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Geotechnical Engineering

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February 15, 2014

13C1126

Akiva Kobre
Fortis Property Group LLC
45 Main Street
Brooklyn, New York 11201

Re: Report of
Supplementary Geotechnical Investigation
39-Story Residential Structure
151 Maiden Lane
New York, NY

Dear Mr. Kobre:

This report is submitted in accordance with our proposal of September 18, 2013 as authorized by you on November 1, 2013. It covers a supplementary geotechnical investigation related to the proposed construction at the referenced address. We understand that the proposed project consists of two contiguous tower structures without a basement: a 39-story residential structure and a 26-story hotel. This report covers only the residential structure. The boring logs from a previous investigation by others for a different project on the site are available and utilized in our evaluation for the current project.

The hotel and residential structures may be constructed separately or at the same time. The total project footprint area will be approximately 6,918-ft^2 (3,488-ft^2 for the hotel and 3,430-ft^2 for the residential building). The plan area for the stories above the first floor is approximately 11,539-ft^2 (5,600-ft^2 for the hotel and 5,939-ft^2 for the residential building).

The total site is trapezoidal in shape with approximately average plan dimensions of 49-ft by 237-ft. It is located on the lower east side of Manhattan near the South Street Sea Port. The site consists of Lots 2 and 7 in Block 72. It is bounded on the east by South Street (approximately 150-ft from the East River), on the south by Maiden Lane, on the

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west by Front Street and on the north by Fletcher Street. The site presently is a parking lot with ground surface elevation approximately +3.5 Borough of Manhattan Datum (BMD).

Available maps indicate that the site is located east of the 17th Century Manhattan shoreline and is "made land". Further, the site had several previous usages after being reclaimed from the river with fill. The previous investigations at the site included seven borings; three of these were within Block 72 Lot 2 (the proposed site of the residential building) and one was within 25-ft of its south property line. Observation wells were installed in two completed borings; one of these was the boring just outside the building's footprint at its south east corner.

PURPOSE AND SCOPE OF SERVICES

The purpose of the investigation was to obtain additional subsurface data at the site that would confirm and supplement the available information and provide recommendations for design and construction of foundations based on the data obtained.

We provided the following services:

1) Engaged Warren George Inc. (WGI) to drill a boring.
2) Provided special inspections to observe and log the boring. We classified the soils in the field and verified that the driller used proper procedures.

3) Evaluated the available and new data and prepared this report.

4) Engaged TerraSense LLC to conduct laboratory tests on representative soil samples selected by us.

5) We will execute TR-1 forms for the boring.

6) Met with you and members of the design team to discuss our findings.

INVESTIGATION

The previous borings indicated that a deep foundation will be necessary to support the proposed structure (see evaluation below). Therefore at least four borings are necessary to provide design information and satisfy the 2008 New York City Building Code (Code) requirements. As discussed above four borings were drilled for the residential building site. These borings were drilled by Craig Test Borings in 2012 under controlled inspection by others. A CME 75 truck mounted drill rig was used to advance the borings. Steel casing was used to support the walls of the boreholes and water was used as the drilling fluid. Samples were obtained by the Standard Penetration Test Method (ASTM D 1586) generally at 5-ft depth intervals, but typically they were taken continuously within the upper 15-ft depth of the boring. All borings penetrated into bedrock (Class 1c

or better). Boring logs pertinent to the proposed residential structure covered by this report are presented in Appendix A.

The supplemental investigation consisted of one boring (B-8). It was drilled by WGI during January 13-16, 2014. It was drilled with an Acker 82 truck mounted drill rig by rotary methods with bio-degradable mud as the drilling fluid. Steel casing was used to support the upper portion of the borehole during soil sampling and then spun to top of rock to enable coring of the rock with an NX-double tube diamond core bit. Soil samples were obtained generally at 5-ft depth intervals by the Standard Penetration Test method (ASTM D1586) using a safety hammer. The drilling was observed by our Mr. Michael Filler. The boring log is presented in Appendix B.

TerraSense LLC conducted three grain size analyses, and one analysis of amount passing the No. 200 sieve on representative samples selected by us. The test results are presented in Appendix C and tabulated on the boring log in Appendix B.

SUBSURFACE CONDITIONS

The previous borings revealed that subsurface conditions generally consist of up to 28-ft of uncontrolled fill, underlain by approximately 5- to 13.5-ft of compressible former marsh deposits followed by up to 122-ft of sand deposits, then sporadically up to about 25-ft of decomposed rock, and hard mica schist bedrock at depths varying from about 111- to 155-ft with depth increasing from west to east across the site.

About 10-ft of wood was encountered below the marsh deposits in two borings in the western (hotel) portion of the. The wood may have been part of old ship wreckages or buried bulkhead cribbing dating to the 18th Century when this part of Maiden Lane was a dock or ship slip.

Groundwater was encountered about 5½ - to 7½-ft below ground surface and appeared to be tidally influenced.

Boring B-8 drilled for this investigation revealed conditions similar to those described above. Uncontrolled fill (class 7 in accordance with Code) was encountered to a depth of about 24-ft below grade. The fill was comprised of gravel, sand, silt, pieces of concrete, steel, bricks and wood. Typical N-values were around 20-blows/ft, but much higher values were recorded while penetrating the construction debris.

Organic Clay (OH, per Unified Soil Classification System)) (Class 7) was encountered below the Fill stratum to a depth of about 35-ft below grade. N-values varied from about 3- to 5-blows/ft indicating a soft to medium consistency. It is most likely an estuarine or tidal marsh deposit.

