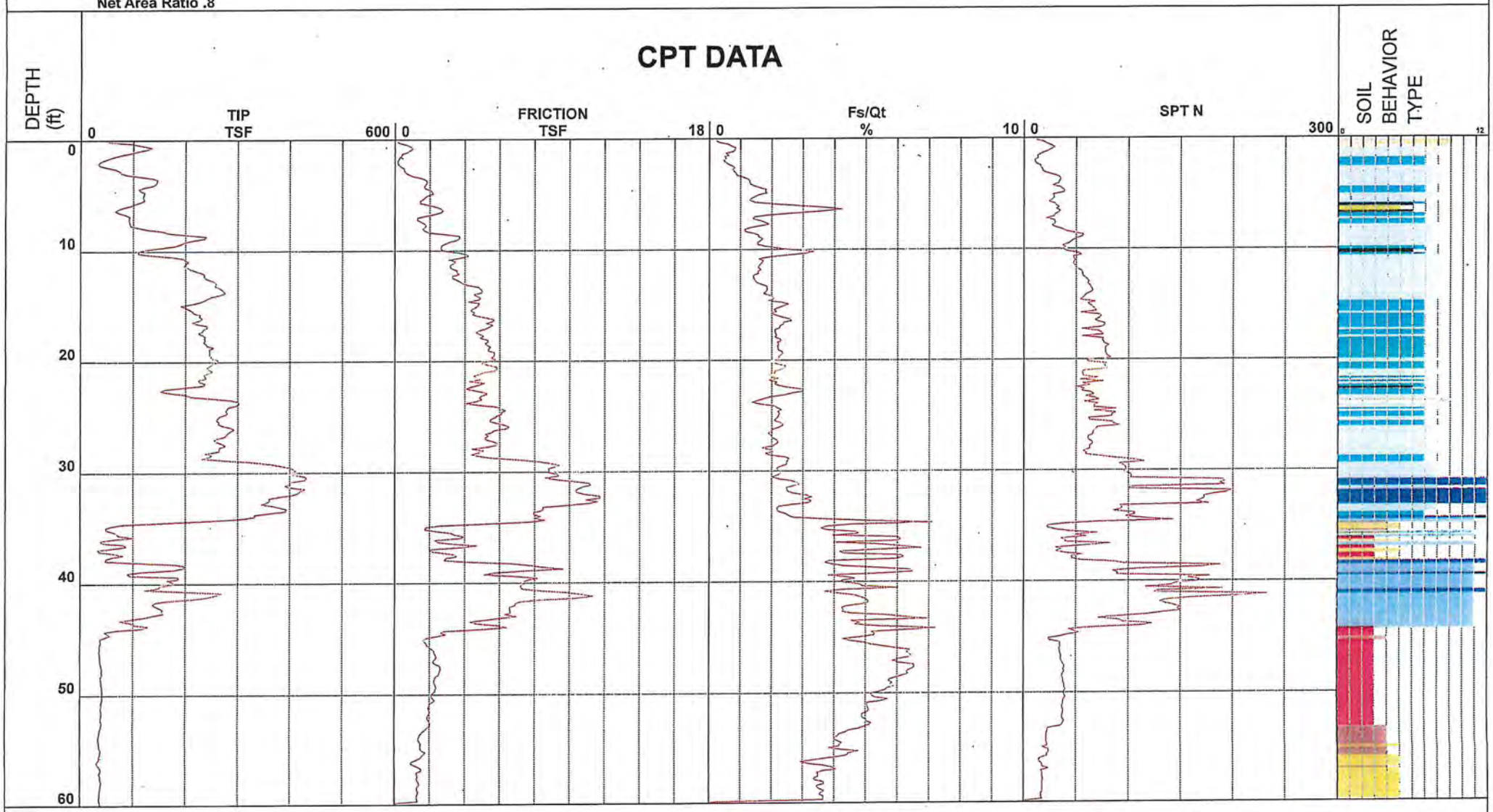
Middle Earth Geo Testing

Petra Inc

Project	Seville Solar Site	Operator	RA-JC	Filename	SDF(241).cpt
Job Number	332-12	Cone Number	DSG1104	GPS	
Hole Number	CPT-06	Date and Time	11/13/2012 2:59:23 PM	Maximum Depth	60.04 ft
EST GW Depth During Test					

Net Area Ratio .8

CPT DATA



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

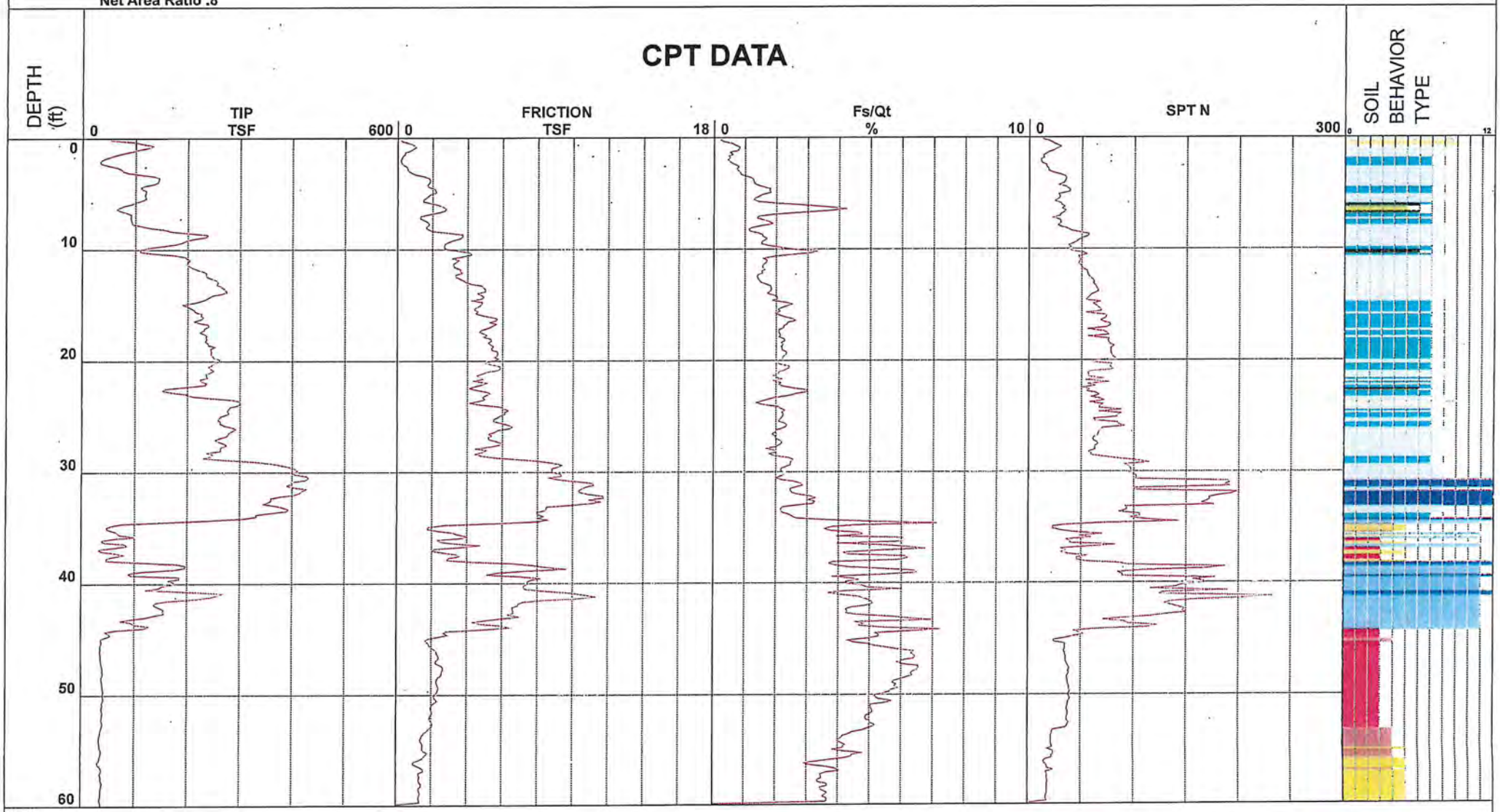
Cone Size 10cm squared

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

Petra Inc

Project	Seville Solar Site	Operator	RA-JC	Filename	SDF(241).cpt
Job Number	332-12	Cone Number	DSG1104	GPS	
Hole Number	CPT-06	Date and Time	11/13/2012 2:59:23 PM	Maximum Depth	60.04 ft
EST GW Depth During Test					

Net Area Ratio .8



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

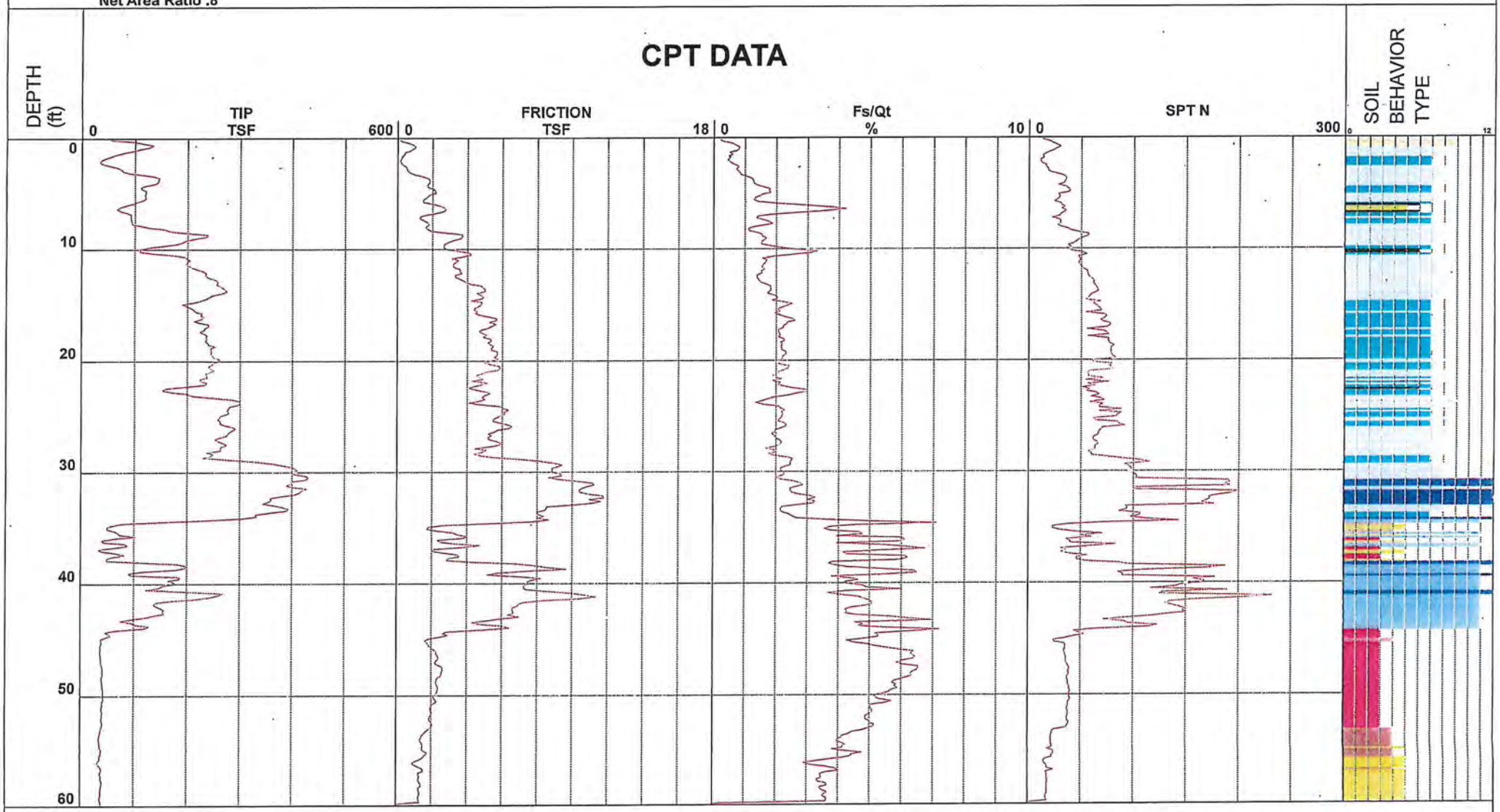
Cone Size 10cm squared

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

Petra Inc

Project	Seville Solar Site	Operator	RA-JC	Filename	SDF(241).cpt
Job Number	332-12	Cone Number	DSG1104	GPS	
Hole Number	CPT-06	Date and Time	11/13/2012 2:59:23 PM	Maximum Depth	60.04 ft
EST GW Depth During Test					

Net Area Ratio .8



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

Cone Size 10cm squared

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

Seville Solar Site

Project ID: Petra Geotech
Data File: SDF(241).cpt
CPT Date: 11/13/2012 2:59:23 PM
GW During Test: 33 ft