Dense poorly graded Sand (SP, and SP-SM), with N-values generally exceeding 35-blows/ft, was encountered below the unsuitable upper soil strata. The top of this stratum varied from about 29- to 39-ft below ground surface based on the previous borings. The

Sand is class 3a per Code, in some samples it is thinly laminated with silt (previous borings) and may contain dense to very dense silt layers. This stratum probably is a glacial outwash deposited in a high energy environment.

Below about 55-ft depth the Sand becomes more silty (typically SP-SM or SM) and more dense with N-values mostly above 50-blows/ft although some lower values were recorded. We believe that at the lower depths the Sand stratum probably is a till deposited by advancing and retreating glaciers some 12-14,000 years ago. The bottom of the till was encountered at about 130-ft depth below ground surface. The bottom of the till varied from about 129- to 162-ft below ground surface in the previous borings.

Decomposed rock (class 1d) was encountered below the till stratum. N-values were very high (exceeding 100-blows/ft) and when the stratum was cored with an NX core barrel very little recovery and zero RQD was obtained.

Bedrock consisting of hard mica schist (class 1a) with quartz was encountered at depth of approximately 155-ft. Core recovery and RQD were 100 percent. In the previous borings the top of rock varied from about 132-to 166-ft below ground surface. Core recoveries and RQD's were somewhat lower than obtained in this investigation,

EVALUATION AND RECOMMENDATIONS

Foundations

The Fill and Organic Clay strata are unsuitable for supporting the heavy foundation loads of the proposed structure. They must be bypassed with deep foundation elements either bearing in the very dense sand (glacial till) or socketed into the bedrock. Because of the height and slenderness of the proposed structure only high capacity elements would be suitable and cost-effective.

In our judgment large diameter drilled piles bearing in the glacial till, caissons drilled into the bedrock, or driven proprietary Taper Tube (TT) piles (see later discussion relating to pile driving vibrations) would be suitable deep foundations. Estimating the relative cost-effectiveness of these foundations requires input from contractors. The cost-effectiveness would be affected by the time required to install the foundation elements and the number of elements.

Typical designs and capacities for drilled caissons and drilled piles are shown in Table 1 (next page). We understand that a driven 20-in OD x 3/8 in wall thickness TT driven about 85-ft deep could be expected to develop a design capacity of 250-tons when driven with a hammer delivering 55,000-ft/lbs of energy per blow. Design uplift and lateral capacities of 40- and 15-tons, respectively also are expected. Spring constants of piles for use in structural design are shown in Table 2 (next page).

The drilled caissons and the larger drilled piles can be expected to develop significantly higher capacities than the TT piles and correspondingly fewer elements. We expect that

approximately 7- to 8– TT piles could be installed each day per pile driving rig and that one rig would be mobilized for the project. However, the presence of wood or other obstructions in the fill could impede the pile driving progress and require spudding or drilling to bypass the obstruction.

TABLE 1 TYPICAL PILE AND CAISSON DESIGNS

	Diameter [inches]	Compressive Design Axial Capacity [kips]	Bar size and grade	Number of Bars	Uplift Design Capacity [Kips]	Lateral Design Capacity [Kips]	Socket Length [ft]
Caissons	18x0.5	1,200	#28 GR 75	1	144	72	11*
		2,400	#28 GR 97	4	745		22*
	24x0.5	1,600	#28 GR 75	1	144	76	11*
		4,000	#28 GR 97	6	1,100		25*
	36x0.5	6,400	#28 GR 97	8	1,490	130	25*
* Casing to penetrate one ft into rock and one ft of rock discounted due to potential disturbance							
Drilled Piles	24x0.5	500	#20 GR 75	1	80	30	*
	30x0.5	950	#28 GR 75	1	150	40	*
	36x0.5	1,200	#28 GR 75	2	200	55	*
* Drilled piles to penetrate to 100-ft depth below botom of pile cap for preliminary budget purposes.							

TABLE 2 SPRING CONSTANTS FOR STRUCTURAL DESIGN

Pile	Design Load (Kips)	Estimated Deflection at Design Load (in)	Spring Constant (Kips/in)
24x0.5	500 compression	0.5	1000
30x0.5	950 compression	0.8	1190
36x0.5	1200 compression	0.7	1715
20 x 3/8 TT	500 compression	0.4	1250
24x0.5	80 uplift	0.38	210
30x0.5	150 uplift	0.38	395
36x0.5	200 uplift	0.38	525
20 x 3/8 TT	70 uplift	0.38	185

We would expect that each drilled pile would require 2- to 3-days for installation per rig and that each drilled caisson would require 3- to 4-days per rig for installation. We assume that about 120 TT-piles would be required and that alternatively about 60-drilled piles or 40-drilled caissons would be required. The estimated time for foundation construction would be about three to four weeks for the TT piles and about sixteen to thirty-two weeks for the drilled foundations, for two or one rig, respectively.

The minimum center to center spacing for the deep foundation elements (piles or caissons) should be a minimum of 2½ diameters of the element.

Two load tests will be required for the drilled or driven pile foundations. No loads tests are required for the drilled caissons but down-the-hole remote TV inspection is required for each caisson as part of special inspections. The load tests for the TT piles and for the drilled piles shall be conducted in accordance with ASTM D 1143 with the final load increment held in place for at least 24-hrs. The test piles shall be subjected to cyclical loading or suitably instrumented with tell tales and strain gauges to allow evaluation of tip and frictional resistances, as specified by the Code.

We estimate that settlements of drilled elements may be about ½- to 1-inch, occurring mainly during construction. Similarly we estimate that settlements of driven TT piles may be about ½-in occurring mainly during construction.

Vibrations Due to Pile Driving- Vibrations due to pile driving can be detrimental to adjacent structures. Problems usually develop when the adjacent structures are old and brittle and/or when they are founded on granular soils that can densify and settle because of the vibrations. For most situations induced vibrations with peak particle velocities less than 2-in/sec are acceptable if the critical conditions are absent. Sometimes cosmetic cracking occurs due to vibrations, even with relatively low vibration velocities.

We understand that all the nearby existing structures are supported on piles driven into the dense sand layer. This should be confirmed and documented. We estimated the potential vibration levels caused by a 55,000-ft-lb hammer based on available empirical data. The estimated vibration levels are about 2-in/sec at a distance of about 20- to 25-ft from the source. The distance from the property line to the closest adjacent building is about 25-ft. Therefore we anticipate that pile driving vibrations should be acceptable if these buildings are supported on piles driven into the dense sand deposit.

Groundwater Control

The previous investigation indicated that groundwater levels are related to the level of the nearby East River. The measured groundwater levels in 2007 were about 5- to 7- ft below ground surface. These should be expected to vary by several feet during the normal tide cycle and could be as high as the River level during a major or design level flood.

During Construction- Unless a major storm occurs we expect that the groundwater level will be below subgrade level but may be encountered during excavation for pile caps. Local sumps and pumps probably will be able to dewater the local excavations to allow placement of re-bars and concrete. If a major storm occurs and the general area is flooded construction probably will be delayed until the flood waters subside.

After Construction-The site lies within the 100-yr flood plain of the East River, and is at approximately el 5.75 (USGS Datum). The 10-yr flood plain is at approx. elevation 11.0 (USGS datum). We understand that the building must be “flood proofed” for water levels up to 1-ft above the 100-yr flood plain elevation. Therefore the ground floor slab

should be designed as a pressure slab with hydrostatic uplift pressures based on a design water level of +12 (USGS datum) corresponding to el 8.25(BMD).

Underpinning and Lateral Retaining Systems

No deep excavations near existing structures are planned. Therefore no underpinning should be necessary. General excavation depths for foundation and ground floor construction should be nominal, on the order of 3-ft below existing ground surface. We expect that sufficient space should be available to allow open cut construction. Temporary side slopes should be no steeper than 1:1½ (v:h). If insufficient space is available we anticipate that cantilevered (unbraced) vertical soldier pile and lagging retaining walls would be used to retain the earth.

Unbraced soldier-pile and lagging walls may be designed based on active earth pressures calculated using an effective soil friction angle of 32^o and total unit weight of 125-lbs/ft^3. The lagging boards should be louvered or spaced to allow relief of hydrostatic pressures.

Potential Effects on Adjacent Structures

As discussed earlier adjacent structures are believed supported on piles bearing in the dense sand strata and are located at least 25-ft from the property line. Therefore, no significant effects on the existing structures are anticipated due to the nominal excavation depths that may be required. Similarly, the adjacent structures are sufficiently distant so that no negative effects are expected with properly executed construction of drilled foundation elements although slight migration of fine soil particles into the drill hole could occur.

The potential effects of pile driving vibrations were discussed earlier. We recommend that vibrations be monitored at various distances from the piles during the driving of initial test piles to confirm that the expected vibration levels will be acceptable. Vibration levels on the adjacent structures should be monitored during installation of piles.

Seismic Considerations

Potential Liquefaction- No potentially liquefiable soils were encountered in the boring drilled for this supplementary investigation. Several N-values from the previous borings plotted below the Code liquefaction screening diagram of N-value vs. depth. However, we analyzed the data using the Simplified Seed Idriss method. We found that with the exception of three isolated points all calculated "safety factors with respect to liquefaction" exceeded 1.25. The lowest calculated safety factors for the isolated points were approximately 1.1 We conclude that liquefaction need not be considered in the design.

Site Class- The site class is determined by considering the weighted N-value for granular soils and the weighted undrained shear strength for cohesive soils in the various soil

layers in the upper 100-ft of the soil profile. We estimated undrained shear strengths from N-values reported on the boring logs applicable to the project.

Our analysis indicates that the site may be classified as "D Stiff soil profile" based on the granular soils, but as "E Soft soil profile" in accordance with Table 1615.1.1 of the Code. Therefore Site Class E should be used for design.

Additional Investigation

Possibly, a site specific investigation involving *insitu* shear wave velocity testing and site spectral analysis could reduce the design spectral accelerations to about 80 per cent of the Site Class determined by the *insitu* shear wave velocity testing.