Sounding ID: CPT-06
Project No: 332-12
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N 60	SPT R-N1 60	Rel Den	Fin Ang deg	Und Shr tsf	OCR - -	Fin Ic	Nk - -	Vol Strn	Dry Stlmt 0.01	Liq Stlmt 0.00	Cycl SStn
0.33	98.3	157.7	157.7	0.3	0.0	0.3	6	clean SAND to silty SAND	125	5.0	20	32	82	48	-	-	5	16	N/A	0.01	N/A	N/A
0.49	114.8	184.1	184.1	0.7	0.0	0.6	6	clean SAND to silty SAND	125	5.0	23	37	87	48	-	-	5	16	N/A	0.01	N/A	N/A
0.66	134.4	215.5	215.5	0.9	0.0	0.7	6	clean SAND to silty SAND	125	5.0	27	43	92	48	-	-	5	16	N/A	0.01	N/A	N/A
0.82	125.4	201.1	201.1	1.0	0.0	0.8	6	clean SAND to silty SAND	125	5.0	25	40	90	48	-	-	5	16	N/A	0.01	N/A	N/A
0.98	107.5	172.4	175.3	0.9	0.0	0.8	6	clean SAND to silty SAND	125	5.0	22	34	85	48	-	-	6	16	N/A	0.01	N/A	N/A
1.15	94.0	150.7	155.7	0.7	0.0	0.7	6	clean SAND to silty SAND	125	5.0	19	30	81	48	-	-	6	16	N/A	0.01	N/A	N/A
1.31	78.8	126.4	126.8	0.4	0.0	0.5	6	clean SAND to silty SAND	125	5.0	16	25	75	48	-	-	5	16	N/A	0.01	N/A	N/A
1.48	62.7	100.5	109.8	0.4	0.0	0.6	6	clean SAND to silty SAND	125	5.0	13	20	67	48	-	-	8	16	N/A	0.01	N/A	N/A
1.64	53.3	85.4	93.3	0.3	0.0	0.5	6	clean SAND to silty SAND	125	5.0	11	17	62	48	-	-	8	16	N/A	0.01	N/A	N/A
1.80	43.0	69.0	81.0	0.2	0.0	0.5	6	clean SAND to silty SAND	125	5.0	9	14	55	47	-	-	10	16	N/A	0.01	N/A	N/A
1.97	36.0	57.7	69.5	0.2	0.0	0.4	6	clean SAND to silty SAND	125	5.0	7	12	49	46	-	-	11	16	N/A	0.01	N/A	N/A
2.13	33.0	52.9	67.7	0.2	0.0	0.5	6	clean SAND to silty SAND	125	5.0	7	11	46	45	-	-	13	16	N/A	0.01	N/A	N/A
2.30	37.4	60.0	75.3	0.2	0.0	0.6	6	clean SAND to silty SAND	125	5.0	7	12	50	45	-	-	12	16	N/A	0.01	N/A	N/A
2.46	50.6	81.2	96.2	0.4	0.0	0.7	6	clean SAND to silty SAND	125	5.0	10	16	60	46	-	-	10	16	N/A	0.01	N/A	N/A
2.62	66.1	106.0	119.7	0.5	0.0	0.8	6	clean SAND to silty SAND	125	5.0	13	21	69	47	-	-	9	16	N/A	0.01	N/A	N/A
2.79	73.7	118.2	128.3	0.5	0.0	0.7	6	clean SAND to silty SAND	125	5.0	15	24	73	47	-	-	7	16	N/A	0.01	N/A	N/A
2.95	76.6	122.8	133.7	0.6	0.0	0.8	6	clean SAND to silty SAND	125	5.0	15	25	74	47	-	-	8	16	N/A	0.01	N/A	N/A
3.12	87.4	140.2	150.2	0.7	0.1	0.8	6	clean SAND to silty SAND	125	5.0	17	28	78	48	-	-	7	16	N/A	0.01	N/A	N/A
3.28	116.3	186.5	189.5	1.0	0.1	0.9	6	clean SAND to silty SAND	125	5.0	23	37	88	48	-	-	6	16	N/A	0.01	N/A	N/A
3.45	137.5	220.6	224.2	1.4	0.1	1.0	6	clean SAND to silty SAND	125	5.0	28	44	93	48	-	-	6	16	N/A	0.01	N/A	N/A
3.61	145.8	233.9	243.0	1.7	0.1	1.2	6	clean SAND to silty SAND	125	5.0	29	47	95	48	-	-	8	16	N/A	0.01	N/A	N/A
3.77	144.3	231.4	244.1	1.8	0.1	1.3	6	clean SAND to silty SAND	125	5.0	29	46	95	48	-	-	7	16	N/A	0.01	N/A	N/A
3.94	143.0	229.4	242.8	1.8	0.1	1.3	6	clean SAND to silty SAND	125	5.0	29	46	94	48	-	-	7	16	N/A	0.01	N/A	N/A
4.10	136.5	219.0	234.3	1.8	0.1	1.3	6	clean SAND to silty SAND	125	5.0	27	44	93	48	-	-	7	16	N/A	0.01	N/A	N/A
4.27	118.7	190.4	213.1	1.7	0.1	1.4	6	clean SAND to silty SAND	125	5.0	24	38	88	48	-	-	8	16	N/A	0.01	N/A	N/A
4.43	110.0	176.3	206.2	1.8	0.1	1.6	6	clean SAND to silty SAND	125	5.0	22	35	86	47	-	-	10	16	N/A	0.01	N/A	N/A
4.59	115.1	184.6	220.7	2.1	0.1	1.8	6	clean SAND to silty SAND	125	5.0	23	37	87	47	-	-	11	16	N/A	0.01	N/A	N/A
4.76	120.8	193.7	227.8	2.1	0.1	1.8	6	clean SAND to silty SAND	125	5.0	24	39	89	47	-	-	10	16	N/A	0.01	N/A	N/A
4.92	120.2	192.8	229.2	2.2	0.1	1.8	6	clean SAND to silty SAND	125	5.0	24	39	89	47	-	-	10	16	N/A	0.01	N/A	N/A
5.09	118.0	189.2	216.8	1.8	0.2	1.6	6	clean SAND to silty SAND	125	5.0	24	38	88	47	-	-	9	16	N/A	0.01	N/A	N/A
5.25	119.0	190.9	215.0	1.7	0.2	1.5	6	clean SAND to silty SAND	125	5.0	24	38	88	47	-	-	9	16	N/A	0.01	N/A	N/A
5.41	120.6	193.5	213.2	1.6	0.2	1.3	6	clean SAND to silty SAND	125	5.0	24	39	89	47	-	-	8	16	N/A	0.01	N/A	N/A
5.58	113.7	182.4	201.4	1.5	0.2	1.3	6	clean SAND to silty SAND	125	5.0	23	36	87	46	-	-	8	16	N/A	0.01	N/A	N/A
5.74	102.2	164.0	189.6	1.5	0.2	1.4	6	clean SAND to silty SAND	125	5.0	20	33	83	46	-	-	10	16	N/A	0.01	N/A	N/A
5.91	93.9	150.3	197.1	1.9	0.2	2.1	5	silty SAND to sandy SILT	120	4.0	23	38	80	45	-	-	13	16	N/A	0.01	N/A	N/A
6.07	80.1	126.5	204.1	2.4	0.2	3.0	5	silty SAND to sandy SILT	120	4.0	20	32	75	44	-	-	18	16	N/A	0.01	N/A	N/A
6.23	70.4	109.7	211.4	2.6	0.2	3.7	5	silty SAND to sandy SILT	120	4.0	18	27	70	44	-	-	22	16	N/A	0.01	N/A	N/A
6.40	65.0	100.1	217.1	2.7	0.2	4.3	9	very stiff fine SOIL	120	2.0	32	50	67	43	-	-	25	30	N/A	0.01	N/A	N/A
6.56	73.8	112.3	211.5	2.7	0.2	3.6	5	silty SAND to sandy SILT	120	4.0	18	28	71	44	-	-	22	16	N/A	0.01	N/A	N/A
6.73	85.4	128.4	197.4	2.3	0.2	2.7	5	silty SAND to sandy SILT	120	4.0	21	32	75	44	-	-	17	16	N/A	0.01	N/A	N/A
6.89	92.7	137.7	180.0	1.7	0.2	1.9	5	silty SAND to sandy SILT	120	4.0	23	34	78	44	-	-	13	16	N/A	0.01	N/A	N/A
7.05	91.4	134.2	162.8	1.3	0.2	1.4	6	clean SAND to silty SAND	125	5.0	18	27	77	44	-	-	11	16	N/A	0.01	N/A	N/A
7.22	91.9	133.4	160.6	1.3	0.2	1.4	6	clean SAND to silty SAND	125	5.0	18	27	77	44	-	-	11	16	N/A	0.01	N/A	N/A
7.38	92.0	132.0	166.0	1.5	0.2	1.6	6	clean SAND to silty SAND	125	5.0	18	26	76	44	-	-	12	16	N/A	0.01	N/A	N/A
7.55	93.7	133.1	172.1	1.7	0.2	1.8	6	clean SAND to silty SAND	125	5.0	19	27	76	44	-	-	13	16	N/A	0.01	N/A	N/A
7.71	94.4	132.6	175.4	1.8	0.2	1.9	5	silty SAND to sandy SILT	120	4.0	24	33	76	44	-	-	13	16	N/A	0.01	N/A	N/A
7.87	111.8	155.4	185.6	1.7	0.2	1.6	6	clean SAND to silty SAND	125	5.0	22	31	82	45	-	-	11	16	N/A	0.01	N/A	N/A
8.04	128.5	176.8	195.1	1.6	0.2	1.2	6	clean SAND to silty SAND	125	5.0	26	35	86	45	-	-	9	16	N/A	0.01	N/A	N/A
8.20	154.9	211.0	220.3	1.7	0.2	1.1	6	clean SAND to silty SAND	125	5.0	32	42	92	46	-	-	6	16	N/A	0.01	N/A	N/A
8.37	167.6	226.1	234.6	1.9	0.2	1.2	6	clean SAND to silty SAND	125	5.0	34	45	94	46	-	-	6	16	N/A	0.01	N/A	N/A
8.53	199.8	266.7	280.3	2.8	0.2	1.4	6	clean SAND to silty SAND	125	5.0	40	53	95	47	-	-	6	16	N/A	0.01	N/A	N/A
8.69	238.7	315.7	330.5	3.7	0.2	1.6	6	clean SAND to silty SAND	125	5.0	49	63	95	48	-	-	6	16	N/A	0.01	N/A	N/A
8.86	235.6	308.7	325.3	3.7	0.2	1.6	6	clean SAND to silty SAND	125	5.0	47	62	95	47	-	-	7	16	N/A	0.01	N/A	N/A
9.02	212.6	276.0	301.2	3.6	0.2	1.7	6	clean SAND to silty SAND	125	5.0	43	55	95	47	-	-	8	16	N/A	0.01	N/A	N/A
9.19	196.8	253.2	277.4	3.2	0.2	1.6	6	clean SAND to silty SAND	125	5.0	39	51	95	47	-	-	8	16	N/A	0.01	N/A	N/A
9.35	189.9	242.1	264.2	2.9	0.2	1.5	6	clean SAND to silty SAND	125	5.0	38	48	95	46	-	-	8	16	N/A	0.01	N/A	N/A
9.51	177.4	224.2	247.6	2.7	0.2	1.5	6	clean SAND to silty SAND	125	5.0	35	45	94	46	-	-	8	16	N/A	0.01	N/A	N/A
9.68	152.8	191.4	224.9	2.7	0.2	1.7	6	clean SAND to silty SAND	125	5.0	31	38	86	45	-	-	10	16	N/A	0.01	N/A	N/A
9.84	124.9	155.2	203.5	2.6	0.2	2.1	5	silty SAND to sandy SILT	120	4.0	31	39	82	44	-	-	12	16	N/A	0.01	N/A	N/A
10.01	109.0	134.4	198.3	2.8	0.2	2.6	5	silty SAND to sandy SILT	120	4.0	27	34	77	43	-	-	16	16	N/A	0.01	N/A	N/A
10.17	109.3	133.7	223.9	3.6	0.2	3.3	5	silty SAND to sandy SILT	120	4.0	27	33	77	43	-	-	19	16	N/A	0.01	N/A	N/A
10.34	133.1	161.5	243.6	4.1	0.2	3.1	5	silty SAND to sandy SILT	120	4.0	33	40	83	44	-	-	17	16	N/A	0.01	N/A	N/A
10.50	173.3	208.7	265.4	4.2	0.2	2.4	5	silty SAND to sandy SILT	120	4.0	43	52	91	45	-	-	12	16	N/A	0.01	N/A	N/A
10.66	195.7	233.9	269.7	3.7	0.3	1.9	6	clean SAND to silty SAND	125	5.0	39	47	95	46	-	-	9	16	N/A	0.01	N/A	N/A
10.83	198.6	235.6	259.4	3.1	0.3	1.6	6	clean SAND to silty SAND	125	5.0	40	47	95	46	-	-	8	16	N/A	0.01	N/A	N/A
10.99	204.7	240.9	269.5	3.5	0.3	1.7	6	clean SAND to silty SAND	125	5.0	41	48	95	46	-	-	8	16	N/A	0.01	N/A	N/A
11.16	198.8	232.3	260.3	3.3	0.4	1.7	6	clean SAND to silty SAND	125	5.0	40	46	95	46	-	-	8	16	N/A	0.01	N/A	N/A
11.32	195.9	227.2	253.8	3.2	0.4	1.6	6	clean SAND to silty SAND	125	5.0	39	45	94	46	-	-	8	16	N/A	0.01	N/A	N/A
11.48	203.2	233.9	258.0	3.2	0.4	1.6	6	clean SAND to silty SAND	125	5.0	41	47	95	46	-	-	8	16	N/A	0.01	N/A	N/A
11.65	209.4	239.4	262.6	3.3	0.4	1.6	6	clean SAND to silty SAND	125	5.0	42	48	95	46	-	-	8	16	N/A	0.01	N/A	N/A
11.81	219.1	248.7	274.4	3.6	0.4	1.6	6	clean SAND to silty SAND	125	5.0	44	50	95	46	-	-	8	16	N/A	0.01	N/A	N/A
11.98	230.8	260.1	280.4	3.5	0.4	1.5	6	clean SAND to silty SAND	125	5.0	46	52	95	46	-	-	7	16	N/A	0.00	N/A	N/A
12.14	235.8	264.1	285.1	3.7	0.4	1.6	6	clean SAND to silty SAND	125	5.0	47	53	95	46	-	-	7	16	N/A	0.00	N/A	N/A
12.30	234.3	260.5	275.5	3.3	0.4	1.4	6	clean SAND to silty SAND	125	5.0	47	52	95	46	-	-	7	16	N/A	0.00	N/A	N/A
12.47	238.5	263.5	277.2	3.3	0.4	1.4	6	clean SAND to silty SAND	125	5.0	48	53	95	46	-	-	7	16	N/A	0.00	N/A	N/A
12.63	247.9	272.1	286.2	3.5	0.4	1.4	6	clean SAND to silty SAND	125	5.0	50	54	95	46	-	-	7	16	N/A	0.00	N/A	N/A
12.80	255.0	278.0	292.9	3.7	0.4	1.5	6	clean SAND to silty SAND	125	5.0	51	56	95	46	-	-	7	16	N/A	0.00	N/A	N/A
12.96	258.2	279.7	296.7	3.9	0.4	1.5	6	clean SAND to silty SAND	125	5.0	52	56	95	46	-	-	7	16	N/A	0.00	N/A	N/A
13.12	255.2	274.8	298.5	4.2	0.4	1.7	6	clean SAND to silty SAND	125	5.0	51	55	95	46	-	-	8	16	N/A	0.00	N/A	N/A
13.29	262.3	280.6	310.5	4.8	0.4	1.8	6	clean SAND to silty SAND	125	5.0	52	56	95	46	-	-	8	16	N/A	0.00	N/A	N/A
13.45	267.6	284.5	314.6	4.9	0.4	1.8	6	clean SAND to silty SAND	125	5.0	54	57	95	46	-	-	8	16	N/A	0.00	N/A	N/A
13.62	271.4	286.8	317.2	5.0	0.4	1.8	6	clean SAND to silty SAND	125	5.0	54	57	95	46	-	-	8	16	N/A	0.00	N/A	N/A
13.78	275.6	289.5	318.3	5.0	0.4	1.8	6	clean SAND to silty SAND	125	5.0	55	58	95	46	-	-	8	16	N/A	0.00	N/A	N/A
13.94	264.3	275.9	302.3	4.5	0.5	1.7	6	clean SAND to silty SAND	125	5.0	53	55	95	46	-	-	8	16	N/A	0.00	N/A	N/A
14.11	247.9	257.3	292.2	4.7	0.5	1.9	6	clean SAND to silty SAND	125	5.0	50	51	95	46	-	-	9	16	N/A	0.00	N/A	N/A
14.27	241.6	249.3	289.6	4.9	0.5	2.0	6	clean SAND to silty SAND	125	5.0	49	50	95	45	-	-	10	16	N/A	0.00	N/A	N/A
14.44	235.6	241.8	282.8	4.8	0.5	2.1	6	clean SAND to silty SAND	125	5.0	47	48	95	45	-	-	10	16	N/A	0.00	N/A	N/A
14.60	224.7	229.3	264.8	4.2	0.5	1.9	6	clean SAND to silty SAND	125	5.0	45	46	94	45	-	-	9	16	N/A	0.00	N/A	N/A
14.76	212.5	215.6	266.5	4.8	0.5	2.3	6	clean SAND to silty SAND	125	5.0	43	43	92	45	-	-	12	16	N/A	0.00	N/A	N/A
14.93	189.7	191.4	251.9	4.8	0.5	2.5	5	silty SAND to sandy SILT	120	4.0	47	48	88	44	-	-	13	16	N/A	0.00	N/A	N/A
15.09	199.9	200.6	254.5	4.7	0.5	2.3	5	silty SAND to sandy SILT	120	4.0	50	50	90	44	-	-	12	16	N/A	0.00	N/A	N/A
15.26	207.0	206.6	253.4	4.4	0.5	2.2	6	clean SAND to silty SAND	125	5.0	41	41	91	44	-	-	11	16	N/A	0.00	N/A	N/A
15.42	212.2	210.7	253.7	4.3	0.5	2.1	6	clean SAND to silty SAND	125	5.0	42	42	92	45	-	-	11	16	N/A	0.00	N/A	N/A