LIMITATIONS

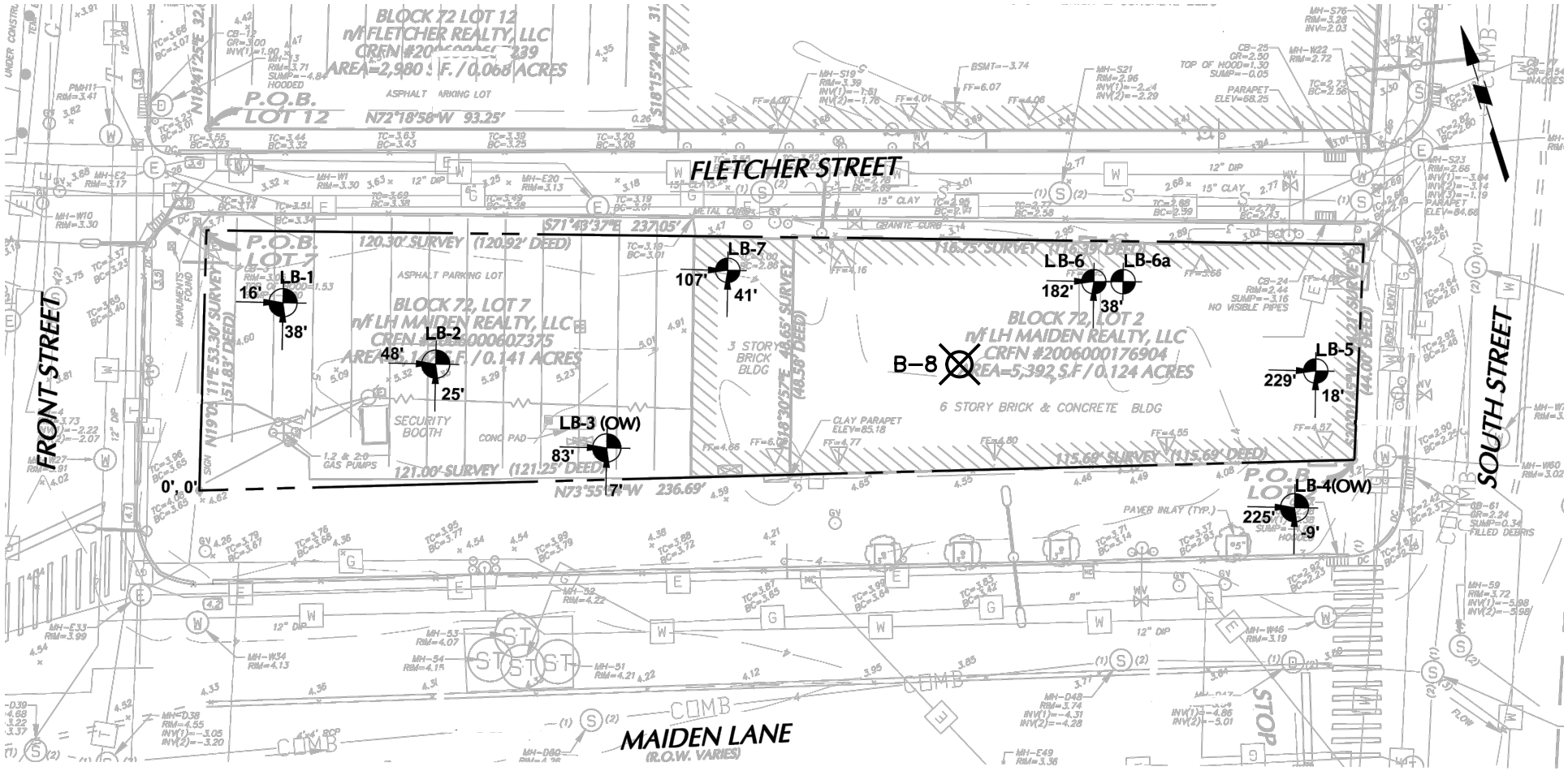
Our recommendations presented above are based on our interpretation of subsurface conditions based on the results of four available boring logs and the boring drilled for this investigation and our understanding of the project as described above. Significant differences in the project or other changed conditions should be reported to us and we should be requested to revise our recommendations if necessary.

We appreciate this opportunity to be of service and look forward to working with you as the project proceeds.

Very truly yours,
RA CONSULTANTS LLC

Robert Alperstein, P.E., D.GE

Walter J. Papp, Jr., P.E.



NOTES:

- BORINGS LB-1 THROUGH LB-7 WERE DRILLED AND OBSERVED BY OTHERS.
- BORING B-8 WAS DRILLED BY WARREN GEORGE INC. AND OBSERVED BY RA CONSULTANTS LLC., BETWEEN JANUARY 13TH THROUGH JANUARY 16TH, 2014.

LEGEND:

BORING OBSERVED BY OTHERS

BORING OBSERVED BY RA CONSULTANTS LLC

1 BORING LOCATION PLAN

Scale: 1/32":1'-0"

PROJECT
151 MAIDEN LANE
NEW YORK, NY

RA CONSULTANTS LLC
Geotechnical Engineering
47 WILKENS DR., DUMONT, NJ 07628
201.374.1794 WWW.RACLLC.COM

DATE:	FEB. 5, 2014
PROJ. NO.:	13C1126
DRN/CHKD:	PS/RA
TITLE:	BORING LOCATION PLAN
DWG:	FIGURE 1

C:\USERS\PATRICK\DROPBOX\RACLLC\RAC LLC 2013 PROJECTS\13C1126 151 MAIDEN LANE\DWG

PATRICK

APPENDIX A

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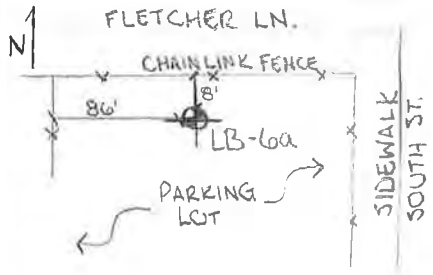
LOG OF BORING LB-6a **SHEET** 1 **OF** 11