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Project ID: Petra Geotech
Data File: SDF(241).cpt
CPT Date: 11/13/2012 2:59:23 PM
GW During Test: 33 ft

Sounding ID: CPT-06
Project No: 332-12
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato -	Hat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N 60	SPT R-N1 60	Rel Den	Fin Ang deg	Und Shr tsf	OCR - -	Fin Ic	Nk - -	Vol Strn	Dry Stlmt 0.01	Liq Stlmt 0.00	Cycl SStn
15.58	214.7	212.1	258.1	4.6	0.5	2.1	6	clean SAND to silty SAND	125	5.0	43	42	92	45	-	-	11	16	N/A	0.00	N/A	N/A
15.75	227.5	223.6	262.3	4.4	0.5	2.0	6	clean SAND to silty SAND	125	5.0	46	45	94	45	-	-	10	16	N/A	0.00	N/A	N/A
15.91	225.1	220.0	264.8	4.8	0.5	2.1	6	clean SAND to silty SAND	125	5.0	45	44	93	45	-	-	11	16	N/A	0.00	N/A	N/A
16.08	230.6	224.2	274.3	5.2	0.5	2.3	6	clean SAND to silty SAND	125	5.0	46	45	94	45	-	-	11	16	N/A	0.00	N/A	N/A
16.24	225.1	217.8	277.9	5.7	0.5	2.5	5	silty SAND to sandy SILT	120	4.0	56	54	93	45	-	-	12	16	N/A	0.00	N/A	N/A
16.40	212.5	204.6	268.6	5.6	0.5	2.6	5	silty SAND to sandy SILT	120	4.0	53	51	91	44	-	-	13	16	N/A	0.00	N/A	N/A
16.57	221.3	212.0	266.4	5.2	0.5	2.4	6	clean SAND to silty SAND	125	5.0	44	42	92	44	-	-	12	16	N/A	0.00	N/A	N/A
16.73	239.7	228.6	281.6	5.6	0.5	2.4	6	clean SAND to silty SAND	125	5.0	48	46	94	45	-	-	11	16	N/A	0.00	N/A	N/A
16.90	240.5	228.2	277.3	5.4	0.5	2.3	6	clean SAND to silty SAND	125	5.0	48	46	94	45	-	-	11	16	N/A	0.00	N/A	N/A
17.06	232.8	219.8	269.0	5.2	0.5	2.2	6	clean SAND to silty SAND	125	5.0	47	44	93	44	-	-	11	16	N/A	0.00	N/A	N/A
17.23	231.6	217.6	261.5	4.8	0.5	2.1	6	clean SAND to silty SAND	125	5.0	46	44	93	44	-	-	11	16	N/A	0.00	N/A	N/A
17.39	223.4	208.9	253.2	4.7	0.5	2.1	6	clean SAND to silty SAND	125	5.0	45	42	91	44	-	-	11	16	N/A	0.00	N/A	N/A
17.55	231.9	215.8	260.5	4.9	0.5	2.1	6	clean SAND to silty SAND	125	5.0	46	43	92	44	-	-	11	16	N/A	0.00	N/A	N/A
17.72	237.2	219.7	265.7	5.1	0.6	2.2	6	clean SAND to silty SAND	125	5.0	47	44	93	44	-	-	11	16	N/A	0.00	N/A	N/A
17.88	235.0	216.7	260.2	4.9	0.6	2.1	6	clean SAND to silty SAND	125	5.0	47	43	93	44	-	-	11	16	N/A	0.00	N/A	N/A
18.05	237.1	217.6	267.4	5.3	0.6	2.3	6	clean SAND to silty SAND	125	5.0	47	44	93	44	-	-	11	16	N/A	0.00	N/A	N/A
18.21	234.0	213.8	265.1	5.3	0.6	2.3	6	clean SAND to silty SAND	125	5.0	47	43	92	44	-	-	12	16	N/A	0.00	N/A	N/A
18.37	238.8	217.2	263.8	5.2	0.7	2.2	6	clean SAND to silty SAND	125	5.0	48	43	93	44	-	-	11	16	N/A	0.00	N/A	N/A
18.54	240.2	217.5	265.9	5.3	0.7	2.2	6	clean SAND to silty SAND	125	5.0	48	43	93	44	-	-	11	16	N/A	0.00	N/A	N/A
18.70	252.7	227.8	274.2	5.5	0.7	2.2	6	clean SAND to silty SAND	125	5.0	51	46	94	44	-	-	11	16	N/A	0.00	N/A	N/A
18.87	243.9	218.9	266.7	5.4	0.7	2.2	6	clean SAND to silty SAND	125	5.0	49	44	93	44	-	-	11	16	N/A	0.00	N/A	N/A
19.03	245.3	219.2	266.6	5.4	0.7	2.2	6	clean SAND to silty SAND	125	5.0	49	44	93	44	-	-	11	16	N/A	0.00	N/A	N/A
19.19	245.4	218.3	270.7	5.7	0.7	2.3	6	clean SAND to silty SAND	125	5.0	49	44	93	44	-	-	12	16	N/A	0.00	N/A	N/A
19.36	245.0	217.1	269.9	5.7	0.7	2.3	6	clean SAND to silty SAND	125	5.0	49	43	93	44	-	-	12	16	N/A	0.00	N/A	N/A
19.52	248.1	218.8	269.8	5.7	0.7	2.3	6	clean SAND to silty SAND	125	5.0	50	44	93	44	-	-	11	16	N/A	0.00	N/A	N/A
19.69	249.8	219.5	267.7	5.5	0.7	2.2	6	clean SAND to silty SAND	125	5.0	50	44	93	44	-	-	11	16	N/A	0.00	N/A	N/A
19.85	261.5	228.7	276.7	5.8	0.7	2.2	6	clean SAND to silty SAND	125	5.0	52	46	94	44	-	-	11	16	N/A	0.00	N/A	N/A
20.01	260.5	226.9	269.1	5.3	0.7	2.1	6	clean SAND to silty SAND	125	5.0	52	45	94	44	-	-	10	16	N/A	0.00	N/A	N/A
20.18	251.0	217.8	258.0	5.0	0.7	2.0	6	clean SAND to silty SAND	125	5.0	50	44	93	44	-	-	10	16	N/A	0.00	N/A	N/A
20.34	246.8	213.2	259.8	5.3	0.7	2.2	6	clean SAND to silty SAND	125	5.0	49	43	92	44	-	-	11	16	N/A	0.00	N/A	N/A
20.51	240.4	206.9	263.5	5.8	0.7	2.4	5	silty SAND to sandy SILT	120	4.0	60	52	91	44	-	-	12	16	N/A	0.00	N/A	N/A
20.67	243.6	208.8	264.9	5.9	0.7	2.4	5	silty SAND to sandy SILT	120	4.0	61	52	91	44	-	-	12	16	N/A	0.00	N/A	N/A
20.83	251.2	214.6	265.9	5.7	0.7	2.3	6	clean SAND to silty SAND	125	5.0	50	43	92	44	-	-	12	16	N/A	0.00	N/A	N/A
21.00	243.1	206.8	251.5	5.1	0.7	2.1	6	clean SAND to silty SAND	125	5.0	49	41	91	44	-	-	11	16	N/A	0.00	N/A	N/A
21.16	234.8	199.0	243.6	4.9	0.7	2.1	6	clean SAND to silty SAND	125	5.0	47	40	90	43	-	-	11	16	N/A	0.00	N/A	N/A
21.33	236.6	199.7	238.3	4.5	0.7	1.9	6	clean SAND to silty SAND	125	5.0	47	40	90	43	-	-	11	16	N/A	0.00	N/A	N/A
21.49	238.4	200.4	241.8	4.7	0.7	2.0	6	clean SAND to silty SAND	125	5.0	48	40	90	43	-	-	11	16	N/A	0.00	N/A	N/A
21.65	223.8	187.4	236.8	4.9	0.7	2.2	6	clean SAND to silty SAND	125	5.0	45	37	88	43	-	-	12	16	N/A	0.00	N/A	N/A
21.82	226.3	188.8	227.7	4.3	0.7	1.9	6	clean SAND to silty SAND	125	5.0	45	38	88	43	-	-	11	16	N/A	0.00	N/A	N/A
21.98	237.3	197.3	245.0	5.1	0.7	2.2	6	clean SAND to silty SAND	125	5.0	47	39	89	43	-	-	12	16	N/A	0.00	N/A	N/A
22.15	232.8	192.8	237.6	4.8	0.7	2.1	6	clean SAND to silty SAND	125	5.0	47	39	89	43	-	-	11	16	N/A	0.00	N/A	N/A
22.31	197.4	162.9	215.2	4.4	0.7	2.3	5	silty SAND to sandy SILT	120	4.0	49	41	83	42	-	-	13	16	N/A	0.00	N/A	N/A
22.47	160.0	131.5	196.3	4.1	0.7	2.6	5	silty SAND to sandy SILT	120	4.0	40	33	76	41	-	-	16	16	N/A	0.00	N/A	N/A
22.64	152.2	124.7	203.9	4.5	0.6	3.0	5	silty SAND to sandy SILT	120	4.0	38	31	74	41	-	-	19	16	N/A	0.00	N/A	N/A
22.80	170.9	139.6	218.3	5.1	0.5	3.0	5	silty SAND to sandy SILT	120	4.0	43	35	78	42	-	-	18	16	N/A	0.00	N/A	N/A