PROJECT: 151 MAIDEN LN.	PROJECT NO.: 170166060C01
LOCATION: NEW YORK, NY	ELEVATION AND DATUM: EL. 5± BPMD
DRILLING AGENCY: CRAIG TEST BORING, INC.	DATE STARTED: 4/4/12 — DATE FINISHED: 4/5/12
DRILLING EQUIPMENT: CME-75	COMPLETION DEPTH: 180' — ROCK DEPTH: 162'
SIZE AND TYPE OF BIT: 3 7/8" Ø TRICONE ROLLER BIT	NO. SAMPLES — DIST. — UNDIST. — CORE
CASING: 4" Ø FLUSH JOINT STEEL CASING	WATER LEVEL: FIRST – — COMPL. 6'-4" — 24 HR. –
CASING HAMMER: AUTO — WEIGHT: 140 LB — DROP: 30"	FOREMAN: CRAIG COHEN
SAMPLER: 2" Ø NX CORE BARREL	INSPECTOR: CORRIE CAMPBELL
SAMPLER HAMMER: – — WEIGHT: – — DROP: –	

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	CASING BLOWS	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 7	FILL		PUSH	1					
				2					
				3					
				4					
				5					
				6					
				7					- START AT 2:00 P.M. ON 4/4/12 - INSTALL CASING FROM 0' TO 10' - DRILL TO 10' - RIG CHATTER FROM 0' TO 10' - SLOW DRILLING
				8					
				9					
				10					
			243 BLOWS/5FT	11					- INSTALL CASING FROM 10' TO 15' - DRILL TO 15' - RIG CHATTER - SLOW DRILLING
				12					
				13					
				14					

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JOB NO. 170116606

DATE 4/5/12

LOG OF BORING NO. LB-6a

SHEET 2 OF 11

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	CASING BLOWS	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLS/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 7	FILL		160 BLOWS/5FT	14 15 16 17 18 19 20					- ADD 5' OF CASING FROM 15' TO 20' - DRILL TO 20' - SLOW DRILLING
			185 BLOWS/5FT	20 21 22 23 24 25					- ADD 5' OF CASING FROM 20' TO 25' - DRILL TO 25' - SLOW DRILLING - BROWN TO BLACK WASH AT ~24'
			133 BLOWS/5FT	25 26 27 28 29 30					- ADD 5' OF CASING FROM 25' TO 30' - DRILL TO 30' - SOME WOOD IN RETURN - BLACK WASH
			111 BLOWS/5FT	30 31 32					- ADD 5' OF CASING FROM 30' TO 35' - DRILL TO 35' - BLACK TO BROWN WASH AT 31'

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JOB NO. 170166601
DATE 4/5/12

LOG OF BORING NO. LB-6a
SHEET 3 OF 11

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 7	FILL		33					
			34					
		111 BLOWS/5FT	35					
			36					-ADD 5' OF CASING FROM 35' TO 40' -DRILL TO 40' - BROWN WASH -ADD QUIKGEL# WATER TO TUB @ 35' -RIG CHATTER FROM 35' TO 40'
			37					
		232 BLOWS/5FT	38					
			39					
			40					-ADD 5' OF CASING FROM 40' TO 45' -DRILL TO 45' -BROWN WASH -SMOOTH DRILLING
			41					
			42					
		312 BLOWS/5FT	43					
			44					
CLASS 3	SAND		45					
			46					-DRILL TO 162' -BROWN WASH -SMOOTH DRILLING
			47					
			48					
			49					
			50					
			51					

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JOB NO. 170166060 01
DATE 4/5/12

LOG OF BORING NO. LB-6a
SHEET 4 OF 11

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO. LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3	SAND		51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68					CONTINUE DRILLING TO 162' -BROWN WASH -SMOOTH DRILLING

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JOB NO. 170166601

DATE 4/5/12

LOG OF BORING NO. LB-6a

SHEET 5 OF 11

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3	SAND		69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86					CONTINUE DRILLING TO 162' - BROWN WASH - SMOOTH DRILLING

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JOB NO. 170166601

DATE 4/5/12

LOG OF BORING NO. LB-6a

SHEET 6 OF 11

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3	SAND		87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104					CONTINUE DRILLING TO 162' - BROWN WASH - SMOOTH DRILLING

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JOB NO. 170166606O1

DATE 4/5/12

LOG OF BORING NO. LB-60a

SHEET 7 OF 11

NYBC CLASS / SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO. LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS IN.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3 SAND		105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122					CONTINUE DRILLING TO 162' -BROWN WASH -SMOOTH DRILLING

086100

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JOB NO. 170166601

DATE 4/5/12

LOG OF BORING NO. LB-6a

SHEET 8 OF 11

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3	SAND		123					CONTINUE DRILLING TO 162' -BROWN WASH -SMOOTH DRILLING
			124					
			125					
			126					
			127					
			128					
			129					
			130					
			131					
			132					
			133					
			134					
			135					
			136					
			137					
			138					
			139					
			140					

086100

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JOB NO. 170166601

DATE 4/5/12

LOG OF BORING NO. LB-6a

SHEET 9 OF 11

NYSC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS B	SAND		140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157					CONTINUE DRILLING TO 162' -SMOOTH DRILLING -BROWN WASH

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JOB NO. 170166601
DATE 4/5/12