22.97	199.2	162.1	229.1	5.3	-0.5	2.7	5	silty SAND to sandy SILT	120	4.0	50	41	83	42	-	-	15	16	N/A	0.00	N/A	N/A
23.13	209.0	169.5	226.3	5.0	0.6	2.4	5	silty SAND to sandy SILT	120	4.0	52	42	84	42	-	-	14	16	N/A	0.00	N/A	N/A
23.30	248.4	200.7	240.8	4.8	0.6	2.0	6	clean SAND to silty SAND	125	5.0	50	40	90	43	-	-	11	16	N/A	0.00	N/A	N/A
23.46	285.1	229.6	260.9	5.0	0.6	1.8	6	clean SAND to silty SAND	125	5.0	57	46	94	44	-	-	9	16	N/A	0.00	N/A	N/A
23.62	300.1	240.8	264.1	4.7	0.6	1.6	6	clean SAND to silty SAND	125	5.0	60	48	95	44	-	-	8	16	N/A	0.00	N/A	N/A
23.79	301.0	240.6	256.2	4.1	0.6	1.4	6	clean SAND to silty SAND	125	5.0	60	48	95	44	-	-	7	16	N/A	0.00	N/A	N/A
23.95	296.3	236.1	262.1	4.8	0.7	1.6	6	clean SAND to silty SAND	125	5.0	59	47	95	44	-	-	8	16	N/A	0.00	N/A	N/A
24.12	280.9	223.1	266.6	5.8	0.7	2.1	6	clean SAND to silty SAND	125	5.0	56	45	93	44	-	-	11	16	N/A	0.00	N/A	N/A
24.28	279.0	220.8	267.4	6.0	0.7	2.2	6	clean SAND to silty SAND	125	5.0	56	44	93	44	-	-	11	16	N/A	0.00	N/A	N/A
24.44	276.2	217.8	269.4	6.3	0.6	2.3	6	clean SAND to silty SAND	125	5.0	55	44	93	44	-	-	12	16	N/A	0.00	N/A	N/A
24.61	279.3	219.5	266.8	6.1	0.7	2.2	6	clean SAND to silty SAND	125	5.0	56	44	93	44	-	-	11	16	N/A	0.00	N/A	N/A
24.77	275.6	215.9	265.1	6.1	0.7	2.2	6	clean SAND to silty SAND	125	5.0	55	43	92	44	-	-	11	16	N/A	0.00	N/A	N/A
24.94	264.1	206.2	255.5	5.8	0.7	2.2	6	clean SAND to silty SAND	125	5.0	53	41	91	43	-	-	12	16	N/A	0.00	N/A	N/A
25.10	261.6	203.6	251.9	5.7	0.7	2.2	6	clean SAND to silty SAND	125	5.0	52	41	90	43	-	-	12	16	N/A	0.00	N/A	N/A
25.26	257.8	200.0	246.6	5.5	0.7	2.1	6	clean SAND to silty SAND	125	5.0	52	40	90	43	-	-	11	16	N/A	0.00	N/A	N/A
25.43	263.0	203.4	247.8	5.5	0.7	2.1	6	clean SAND to silty SAND	125	5.0	53	41	90	43	-	-	11	16	N/A	0.00	N/A	N/A
25.59	262.0	201.9	252.3	5.9	0.7	2.3	6	clean SAND to silty SAND	125	5.0	52	40	90	43	-	-	12	16	N/A	0.00	N/A	N/A
25.76	269.4	206.9	260.8	6.3	0.7	2.4	5	silty SAND to sandy SILT	120	4.0	67	52	91	43	-	-	12	16	N/A	0.00	N/A	N/A
25.92	284.1	217.6	269.6	6.5	0.7	2.3	6	clean SAND to silty SAND	125	5.0	57	44	93	43	-	-	12	16	N/A	0.00	N/A	N/A
26.08	292.1	223.0	269.9	6.3	0.7	2.2	6	clean SAND to silty SAND	125	5.0	58	45	93	44	-	-	11	16	N/A	0.00	N/A	N/A
26.25	286.5	218.1	259.0	5.7	0.7	2.0	6	clean SAND to silty SAND	125	5.0	57	44	93	43	-	-	10	16	N/A	0.00	N/A	N/A
26.41	279.4	212.0	252.5	5.5	0.7	2.0	6	clean SAND to silty SAND	125	5.0	56	42	92	43	-	-	10	16	N/A	0.00	N/A	N/A
26.58	277.6	210.0	246.7	5.2	0.7	1.9	6	clean SAND to silty SAND	125	5.0	56	42	91	43	-	-	10	16	N/A	0.00	N/A	N/A
26.74	274.1	206.6	246.9	5.4	0.7	2.0	6	clean SAND to silty SAND	125	5.0	55	41	91	43	-	-	11	16	N/A	0.00	N/A	N/A
26.90	260.6	195.8	237.6	5.2	0.7	2.0	6	clean SAND to silty SAND	125	5.0	52	39	89	43	-	-	11	16	N/A	0.00	N/A	N/A
27.07	253.2	189.7	234.5	5.2	0.7	2.1	6	clean SAND to silty SAND	125	5.0	51	38	88	43	-	-	12	16	N/A	0.00	N/A	N/A
27.23	259.7	194.0	241.9	5.6	0.7	2.2	6	clean SAND to silty SAND	125	5.0	52	39	89	43	-	-	12	16	N/A	0.00	N/A	N/A
27.40	270.3	201.3	249.9	5.9	0.7	2.2	6	clean SAND to silty SAND	125	5.0	54	40	90	43	-	-	12	16	N/A	0.00	N/A	N/A
27.56	275.0	204.2	250.1	5.8	0.7	2.1	6	clean SAND to silty SAND	125	5.0	55	41	91	43	-	-	11	16	N/A	0.00	N/A	N/A
27.72	264.4	195.7	238.3	5.3	0.7	2.0	6	clean SAND to silty SAND	125	5.0	53	39	89	43	-	-	11	16	N/A	0.00	N/A	N/A
27.89	263.1	194.2	226.0	4.4	0.8	1.7	6	clean SAND to silty SAND	125	5.0	53	39	89	43	-	-	10	16	N/A	0.00	N/A	N/A
28.05	263.4	193.9	234.1	5.1	0.7	1.9	6	clean SAND to silty SAND	125	5.0	53	39	89	43	-	-	11	16	N/A	0.00	N/A	N/A
28.22	237.5	174.2	218.8	4.8	0.8	2.0	6	clean SAND to silty SAND	125	5.0	47	35	85	42	-	-	12	16	N/A	0.00	N/A	N/A
28.38	249.5	182.5	217.9	4.4	0.7	1.8	6	clean SAND to silty SAND	125	5.0	50	37	87	42	-	-	11	16	N/A	0.00	N/A	N/A
28.54	245.3	178.9	220.9	4.8	0.7	2.0	6	clean SAND to silty SAND	125	5.0	49	36	86	42	-	-	12	16	N/A	0.00	N/A	N/A
28.71	230.7	167.8	225.4	5.5	0.8	2.4	5	silty SAND to sandy SILT	120	4.0	58	42	84	42	-	-	14	16	N/A	0.00	N/A	N/A
28.87	275.3	199.7	261.2	7.0	0.7	2.6	5	silty SAND to sandy SILT	120	4.0	69	50	90	43	-	-	13	16	N/A	0.00	N/A	N/A
29.04	328.6	237.7	295.9	8.2	0.7	2.5	6	clean SAND to silty SAND	125	5.0	66	48	95	44	-	-	12	16	N/A	0.00	N/A	N/A
29.20	361.3	260.7	317.0	8.9	0.8	2.5	6	clean SAND to silty SAND	125	5.0	72	52	95	44	-	-	11	16	N/A	0.00	N/A	N/A
29.36	380.4	273.6	330.2	9.4	0.8	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	25.1	9.9	11	16	N/A	0.00	N/A	N/A
29.53	398.5	285.9	334.6	9.1	0.8	2.3	6	clean SAND to silty SAND	125	5.0	80	57	95	44	-	-	10	16	N/A	0.00	N/A	N/A
29.69	405.2	290.0	333.6	8.8	0.8	2.2	6	clean SAND to silty SAND	125	5.0	81	58	95	44	-	-	9	16	N/A	0.00	N/A	N/A
29.86	410.5	292.9	335.8	8.8	0.8	2.2	6	clean SAND to silty SAND	125	5.0	82	59	95	45	-	-	9	16	N/A	0.00	N/A	N/A
30.02	397.2	282.6	328.4	8.8	0.8	2.2	6	clean SAND to silty SAND	125	5.0	79	57	95	44	-	-	10	16	N/A	0.00	N/A	N/A
30.19	406.0	288.1	336.7	9.3	0.8	2.3	6	clean SAND to silty SAND	125	5.0	81	58	95	44	-	-	10	16	N/A	0.00	N/A	N/A
30.35	427.7	302.7	346.6	9.4	0.9	2.2	6	clean SAND to silty SAND	125	5.0	86	61	95	45	-	-	9	16	N/A	0.00	N/A	N/A
30.51	431.2	304.3	340.3	8.6	0.9	2.0	6	clean SAND to silty SAND	125	5.0	86	61	95	45	-	-	8	16	N/A	0.00	N/A	N/A
30.68	425.5	299.5	342.9	9.2	0.9	2.2	6	clean SAND to silty SAND	125	5.0	85	60	95	45	-	-	9	16	N/A	0.00	N/A	N/A
30.84	397.6	279.1	340.0	10.3	0.9	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	26.2	9.9	11	16	N/A	0.00	N/A	N/A

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Project ID: Petra Geotech
Data File: SDF(241).cpt
CPT Date: 11/13/2012 2:59:23 PM
GW During Test: 33 ft

Sounding ID: CPT-06
Project No: 332-12
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato -	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N 60	SPT R-N1 60	Rel Den	Ftn Ang deg	Und Shr tsf	OCR - -	Fin fc	NK - -	Vel Strn	Dry Stlmt 0.01	Liq Stlmt 0.00	Cycl SStn -
31.01	400.3	280.3	349.3	11.1	1.0	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	26.4	9.9	12	16	N/A	0.00	N/A	N/A
31.17	389.6	272.1	345.2	11.2	1.0	2.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	25.7	9.9	12	16	N/A	0.00	N/A	N/A
31.33	400.5	279.1	344.3	10.8	1.0	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	26.4	9.9	11	16	N/A	0.00	N/A	N/A
31.50	428.0	297.5	352.8	10.5	1.1	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	28.2	9.9	10	16	N/A	0.00	N/A	N/A
31.66	418.1	290.0	346.1	10.3	1.1	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	27.6	9.9	11	16	N/A	0.00	N/A	N/A
31.83	415.1	287.2	344.6	10.4	1.1	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	27.4	9.9	11	16	N/A	0.00	N/A	N/A
31.99	404.8	279.4	344.6	10.9	1.2	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	26.7	9.9	11	16	N/A	0.00	N/A	N/A
32.15	377.9	260.2	343.0	11.7	1.2	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	24.9	9.9	13	16	N/A	0.00	N/A	N/A
32.32	359.1	246.7	336.7	11.8	1.3	3.3	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.7	9.9	14	16	N/A	0.00	N/A	N/A
32.48	360.6	247.1	327.0	10.9	1.3	3.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.8	9.9	13	16	N/A	0.00	N/A	N/A
32.65	355.5	243.1	332.7	11.6	1.3	3.3	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	23.4	9.9	14	16	N/A	0.00	N/A	N/A
32.81	344.9	235.3	321.4	11.0	1.3	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	22.7	9.9	14	16	N/A	0.00	N/A	N/A
32.97	368.5	250.8	314.9	9.8	1.2	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	24.3	9.9	12	16	N/A	0.00	N/A	N/A
33.14	382.1	259.8	307.0	8.5	1.3	2.2	6	clean SAND to silty SAND	125	5.0	76	52	95	44	-	-	10	16	0.00	-	0.00	0.0
33.30	393.3	267.0	311.5	8.5	1.3	2.2	6	clean SAND to silty SAND	125	5.0	79	53	95	44	-	-	10	16	0.00	-	0.00	0.0
33.47	389.7	264.3	308.7	8.4	1.3	2.2	6	clean SAND to silty SAND	125	5.0	78	53	95	44	-	-	10	16	0.00	-	0.00	0.0
33.63	359.1	243.2	290.7	7.9	1.3	2.2	6	clean SAND to silty SAND	125	5.0	72	49	95	43	-	-	11	16	0.00	-	0.00	0.0
33.79	330.7	223.7	279.9	8.0	1.3	2.4	6	clean SAND to silty SAND	125	5.0	68	45	94	43	-	-	12	16	0.00	-	0.00	0.0
33.96	332.4	224.6	284.2	8.4	1.3	2.5	5	silty SAND to sandy SILT	120	4.0	93	56	94	43	-	-	12	16	0.00	-	0.00	0.0
34.12	304.7	205.6	270.6	8.0	1.3	2.7	5	silty SAND to sandy SILT	120	4.0	78	51	91	43	-	-	13	16	0.00	-	0.00	0.0
34.29	235.1	158.5	262.1	8.6	1.3	3.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.4	9.9	19	16	0.00	-	0.00	0.0
34.45	149.7	100.8	247.4	7.7	1.3	5.2	9	very stiff fine SOIL	120	2.0	75	50	67	39	-	-	28	30	0.00	-	0.00	0.0
34.61	76.6	36.7	-	5.4	1.3	7.3	3	silty CLAY to CLAY	115	1.5	51	24	-	-	8.3	9.9	48	15	-	-	0.00	-
34.78	57.3	27.4	-	2.6	1.1	4.8	3	silty CLAY to CLAY	115	1.5	38	18	-	-	3.9	8.7	46	15	-	-	0.00	-
34.94	47.6	22.7	-	1.8	1.2	3.9	3	silty CLAY to CLAY	115	1.5	32	15	-	-	3.2	7.2	46	15	-	-	0.00	-
35.11	48.4	23.1	-	1.7	1.0	3.7	4	clayy SILT to silty CLAY	115	2.0	24	12	-	-	3.3	7.3	45	15	-	-	0.00	-
35.27	61.6	29.3	-	2.3	0.6	3.9	4	clayy SILT to silty CLAY	115	2.0	31	15	-	-	4.2	9.3	41	15	-	-	0.00	-
35.43	67.7	32.1	-	3.2	0.8	4.8	3	silty CLAY to CLAY	115	1.5	45	21	-	-	4.6	9.9	43	15	-	-	0.00	-
35.60	72.6	34.4	-	3.5	1.0	4.9	3	silty CLAY to CLAY	115	1.5	48	23	-	-	5.0	9.9	42	15	-	-	0.00	-
35.76	101.5	67.8	173.9	4.0	1.0	4.0	4	clayy SILT to silty CLAY	115	2.0	51	34	-	-	7.0	9.9	29	15	0.00	-	0.00	0.0
35.93	62.9	29.7	-	3.8	1.1	6.2	3	silty CLAY to CLAY	115	1.5	42	20	-	-	4.3	9.4	49	15	-	-	0.00	-
36.09	37.7	17.8	-	2.3	1.0	6.5	3	silty CLAY to CLAY	115	1.5	25	12	-	-	2.5	5.5	61	15	-	-	0.00	-
36.26	41.3	19.4	-	2.5	1.0	6.3	3	silty CLAY to CLAY	115	1.5	28	13	-	-	2.8	6.1	58	15	-	-	0.00	-
36.42	81.8	38.4	-	3.2	0.7	4.1	4	clayy SILT to silty CLAY	115	2.0	41	19	-	-	5.6	9.9	37	15	-	-	0.00	-
36.58	86.6	40.5	-	4.7	0.7	5.6	3	silty CLAY to CLAY	115	1.5	58	27	-	-	6.0	9.9	41	15	-	-	0.00	-
36.75	60.9	28.4	-	3.7	0.6	6.4	3	silty CLAY to CLAY	115	1.5	41	19	-	-	4.1	9.0	50	15	-	-	0.00	-
36.91	32.0	14.9	-	2.2	0.4	7.3	3	silty CLAY to CLAY	115	1.5	21	10	-	-	2.1	4.6	67	15	-	-	0.00	-
37.08	37.6	17.5	-	2.0	0.4	5.6	3	silty CLAY to CLAY	115	1.5	25	12	-	-	2.5	5.4	58	15	-	-	0.00	-
37.24	63.8	29.6	-	2.7	0.5	4.3	3	silty CLAY to CLAY	115	1.5	43	20	-	-	4.4	9.4	43	15	-	-	0.00	-
37.40	80.3	37.2	-	3.4	0.7	4.4	4	clayy SILT to silty CLAY	115	2.0	40	19	-	-	5.5	9.9	39	15	-	-	0.00	-
37.57	58.1	26.9	-	3.6	0.7	6.4	3	silty CLAY to CLAY	115	1.5	39	18	-	-	4.0	8.5	51	15	-	-	0.00	-
37.73	47.9	22.1	-	3.0	0.7	6.5	3	silty CLAY to CLAY	115	1.5	32	15	-	-	3.2	6.9	56	15	-	-	0.00	-
37.90	47.5	21.9	-	2.8	0.7	6.2	3	silty CLAY to CLAY	115	1.5	32	15	-	-	3.2	6.9	55	15	-	-	0.00	-
38.06	112.9	74.4	178.9	4.3	0.7	3.9	4	clayy SILT to silty CLAY	115	2.0	56	37	-	-	7.8	9.9	27	15	0.00	-	0.00	0.0
38.22	180.3	118.6	222.0	6.6	0.4	3.7	5	silty SAND to sandy SILT	120	4.0	45	30	73	39	-	-	22	16	0.00	-	0.00	0.0
38.39	197.8	129.9	241.6	7.7	0.4	4.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	13.0	9.9	21	16	0.00	-	0.00	0.0
38.55	196.4	128.9	253.5	8.4	0.5	4.3	9	very stiff fine SOIL	120	2.0	98	64	75	40	-	-	23	30	0.00	-	0.00	0.0
38.72	177.7	116.5	276.4	9.6	0.6	5.5	9	very stiff fine SOIL	120	2.0	89	58	72	39	-	-	27	30	0.00	-	0.00	0.0
38.88	114.7	52.2	-	7.3	0.8	6.5	3	silty CLAY to CLAY	115	1.5	76	35	-	-	7.9	9.9	40	15	-	-	0.00	-
39.04	88.5	40.2	-	5.7	0.9	6.7	3	silty CLAY to CLAY	115	1.5	59	27	-	-	6.1	9.9	45	15	-	-	0.00	-
39.21	93.9	42.5	-	5.1	0.9	5.6	3	silty CLAY to CLAY	115	1.5	63	28	-	-	6.5	9.9	41	15	-	-	0.00	-
39.37	185.1	120.9	227.6	7.0	1.1	3.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	12.1	9.9	22	16	0.00	-	0.00	0.0
39.54	185.7	121.2	248.9	8.2	0.9	4.5	9	very stiff fine SOIL	120	2.0	93	61	73	40	-	-	24	30	0.00	-	0.00	0.0
39.70	164.2	107.0	240.7	7.7	0.9	4.7	9	very stiff fine SOIL	120	2.0	82	54	69	39	-	-	26	30	0.00	-	0.00	0.0
39.86	175.8	114.4	235.2	7.4	0.9	4.3	9	very stiff fine SOIL	120	2.0	88	57	71	39	-	-	24	30	0.00	-	0.00	0.0
40.03	173.4	112.8	235.6	7.4	0.9	4.4	9	very stiff fine SOIL	120	2.0	87	56	71	39	-	-	24	30	0.00	-	0.00	0.0
40.19	151.3	98.3	234.2	7.2	0.9	4.9	9	very stiff fine SOIL	120	2.0	76	49	66	38	-	-	27	30	0.00	-	0.00	0.0
40.36	147.4	95.7	233.9	7.2	0.8	5.0	9	very stiff fine SOIL	120	2.0	74	48	66	38	-	-	28	30	0.00	-	0.00	0.0
40.52	121.5	54.1	-	7.3	0.3	6.1	3	silty CLAY to CLAY	115	1.5	81	36	-	-	8.4	9.9	38	15	-	-	0.00	-
40.68	198.2	128.3	251.2	8.4	0.4	4.3	9	very stiff fine SOIL	120	2.0	99	64	75	40	-	-	23	30	0.00	-	0.00	0.0
40.85	267.5	173.1	278.3	9.8	0.4	3.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	17.6	9.9	18	16	0.00	-	0.00	0.0
41.01	260.0	168.6	287.6	10.6	0.1	4.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	17.1	9.9	20	16	0.00	-	0.00	0.0
41.18	242.8	156.8	298.1	11.3	0.5	4.7	9	very stiff fine SOIL	120	2.0	100	78	82	41	-	-	22	30	0.00	-	0.00	0.0
41.34	214.0	138.1	282.1	10.3	0.7	4.9	9	very stiff fine SOIL	120	2.0	100	69	78	40	-	-	24	30	0.00	-	0.00	0.0
41.50	167.7	108.1	252.0	8.3	0.9	5.1	9	very stiff fine SOIL	120	2.0	84	54	70	39	-	-	27	30	0.00	-	0.00	0.0
41.67	142.3	91.6	234.0	7.2	0.9	5.2	9	very stiff fine SOIL	120	2.0	71	46	64	38	-	-	29	30	0.00	-	0.00	0.0
41.83	136.1	87.5	229.4	6.9	0.7	5.2	9	very stiff fine SOIL	120	2.0	68	44	63	38	-	-	29	30	0.00	-	0.00	0.0
42.00	141.5	90.9	227.7	6.9	0.2	5.0	9	very stiff fine SOIL	120	2.0	71	45	64	38	-	-	28	30	0.00	-	0.00	0.0
42.16	149.5	96.0	220.1	6.6	0.3	4.5	9	very stiff fine SOIL	120	2.0	75	48	66	38	-	-	26	30	0.00	-	0.00	0.0
42.32	156.0	100.0	219.3	6.6	0.5	4.3	9	very stiff fine SOIL	120	2.0	78	50	67	38	-	-	25	30	0.00	-	0.00	0.0
42.49	153.8	98.5	219.9	6.6	0.7	4.4	9	very stiff fine SOIL	120	2.0	77	49	67	38	-	-	26	30	0.00	-	0.00	0.0
42.65	156.8	100.3	220.1	6.6	0.8	4.3	9	very stiff fine SOIL	120	2.0	78	50	67	38	-	-	25	30	0.00	-	0.00	0.0
42.82	138.6	88.6	215.8	6.3	0.8	4.6	4	clayy SILT to silty CLAY	115	2.0	68	44	-	-	9.6	9.9	28	15	0.00	-	0.00	0.0
42.98	122.1	52.8	-	7.0	0.8	5.8	3	silty CLAY to CLAY	115	1.5	81	35	-	-	8.5	9.9	38	15	-	-	0.00	-
43.15	94.6	40.8	-	5.9	0.8	6.4	3	silty CLAY to CLAY	115	1.5	63	27	-	-	6.5	9.9	44	15	-	-	0.00	-
43.31	74.3	32.0	-	5.2	0.8	7.2	3	silty CLAY to CLAY	115	1.5	50	21	-	-	5.1	9.9	50	15	-	-	0.00	-
43.47	95.2	40.9	-	4.3	0.4	4.7	4	clayy SILT to silty CLAY	115	2.0	48	20	-	-	6.6	9.9	38	15	-	-	0.00	-
43.64	98.6	42.3	-	4.7	-0.3	4.9	3	silty CLAY to CLAY	115	1.5	66	28	-	-	6.8	9.9	39	15	-	-	0.00	-
43.80	128.3	81.5	210.0	6.0	-0.9	4.7	4	clayy SILT to silty CLAY	115	2.0	64	41	-	-	8.9	9.9	29	15	0.00	-	0.00	0.0
43.97	118.6	50.7	-	6.4	-0.7	5.5	3	silty CLAY to CLAY	115	1.5	79	34	-	-	8.2	9.9	38	15	-	-	0.00	-
44.13	68.0	29.0	-	4.9	-0.2	7.5	3	silty CLAY to CLAY	115	1.5	45	19	-	-	4.8	9.2	53	15	-	-	0.00	-
44.29	45.4	19.3	-	2.8	-0.1	6.7	3	silty CLAY to CLAY	115	1.5	30	13	-	-	3.0	6.0	59	15	-	-	0.00	-
44.46	50.9	21.6	-	2.6	-0.1	5.5	3	silty CLAY to CLAY	115	1.5	34	14	-	-	3.4	6.8	53	15	-	-	0.00	-
44.62	55.5	23.5	-	2.9	-0.3	5.5	3	silty CLAY to CLAY	115	1.5	37	16	-	-	3.8	7.4	51	15	-	-	0.00	-
44.79	45.2	19.1	-	2.4	-0.3	5.6	3	silty CLAY to CLAY	115	1.5	30	13	-	-	3.0	5.9	56	15	-	-	0.00	-
44.95	36.9	15.6	-	1.8	-0.2	5.3	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.4	4.9	60	15	-	-	0.00	-
45.11	37.9	16.0	-	1.6	-0.2	4.6	3	silty CLAY to CLAY	115	1.5	25	11	-	-	2.5	4.9	57	15	-	-	0.00	-
45.28	38.5	16.2	-	1.7	-0.3	4.8	3	silty CLAY to CLAY	115	1.5	26	11	-	-	2.6	5.0	57	15	-	-	0.00	-
45.44	36.9	15.5	-	1.8	-0.3	5.4	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.4	4.7	60	15	-	-	0.00	-
45.61	36.1	15.2	-	1.9	-0.4	5.6	3	silty CLAY to CLAY	115	1.5	24	10	-	-	2.4	4.6	62	15	-	-	0.00	-
45.77	36.2	15.2	-	2.0	-0.4	6.0	3	silty CLAY to CLAY	115	1.5	24	10	-	-	2.4	4.6	63	15	-	-	0.00	-
45.93	36.4	15.2	-	2.2	-0.4	6.4	3	silty CLAY to CLAY	115	1.5	24	10	-	-	2.4	4.6	64	15	-	-	0.00	-
46.10	35.5	14.8	-	2.3	-0.6	6.9	3	silty CLAY to CLAY	115	1.5	24	10	-	-	2.3	4.5	67	15	-	-	0.00	-
46.26	36.1	15.1	-	2.3	-0.6	6.8	3	silty CLAY to CLAY	115	1.5	24	10	-	-	2.4	4.6	66	15	-	-	0.00	-

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Seville Solar Site

Project ID: Petra Geotech
Data File: SDF(241).cpt
CPT Date: 11/13/2012 2:59:23 PM
GW During Test: 33 ft