LOG OF BORING NO. LB-6a

SHEET 10 OF 11

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	TIME TO CORE (MIN.)	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3	SAND			158					
				159					
				160					
				161					
				162					- CHANGE WATER & QUIK GEL IN TUB - START CORING AT 12.22 P.M.
CLASS 1	ROCK	NO RECOVERY	2 MIN	163	C-1	NX CORE SAMPLER			- LOSING WATER FROM 163-163.5'
			3 MIN	164					- LOTS OF RIG CHATTER FROM 164' - 172' - LOSING WATER FROM 164' TO 172'
			4 MIN	165					
			3 MIN	166					
			9 MIN	167					- ADDED MORE WATER & QUIK GEL
			9 MIN	168					- ADDED MORE WATER & QUIK GEL TO TUB
			23 MIN	169					- ADDED MORE WATER & QUIK GEL TO TUB
			18 MIN	170					
CLASS 1b	ROCK	GRAY MICA SCHIST [CLASS 1b]	9 MIN						- UNABLE TO MOVE FURTHER
			2 MIN	171	C-2	NX CORE SAMPLER	98"/120" = 82"	68"/120" = 52"	- WHEN PULLED UP ROCK CORE, ALL SAND B/C OF MACHINE MALFUNCTION
			3 MIN.	172					
			3 MIN.	173					
			3 MIN.	174					
			4 MIN	175					
			5 MIN.	176					

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JOB NO. 170166601

DATE 4/5/12

LOG OF BORING NO. LB-6a

SHEET 11 OF 11

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	TIME (MIN)	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/IN.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 1b	ROCK	GREY MICA SCHIST (CLASS 1b)	6 MIN	176	C-2	NX CORE SAMPLER	98"/120" = 82%	68"/120" = 57%	- ADD MORE WATER & QUIKGEL TO TUB
			10 MIN	177					
			12 MIN	178					
			11 MIN	179					
		E.O.B. AT 180		180					

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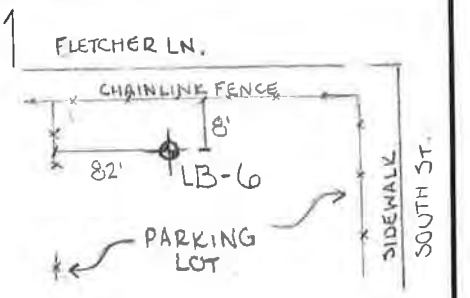
LOG OF BORING LB-6 SHEET 1 OF 9

PROJECT 151-161 MAIDEN LN.	PROJECT NO. 170161666601
LOCATION NEW YORK, NY	ELEVATION AND DATUM EL 5± (BPMD)
DRILLING AGENCY CRAIG TESTING INC.	DATE STARTED 4/2/12 / DATE FINISHED 4/4/12
DRILLING EQUIPMENT CME-75 TRUCK MOUNTED RIG	COMPLETION DEPTH 152' / ROCK DEPTH ~152'
SIZE AND TYPE OF BIT 2 7/8" TRICONE ROLLER BIT	NO. SAMPLES DIST. 36 UNDIST. - CORE -
CASING 4" DIAMETER FLUSH JOINT STEEL	WATER LEVEL FIRST ~7' COMPL. 24 HR.
CASING HAMMER AUTO. WEIGHT 140 LB. DROP 30"	FOREMAN KEITH PARENT / CRAIG COHEN
SAMPLER 2" DIAMETER SPLIT SPOON	INSPECTOR CODRIE CAMPBELL
SAMPLER HAMMER SAFETY WEIGHT 140 LB. DROP 30"	

NYSDOT CLASS	SOIL MODEL	SAMPLE DESCRIPTION	PID (ppm)	CASING BLOWS/ft	DEPTH SCALE	SAMPLES NO./LOC.	TYPE	RECOV. FT.	PENETR. RESIST BL/6 in.
CLASS 7	FILL	brown f-c SAND WITH SOME gravel, trace brick, trace silt, dry [SP]	0	PUSH	1	S-1	SS	10"	15 11 11 20
		brown f-c SAND with some gravel, trace wood, trace silt, dry [SP]	0		2 3 4	S-2	SS	5"	20 11 9 9
		mottled f-c gravelly SAND and BRICK with trace silt [SP]	0	17 BLOWS/5FT	5 6	S-3	SS	6"	19 14 15 7
		brown f-c SAND with some brick, trace gravel, moist [SP]	0		7 8	S-4	SS	1"	4 3 3 WOH
		brown f. sandy GRAVEL with some brick, moist [GP]	0		9	S-5	SS	5"	1 1 1 1
		TAN f. SANDY GRAVEL, MOIST [GP]	0	PUSH	10 11	S-6	SS	2"	4 8 6 9
				114 BLOWS/3 FT.	12 13 14				

REMARKS
(DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)



- START DRILLING @ 8:30 A.M.
- TAKE S-1 W/ SS SAMPLER FROM 0'-2'
- TAKE S-2 W/ SS SAMPLER FROM 2'-4'
- TAKE S-3 W/ SS SAMPLER FROM 4'-6'
- ADD WATER & QUIKGEL TO TUB
- DRILL TO 6' ⇒ LOTS OF CHATTER
- TAKE S-4 W/ SS SAMPLER FROM 6'-8'
- TAKE S-5 W/ SS SAMPLER FROM 8'-10'
- INSTALL 9' OF CASING
- DRILL TO 10'
- BROWNISH-GRAY WASH GRAVEL COMING OUT W/ RETURN
- TAKE S-6 W/ SS SAMPLER FROM 10'-12'
- INSTALL 5' OF CASING FROM 9' TO 14'
- DRILL TO 15'
- TAN → BROWN WASH

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JOB NO. 170166601
DATE 4/2/12