Sounding ID: CPT-06
Project No: 332-12
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qincs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato -	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N 60	SPT R-N1 60	Rel Den	Ftn Ang deg	Und Shr tsf	OCR - -	Fin Ic	Hk - -	Vol Strn	Dry Stlmt 0.01	Liq Stlmt 0.00	Cycl SStn
46.43	36.6	15.2	-	2.3	-0.6	6.9	3	silty CLAY to CLAY	115	1.5	24	10	-	-	2.4	4.6	66	15	-	-	0.00	-
46.59	37.1	15.4	-	2.4	-0.6	7.0	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.5	4.7	66	15	-	-	0.00	-
46.75	37.4	15.5	-	2.4	-0.7	6.9	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.5	4.7	65	15	-	-	0.00	-
46.92	37.3	15.4	-	2.3	-0.6	6.5	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.5	4.7	64	15	-	-	0.00	-
47.08	37.6	15.5	-	2.2	-0.6	6.3	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.5	4.7	63	15	-	-	0.00	-
47.25	38.7	16.0	-	2.3	-0.7	6.5	3	silty CLAY to CLAY	115	1.5	26	11	-	-	2.6	4.9	63	15	-	-	0.00	-
47.41	39.5	16.2	-	2.6	-0.7	7.0	3	silty CLAY to CLAY	115	1.5	26	11	-	-	2.6	5.0	63	15	-	-	0.00	-
47.57	40.2	16.5	-	2.6	-0.7	7.0	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	5.1	64	15	-	-	0.00	-
47.74	40.5	16.6	-	2.6	-0.7	7.0	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	5.1	64	15	-	-	0.00	-
47.90	40.1	16.4	-	2.6	-0.7	6.9	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	5.0	64	15	-	-	0.00	-
48.07	40.7	16.6	-	2.6	-0.7	6.8	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	5.1	63	15	-	-	0.00	-
48.23	39.7	16.2	-	2.5	-0.7	6.9	3	silty CLAY to CLAY	115	1.5	26	11	-	-	2.6	4.9	64	15	-	-	0.00	-
48.39	38.4	15.6	-	2.4	-0.7	6.7	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.5	4.8	65	15	-	-	0.00	-
48.56	38.5	15.6	-	2.3	-0.7	6.5	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.5	4.8	64	15	-	-	0.00	-
48.72	39.2	15.9	-	2.3	-0.7	6.3	3	silty CLAY to CLAY	115	1.5	26	11	-	-	2.6	4.8	63	15	-	-	0.00	-
48.89	39.6	16.0	-	2.3	-0.7	6.2	3	silty CLAY to CLAY	115	1.5	26	11	-	-	2.6	4.9	62	15	-	-	0.00	-
49.05	39.6	16.0	-	2.3	-0.7	6.3	3	silty CLAY to CLAY	115	1.5	26	11	-	-	2.6	4.9	63	15	-	-	0.00	-
49.22	40.5	16.3	-	2.3	-0.7	6.2	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	5.0	62	15	-	-	0.00	-
49.38	40.6	16.3	-	2.4	-0.7	6.4	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	5.0	62	15	-	-	0.00	-
49.54	41.0	16.5	-	2.3	-0.7	6.1	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	5.0	61	15	-	-	0.00	-
49.71	41.4	16.6	-	2.3	-0.7	6.1	3	silty CLAY to CLAY	115	1.5	28	11	-	-	2.7	5.1	61	15	-	-	0.00	-
49.87	40.7	16.3	-	2.2	-0.7	5.9	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	5.0	61	15	-	-	0.00	-
50.04	40.7	16.3	-	2.1	-0.7	5.6	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	5.0	60	15	-	-	0.00	-
50.20	40.9	16.4	-	2.1	-0.7	5.6	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	5.0	60	15	-	-	0.00	-
50.36	41.7	16.6	-	2.2	-0.7	5.7	3	silty CLAY to CLAY	115	1.5	28	11	-	-	2.8	5.1	60	15	-	-	0.00	-
50.53	40.5	16.1	-	2.3	-0.7	6.2	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	4.9	62	15	-	-	0.00	-
50.69	39.2	15.6	-	2.1	-0.7	6.0	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.6	4.7	62	15	-	-	0.00	-
50.86	39.7	15.8	-	2.0	-0.7	5.5	3	silty CLAY to CLAY	115	1.5	20	11	-	-	2.6	4.8	60	15	-	-	0.00	-
51.02	39.5	15.6	-	2.0	-0.7	5.5	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.6	4.8	60	15	-	-	0.00	-
51.18	38.1	15.1	-	1.9	-0.7	5.5	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.5	4.6	61	15	-	-	0.00	-
51.35	38.8	15.3	-	2.0	-0.6	5.5	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.6	4.7	61	15	-	-	0.00	-
51.51	39.7	15.6	-	2.0	-0.6	5.5	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.6	4.8	62	15	-	-	0.00	-
51.68	39.6	15.6	-	2.0	-0.6	5.5	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.6	4.7	61	15	-	-	0.00	-
51.84	39.4	15.5	-	1.9	-0.6	5.3	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.6	4.7	60	15	-	-	0.00	-
52.00	38.6	15.1	-	1.9	-0.6	5.3	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.5	4.6	61	15	-	-	0.00	-
52.17	38.3	15.0	-	1.9	-0.6	5.3	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.5	4.5	61	15	-	-	0.00	-
52.33	39.0	15.2	-	2.0	-0.6	5.5	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.6	4.6	61	15	-	-	0.00	-
52.50	40.4	15.8	-	2.0	-0.6	5.4	3	silty CLAY to CLAY	115	1.5	27	11	-	-	2.7	4.8	60	15	-	-	0.00	-
52.66	39.6	15.4	-	2.1	-0.6	5.6	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.6	4.7	61	15	-	-	0.00	-
52.82	39.1	15.2	-	2.0	-0.6	5.6	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.6	4.6	62	15	-	-	0.00	-
52.99	37.9	14.7	-	1.9	-0.6	5.4	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.5	4.4	62	15	-	-	0.00	-
53.15	36.8	14.3	-	1.8	-0.6	5.2	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.4	4.3	62	15	-	-	0.00	-
53.32	36.4	14.1	-	1.6	-0.6	4.9	3	silty CLAY to CLAY	115	1.5	24	9	-	-	2.4	4.2	61	15	-	-	0.00	-
53.48	35.4	13.7	-	1.5	-0.6	4.8	3	silty CLAY to CLAY	115	1.5	24	9	-	-	2.3	4.1	61	15	-	-	0.00	-
53.64	34.9	13.5	-	1.4	-0.6	4.6	3	silty CLAY to CLAY	115	1.5	23	9	-	-	2.3	4.0	61	15	-	-	0.00	-
53.81	34.3	13.2	-	1.4	-0.6	4.6	3	silty CLAY to CLAY	115	1.5	23	9	-	-	2.2	3.9	61	15	-	-	0.00	-
53.97	33.7	13.0	-	1.4	-0.6	4.5	3	silty CLAY to CLAY	115	1.5	22	9	-	-	2.2	3.9	61	15	-	-	0.00	-
54.14	34.4	13.2	-	1.4	-0.5	4.4	3	silty CLAY to CLAY	115	1.5	23	9	-	-	2.2	3.9	61	15	-	-	0.00	-
54.30	35.0	13.4	-	1.4	-0.5	4.5	3	silty CLAY to CLAY	115	1.5	23	9	-	-	2.3	4.0	61	15	-	-	0.00	-
54.46	35.2	13.5	-	1.5	-0.5	4.7	3	silty CLAY to CLAY	115	1.5	23	9	-	-	2.3	4.0	61	15	-	-	0.00	-
54.63	35.6	13.6	-	1.5	-0.5	4.6	3	silty CLAY to CLAY	115	1.5	24	9	-	-	2.3	4.1	61	15	-	-	0.00	-
54.79	35.7	13.6	-	1.5	-0.5	4.6	3	silty CLAY to CLAY	115	1.5	24	9	-	-	2.3	4.1	61	15	-	-	0.00	-
54.96	38.3	14.6	-	1.5	-0.5	4.2	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.5	4.4	57	15	-	-	0.00	-
55.12	38.1	14.5	-	1.6	-0.5	4.6	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.5	4.4	59	15	-	-	0.00	-
55.28	37.3	14.1	-	1.8	-0.5	5.2	3	silty CLAY to CLAY	115	1.5	25	9	-	-	2.4	4.2	62	15	-	-	0.00	-
55.45	37.2	14.1	-	1.7	-0.5	4.9	3	silty CLAY to CLAY	115	1.5	25	9	-	-	2.4	4.2	61	15	-	-	0.00	-
55.61	35.2	13.3	-	1.6	-0.4	4.9	3	silty CLAY to CLAY	115	1.5	23	9	-	-	2.3	4.0	63	15	-	-	0.00	-
55.78	35.5	13.4	-	1.5	-0.4	4.6	3	silty CLAY to CLAY	115	1.5	24	9	-	-	2.3	4.0	61	15	-	-	0.00	-
55.94	34.8	13.1	-	1.3	-0.4	4.1	3	silty CLAY to CLAY	115	1.5	23	9	-	-	2.3	3.9	60	15	-	-	0.00	-
56.11	30.9	11.6	-	1.0	-0.4	3.7	3	silty CLAY to CLAY	115	1.5	21	8	-	-	2.0	3.4	61	15	-	-	0.00	-
56.27	31.3	11.8	-	0.9	-0.4	3.3	3	silty CLAY to CLAY	115	1.5	21	8	-	-	2.0	3.5	59	15	-	-	0.00	-
56.43	35.2	13.3	-	1.1	-0.3	3.5	3	silty CLAY to CLAY	115	1.5	23	9	-	-	2.3	3.9	57	15	-	-	0.00	-
56.60	37.4	14.1	-	1.4	-0.3	4.0	3	silty CLAY to CLAY	115	1.5	25	9	-	-	2.5	4.2	57	15	-	-	0.00	-
56.76	38.5	14.5	-	1.5	-0.3	4.3	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.5	4.3	58	15	-	-	0.00	-
56.93	37.7	14.2	-	1.5	-0.3	4.4	3	silty CLAY to CLAY	115	1.5	25	9	-	-	2.5	4.2	59	15	-	-	0.00	-
57.09	35.5	13.4	-	1.3	-0.3	4.0	3	silty CLAY to CLAY	115	1.5	24	9	-	-	2.3	3.9	59	15	-	-	0.00	-
57.25	37.2	14.0	-	1.3	-0.3	3.8	3	silty CLAY to CLAY	115	1.5	25	9	-	-	2.4	4.1	57	15	-	-	0.00	-
57.42	38.0	14.3	-	1.3	-0.2	3.8	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.5	4.2	56	15	-	-	0.00	-
57.58	37.2	14.0	-	1.3	-0.2	3.8	3	silty CLAY to CLAY	115	1.5	25	9	-	-	2.4	4.1	57	15	-	-	0.00	-
57.75	38.1	14.4	-	1.3	-0.1	3.7	3	silty CLAY to CLAY	115	1.5	25	10	-	-	2.5	4.2	55	15	-	-	0.00	-
57.91	39.7	15.0	-	1.3	-0.1	3.7	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.6	4.4	55	15	-	-	0.00	-
58.07	38.6	14.6	-	1.4	-0.1	4.0	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.5	4.3	57	15	-	-	0.00	-
58.24	38.3	14.5	-	1.4	-0.1	4.0	3	silty CLAY to CLAY	115	1.5	26	10	-	-	2.5	4.2	57	15	-	-	0.00	-
58.40	37.6	14.2	-	1.3	-0.1	3.8	3	silty CLAY to CLAY	115	1.5	25	9	-	-	2.5	4.1	56	15	-	-	0.00	-
58.57	37.2	14.0	-	1.3	0.0	3.8	3	silty CLAY to CLAY	115	1.5	25	9	-	-	2.4	4.1	57	15	-	-	0.00	-
58.73	36.7	13.9	-	1.3	0.0	3.9	3	silty CLAY to CLAY	115	1.5	24	9	-	-	2.4	4.0	59	15	-	-	0.00	-
58.89	36.7	13.9	-	1.3	0.0	4.1	3	silty CLAY to CLAY	115	1.5	24	9	-	-	2.4	4.0	59	15	-	-	0.00	-
59.06	36.6	13.8	-	1.3	0.0	4.0	3	silty CLAY to CLAY	115	1.5	24	9	-	-	2.4	4.0	59	15	-	-	0.00	-
59.22	36.0	13.6	-	1.3	0.0	3.9	3	silty CLAY to CLAY	115	1.5	24	9	-	-	2.4	3.9	59	15	-	-	0.00	-
59.39	35.1	13.2	-	1.3	0.0	4.1	3	silty CLAY to CLAY	115	1.5	23	9	-	-	2.3	3.8	59	15	-	-	0.00	-
59.55	35.6	13.4	-	1.3	0.0	4.0	3	silty CLAY to CLAY	115	1.5	24	9	-	-	2.3	3.8	59	15	-	-	0.00	-
59.71	36.8	13.9	-	1.3	0.0	4.0	3	silty CLAY to CLAY	115	1.5	25	9	-	-	2.4	4.0	59	15	-	-	0.00	-

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

APPENDIX D

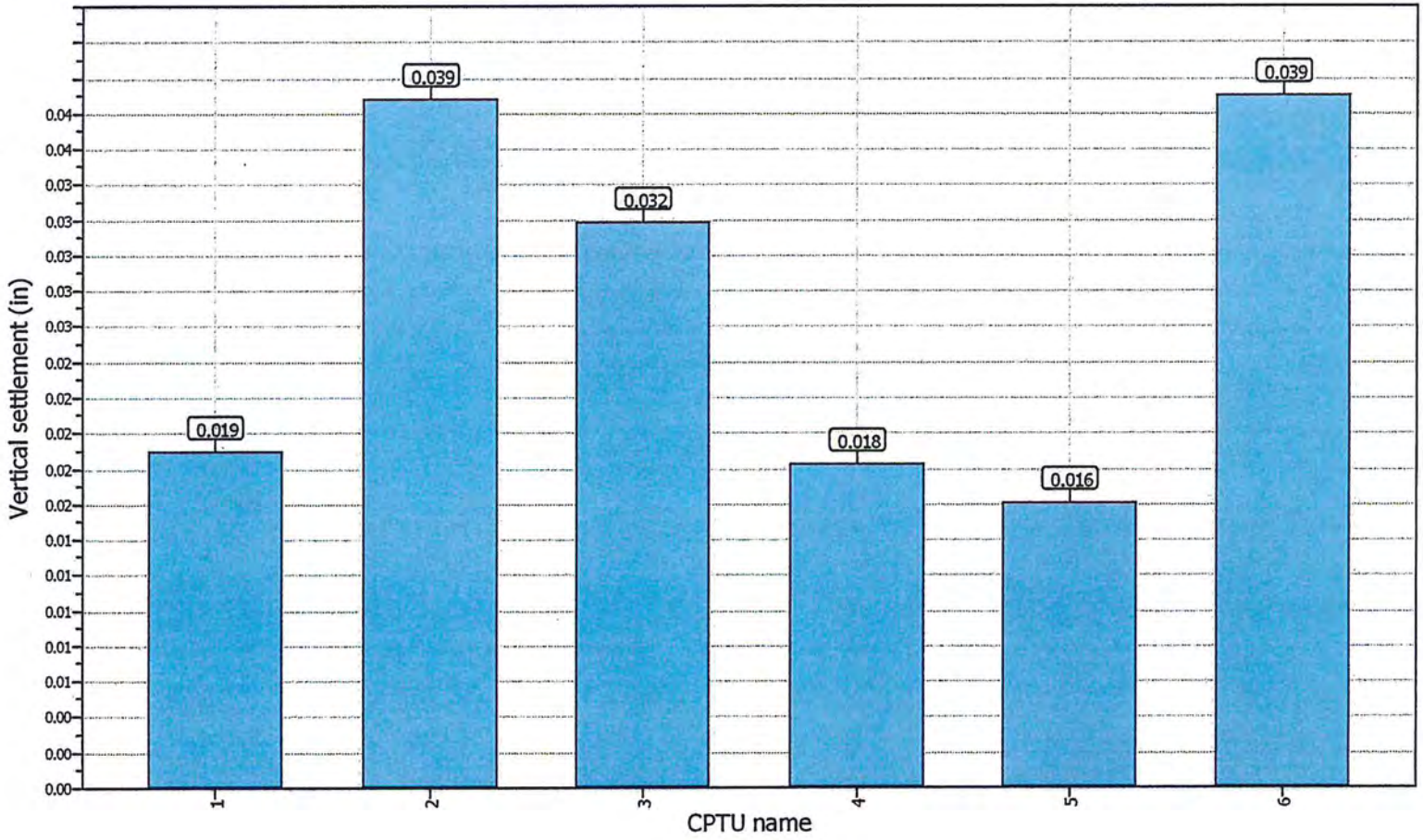
LIQUEFACTION ANALYSIS

PETRA

Project title : 332-12 Regenerate Power

Location : Ocitillo Wells

Overall vertical settlements report



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GeoLogismiki
Geotechnical Engineers
Merarhias 56
http://www.geologismiki.gr

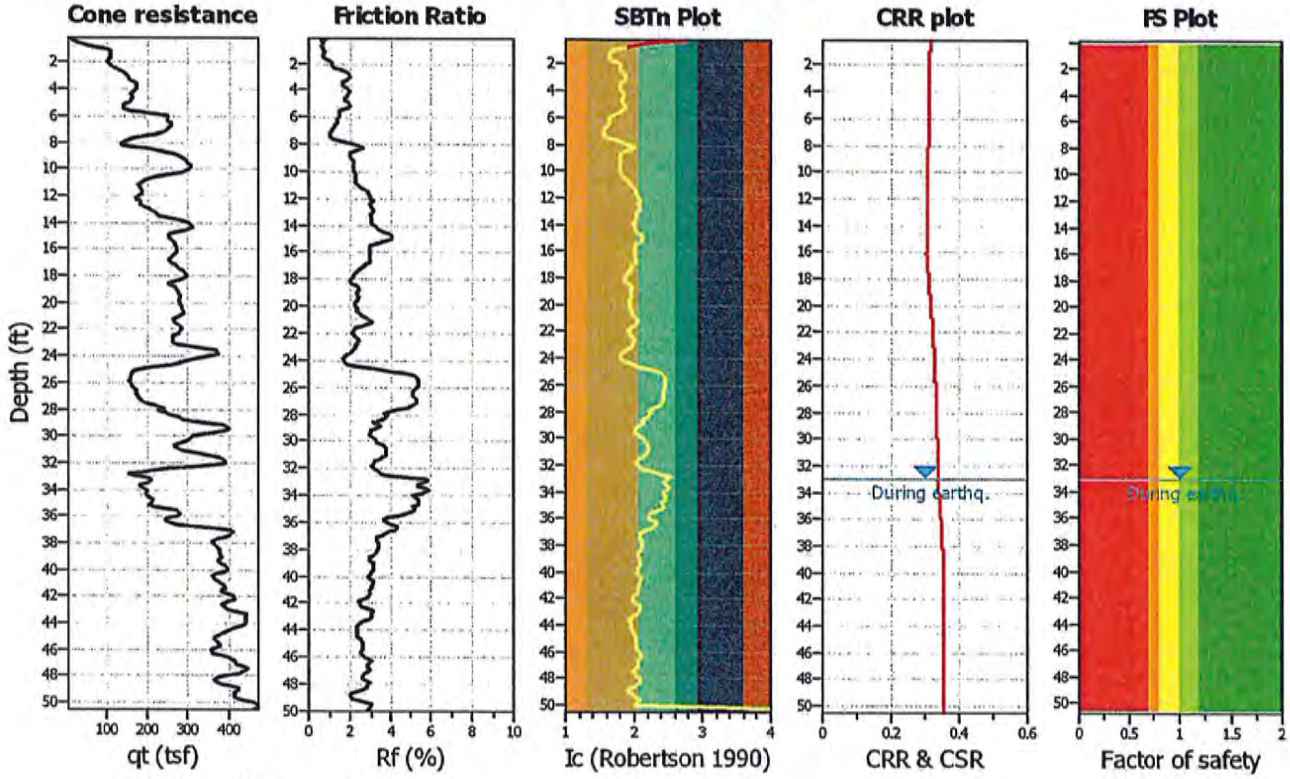
LIQUEFACTION ANALYSIS REPORT

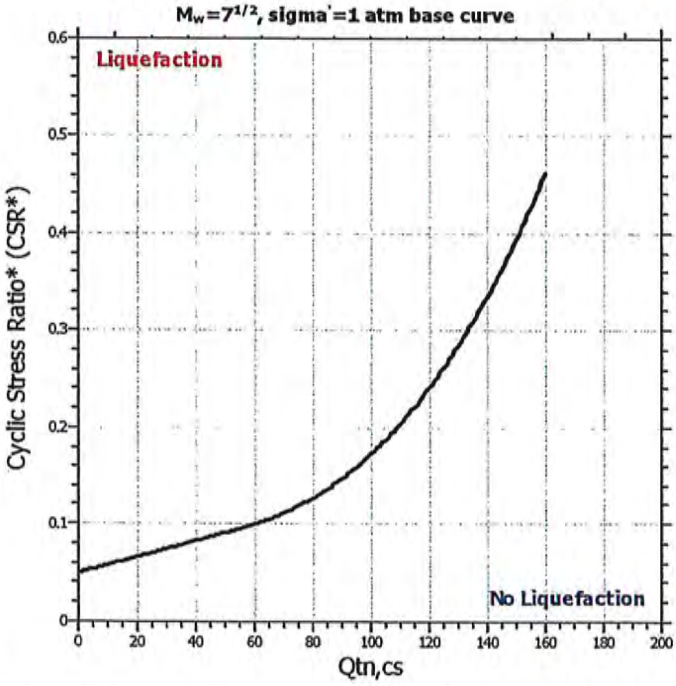
Project title : 332-12 Regenerate Power **Location : Ocitillo Wells**

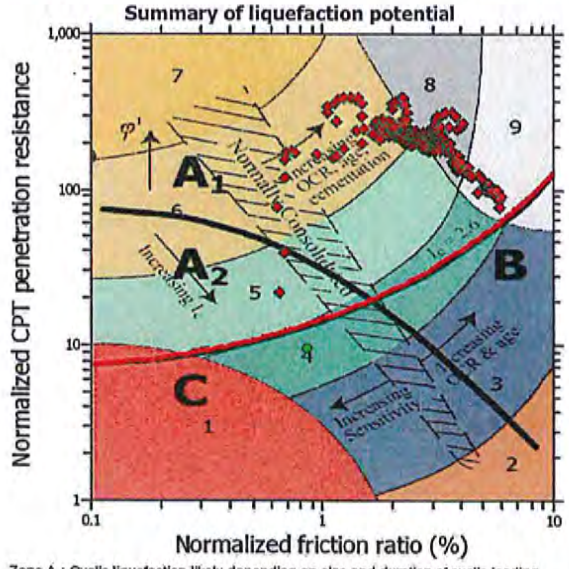
CPT file : 1

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	33.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	33.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.62	Ic cut-off value:	2.60	Trans. detect. applied:	Yes		
Peak ground acceleration:	0.51	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

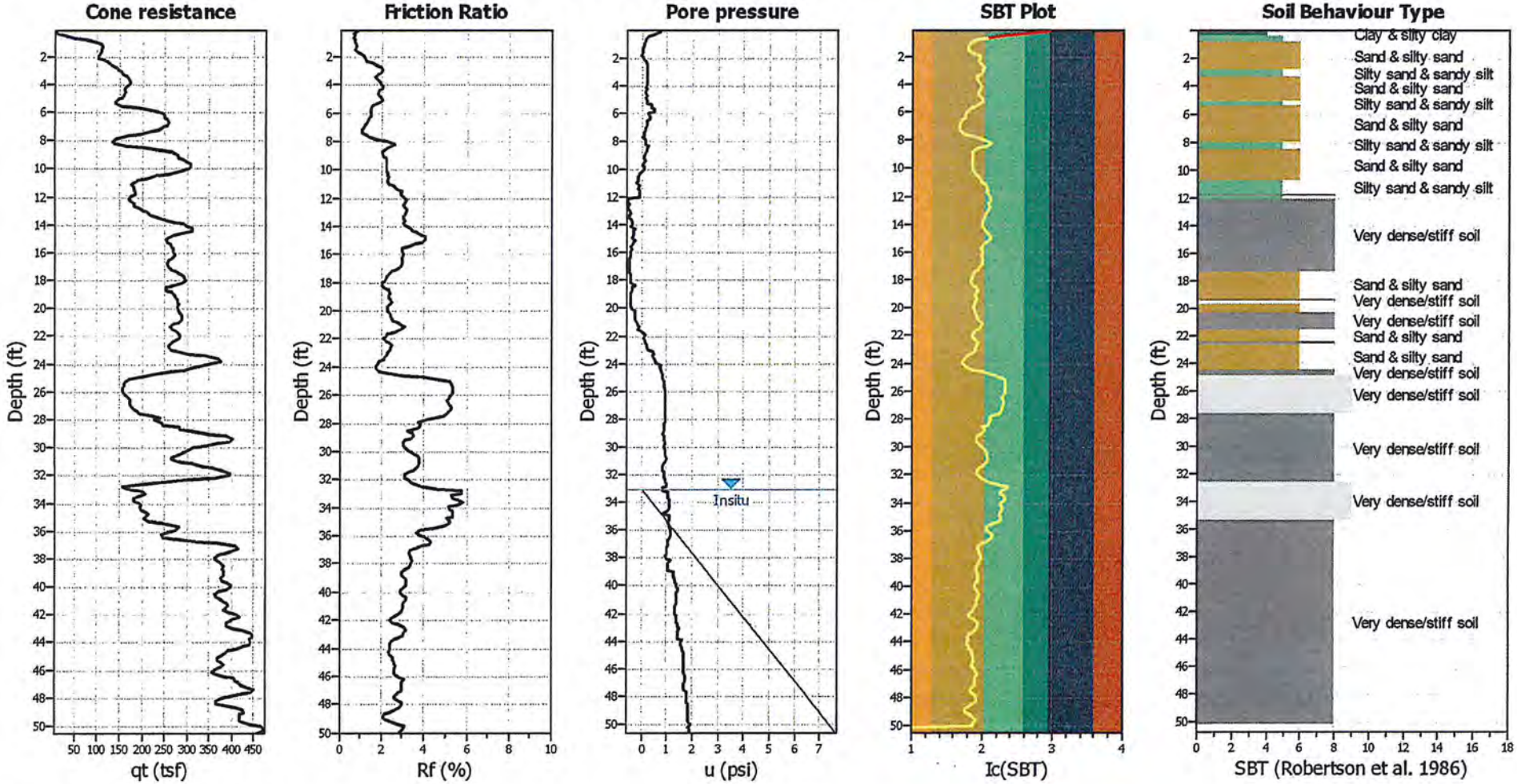






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



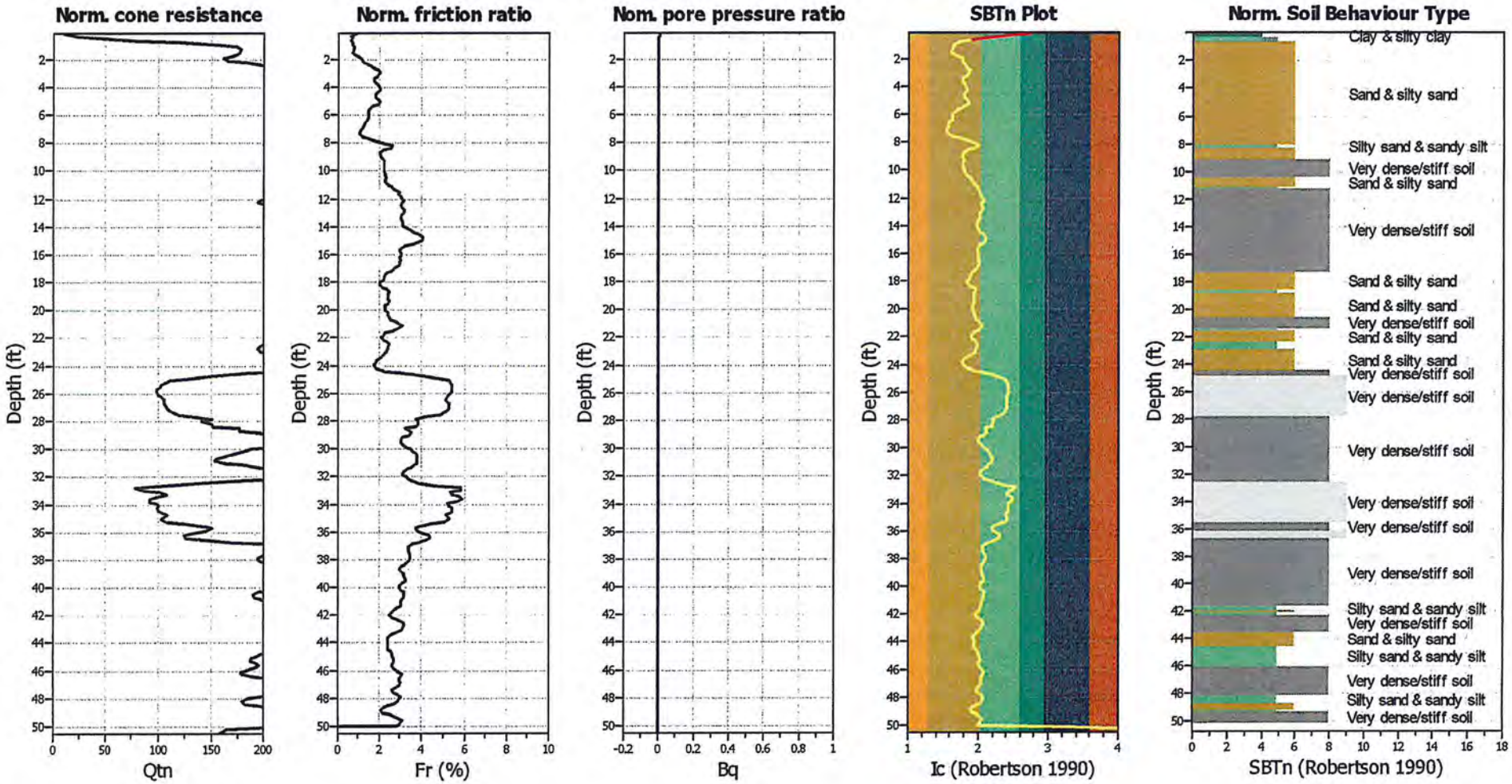
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	33.00 ft	**Fill weight:**	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	**Transition detect. applied:**	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	**K_σ applied:**	Yes
Earthquake magnitude M_w:	6.62	Unit weight calculation:	Based on SBT	**Clay like behavior applied:**	Sands only
Peak ground acceleration:	0.51	Use fill:	No	**Limit depth applied:**	No
Depth to water table (insitu):	33.00 ft	Fill height:	N/A	**Limit depth:**	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