LOG OF BORING NO. LB-6
SHEET 2 OF 9

USCS CLASS	SYMBOL	SAMPLE DESCRIPTION	PID (ppm)	CASING BLOWS (BPF)	DEPTH SCALE	SAMPLES NO. LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
					14					
					15					
		GRAY f. SANDY GRAVEL, MOIST [GP]	0.3	309 BLOWS/5FT	16	S-7	SS	4"	4 21 00 37	-TAKE S-7 W/ SS AT 15'-17'
					17					
					18					-INSTALL CASING 5' FROM 14' TO 19' -DRILL TO 20' -BROWN WASH -RIG CHATTER 17' TO 20'
					19					
					20					
		GREY f. GRAVEL WITH SOME f-M SAND MOIST [GP]	1.4	355 BLOWS/FT	21	S-8	SS	1"	3 14 4 5	TAKE S-8 W/ SS SAMPLER FROM 20'-22'
					22					
CLASS 7	FILL			526 BLOWS/FT	23					-INSTALL 5' CASING FROM 19' TO 24' -DRILL DOWN TO 25' -A LITTLE RIG CHATTER FROM 23' TO 25'
					24					
		BROWN WOOD WITH TRACE f-m SAND, MOIST	4.9 PPM	239 BLOWS/4FT	25	S-9	SS	5"	29 9 14 19	TAKE S-9 W/ SS SAMPLER FROM 25' TO 27'
					26					
					27					-INSTALL 5' CASING FROM 24' TO 29' -INCREASED RESISTANCE TO INSTALL CASING BETWEEN 24' AND 25' -AT 11:10 A.M. STOP TO REPAIR AUTOHAMMER -DRILL TO 30' -BROWN WASH, SLOW DRILLING -ODOR OBSERVED IN HOLE -WOOD CHUNKS COMING UP W/ RETURN -AT 29.5' HIT THIN LAYER PRODUCING BLACK WASH
					28					
					29					
					30					
		BLACK ORGANIC SILT AND WOOD, MOIST [MH]	0 PPM		31	S-10	SS	>1"	4 3 5 5	

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JOB NO. 170166601
DATE 4/2/12

LOG OF BORING NO. LB-6
SHEET 3 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	PID (ppm)	CASING BLOWS	DEPTH SCALE	SAMPLES NO./LOC.	TYPE	RECOV. FT.	PENETR. RESIST BLWS/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 5	FILL	BLACK ORGANIC SILT AND WOOD, MOIST [MH]	0	63 BLOWS/5FT	32	S-11	SS	1"	3 2 2 3	TAKE S-11 W/SS FROM 32' TO 34' POOR RECOVERY
		BLACK ORGANIC CLAYEY SILT WITH SOME WOOD, MOIST [MH]	0		34	S-11a	SS	5"	PUSH	TAKE S-11a FROM 34' TO 36' W/ 3-IN Ø SPLIT SPOON TO MAKE SURE GET ACCEPTABLE SAMPLE
?	?	? ? ?			36	S-12	SS	3"	12 12 14 18	TAKE S-12 FROM 36' TO 38'
		BROWN f-C GRAVELLY SAND WITH TRACE SILT [SP]	0	98 BLOWS/5FT	38					- DRILL TO 40' - BLACK TO BROWN WASH @ ~36.5'
		BROWN f-m SAND WITH SOME GRAVEL, TRACE SILT, MOIST [SP]	0	178 BLOWS/5FT	40	S-13	SS	4"	15 11 9 13	- TAKE S-13 W/SS FROM 40' TO 42' - DRILL TO 45' - BROWN WASH, RIG CHATTER 43' TO 45'
CLASS 3	SAND	BROWN f-m SILTY SAND WITH SOME GRAVEL, MOIST [SM]	0		45	S-14	SS	2"	H 23 25 38	- TAKE S-H W/SS FROM 45' TO 47' - INSTALL 5' OF CASING FROM 34' TO 39' - INSTALL 5' OF CASING FROM 39' TO 44' - DRILL TO 50' - BROWN WASH - RIG CHATTER FROM 48' TO 50'
					50					

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JOB NO. 170166601
DATE 4/2/12

LOG OF BORING NO. LB-6
SHEET 4 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	CASING BLOWS (bpf)	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLS/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3	SAND	VARVED BROWN f-m SAND AND GRAY SILT WITH TRACE MICA, MOIST [SP]		50	S-15	SS	19"	14	TAKE S-15 w/ SS FROM 50' TO 52'
				51				14	
								19	
				52				24	- DRILL TO 55'
									- SMOOTH DRILLING
				53					- BROWN WASH
				54					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]		55	S-16	SS	19"	9	TAKE S-16 w/ SS FROM 55' TO 57'
								11	- END OF 4/2/12 AT 1:15 P.M.
				56				23	- START OF 4/3/12 AT 1:30 A.M.
									- ADD MORE WATER & QUIKGEL TO TUB
				57				30	
				58					- DRILL TO 60'
									- SMOOTH DRILLING, BROWN WASH
				59					
		NO RECOVERY		60	S-17	SS	0"	22	TAKE S-17 w/ SS FROM 60' TO 62'
								26	NO RECOVERY SO TAKE ANOTHER SAMPLE
				61				26	IMMEDIATELY AFTER
								30	
		BROWN f-m SAND WITH SOME SILT, TRACE MICA, MOIST [SP]		62	S-18	SS	23"	26	TAKE S-18 w/ SS FROM 62' TO 64'
								34	
				63				43	
								50/5	
				64					- DRILL TO 65'
									- SMOOTH DRILLING, BROWN WASH
				65					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]						8	
				66	S-19	SS	18"	15	
								21	
				67				24	

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JOB NO. 170166060601
DATE 4/3/12