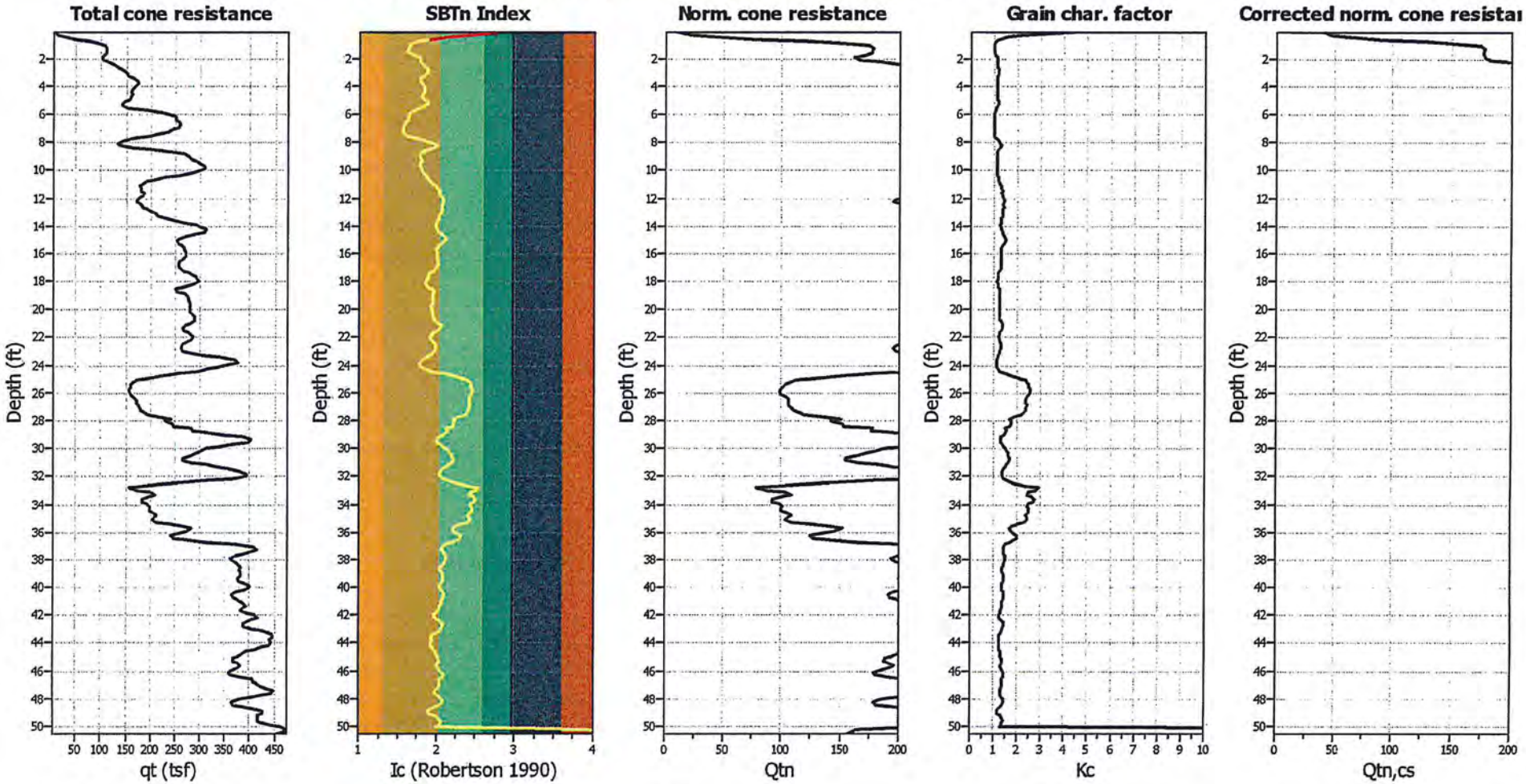
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	33.00 ft	**Fill weight:**	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	**Transition detect. applied:**	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	**K_σ applied:**	Yes
Earthquake magnitude M_w:	6.62	Unit weight calculation:	Based on SBT	**Clay like behavior applied:**	Sands only
Peak ground acceleration:	0.51	Use fill:	No	**Limit depth applied:**	No
Depth to water table (insitu):	33.00 ft	Fill height:	N/A	**Limit depth:**	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

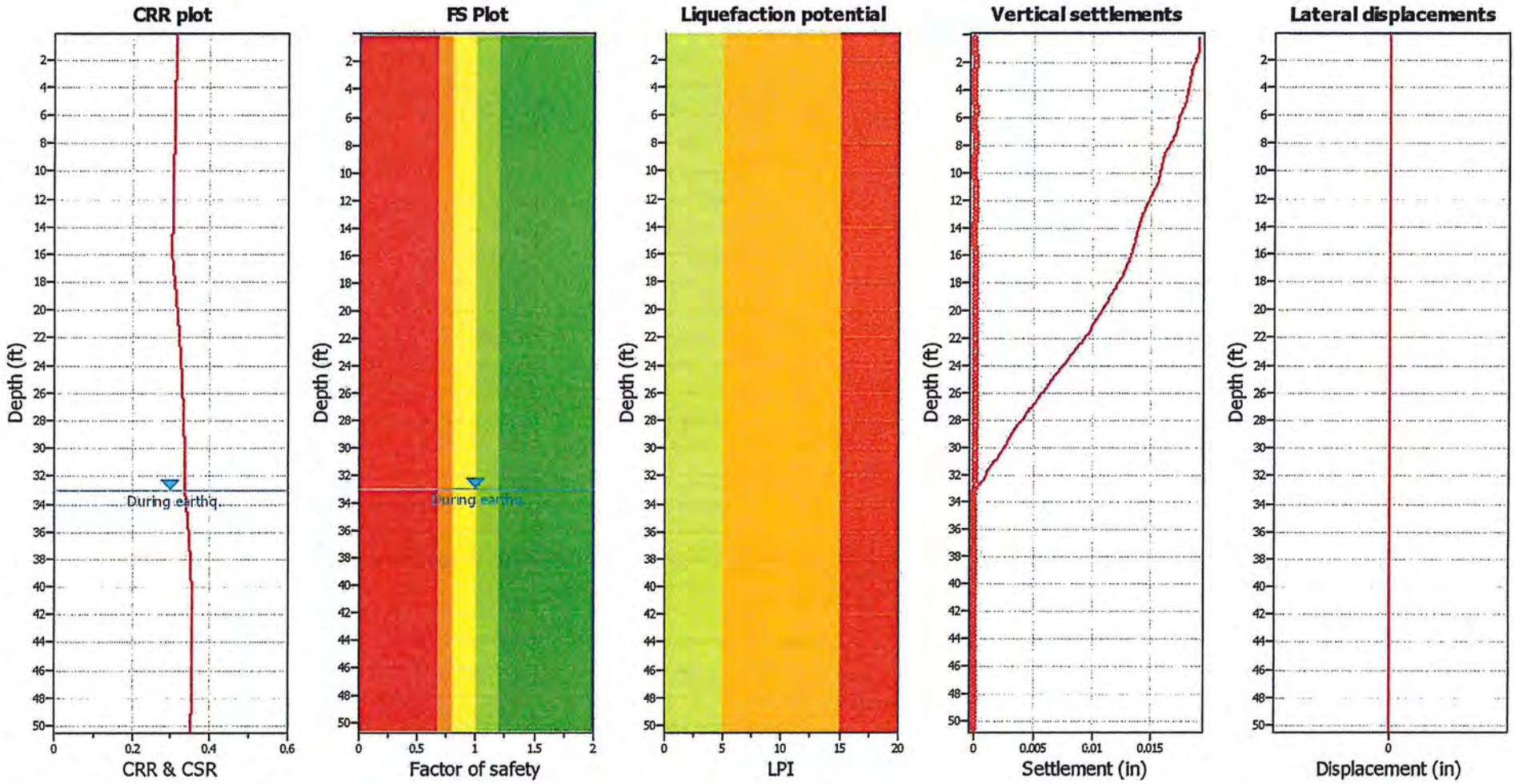
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	33.00 ft	**Fill weight:**	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	**Transition detect. applied:**	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	**K_σ applied:**	Yes
Earthquake magnitude M_w:	6.62	Unit weight calculation:	Based on SBT	**Clay like behavior applied:**	Sands only
Peak ground acceleration:	0.51	Use fill:	No	**Limit depth applied:**	No
Depth to water table (insitu):	33.00 ft	Fill height:	N/A	**Limit depth:**	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	33.00 ft	**Fill weight:**	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	**Transition detect. applied:**	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	**K_σ applied:**	Yes
Earthquake magnitude M_w:	6.62	Unit weight calculation:	Based on SBT	**Clay like behavior applied:**	Sands only
Peak ground acceleration:	0.51	Use fill:	No	**Limit depth applied:**	No
Depth to water table (insitu):	33.00 ft	Fill height:	N/A	**Limit depth:**	N/A

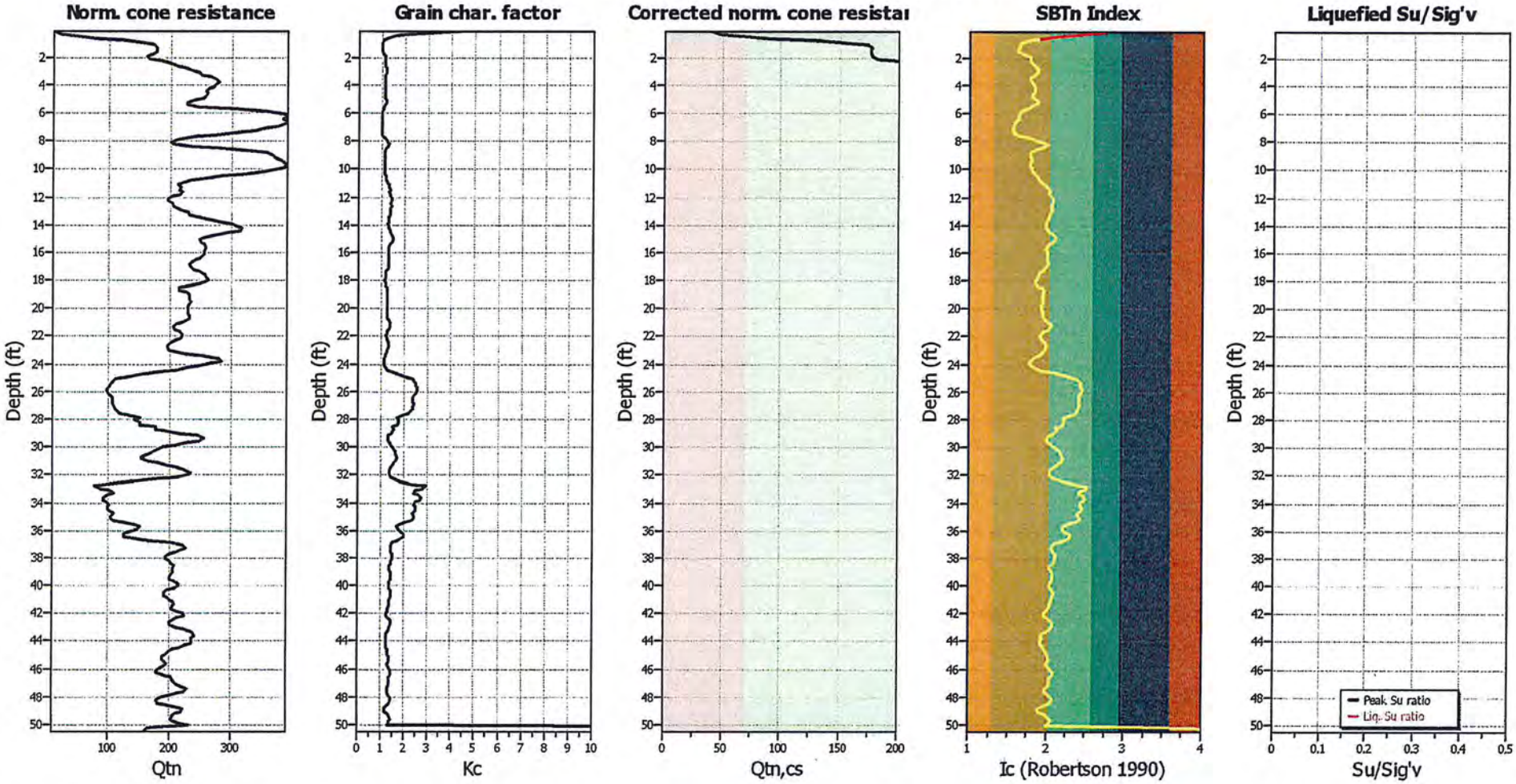
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liquefaction are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	33.00 ft	**Fill weight:**	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	**Transition detect. applied:**	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	**K_σ applied:**	Yes
Earthquake magnitude M_w:	6.62	Unit weight calculation:	Based on SBT	**Clay like behavior applied:**	Sands only
Peak ground acceleration:	0.51	Use fill:	No	**Limit depth applied:**	No
Depth to water table (Insitu):	33.00 ft	Fill height:	N/A	**Limit depth:**	N/A