LOG OF BORING NO. LB-6
SHEET 5 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO.LOC.	TYPE	RECOV. FT.	PENETR. RESIST BLG/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
			68					- DRILL TO 70' - SMOOTH DRILLING - BROWN WASH
			69					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	70	S-20	SS	16"	10 14 16 17	- TAKE S-20 WITH SS FROM 70' TO 72'
			71					
			72					- DRILL TO 75' - SMOOTH DRILLING, BROWN WASH
			73					
			74					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA [SP]	75	S-21	SS	20"	10 10 12 15	TAKE S-21 WITH SS FROM 75' TO 77'
			76					
			77					- DRILL TO 80' - SMOOTH DRILLING - BROWN WASH
3	SAND		78					
			79					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA [SP]	80	S-22	SS	14"	16 21 17 18	TAKE S-22 W/SS FROM 80' TO 82'
			81					
			82					- DRILL TO 85' - SMOOTH DRILLING - BROWN WASH
			83					
			84					
		BROWN f-m SAND WITH TRACE MICA, MOIST [SP]	85	S-23	SS	15"	32 42	TAKE S-23 WITH SS FROM 85' TO 87'

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JOB NO. 170160101C1

DATE 4/3/12

LOG OF BORING NO. LB-6

SHEET 6 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
			86	S-23	SS		45 47	
			87					-DRILL TO 90' -SMOOTH DRILLING -BROWN WASH
			88					
			89					
			90				28	-TAKE S-24 WITH SS FROM 90' TO 92'
		BROWN f-m SAND WITH SOME SILT, TRACE MICA, MOIST [SP]	91	S-24	SS	17"	35 34	
			92				49	-DRILL TO 95' -SMOOTH DRILLING -BROWN WASH
			93					
			94					
CLASS 3	SAND	BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	95				10	-TAKE S-25 WITH SS FROM 95' TO 97'
			96	S-25	SS	16"	19 28	
			97				21	-DRILL TO 100' -SMOOTH DRILLING -BROWN WASH
			98					
			99					
			100				16	-TAKE S-26 WITH SS FROM 100' TO 102'
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	101	S-26	SS	14"	20 20	
			102				25	-DRILL TO 105' -SMOOTH DRILLING -BROWN WASH
			103					

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JOB NO. 170166601
DATE 4/3/12

LOG OF BORING NO. LB-6
SHEET 7 OF 9

NYBC CLASS SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO.LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/6"	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3 SAND	BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	104					
		105	S-27	SS	21"	19 28 24 29	TAKE S-27 WITH SS FROM 105' TO 107'
		106					
		107					- DRILL TO 110' - SMOOTH DRILLING - BROWN WASH
		108					
		109					
	BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	110	S-28	SS	18"	17 24 22 23	TAKE S-28 WITH SS FROM 110' TO 112'
		111					
		112					- DRILL TO 115' - SMOOTH DRILLING - BROWN WASH
		113					
		114					
	BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	115	S-29	SS	21"	23 22 23 25	TAKE S-29 WITH SS FROM 115' TO 117'
		116					
		117					DRILL TO 120' SMOOTH DRILLING BROWN WASH
		118					
		119					
	BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	120	S-30	SS	20"	20 23 20 29	TAKE S-30 FROM 120' TO 122'
		121					

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JOB NO. 170166601

DATE 4/3/12

LOG OF BORING NO. LB-6

SHEET 8 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO.LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
			122					-DRILL TO 125' -SMOOTH DRILLING -BROWN WASH
		BROWN f-m SAND WITH SOME SILT, TRACE MICA [SP]	123 124 125	S-31	SS	21"	16 22 22 32	-TAKE S-31 WITH SS FROM 125' TO 127'
			126 127					-DRILL TO 130' -BROWN WASH -A LITTLE RIG CHATTER IN LAST 1' OF DRILLING
		VARVED BROWN f-m SAND AND GREY SILT, TRACE MICA, MOIST [SP]	128 129 130	S-32	SS	20"	16 20 25 33	-TAKE S-32 W/SS FROM 130' TO 132'
			131 132					-DRILL DOWN TO 135' -BROWN WASH -SMOOTH DRILLING
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	133 134 135	S-33	SS	21"	33 34 47 50/4	TAKE S-33 W/ SS FROM 135' TO 137'
			136 137					-DRILL DOWN TO 140' -SLIGHT RIG CHATTER -BROWN WASH
			138 139					

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JOB NO. 170166601

DATE 4/3/12

LOG OF BORING NO. LB-6

SHEET 9 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/IN.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	140				25	TAKE S-34 W/SS FROM 140' TO 142'
			141	S-34	SS	22"	28	
			142				34	
							41	-DRILL TO 145' -RIG CHATTER -BROWN WASH END OF 4/3/12 AT 3:00 P.M.
			143					
			144					START 4/4/12 AT 7:45 A.M.
			145					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]		S-35	SS	20"	22	TAKE S-35 W/SS FROM 145' TO 147'
3			146				30	
CLASS 3 SAND							30	
			147				24	-ADD MORE QUIKGEL & WATER TO TUB -DRILL TO 150' -SMOOTH DRILLING -BROWN WASH
			148					
			149					
			150				100/4"	ATTEMPT TO TAKE S-36 W/SS FROM 150' TO 152' -REFUSAL @ 150'-4"
		BROWN f-m SAND AND DECOMPOSED ROCK WITH TRACE GRAVEL, MOIST [SP]		S-36	SS	4"		
?	?	EOB AT 152' ? ROCK ?	151					
			152					-DRILL DOWN TO 152', ROCK BEGINS -START CORING -DUE TO CASING BEING CROOKED, UNABLE TO GET NX CORE BARREL DOWN WITH ROCK CORE RODS, HAD TO USE REGULAR RODS -WHEN USING REGULAR RODS, NO RETURN -HOLE CAVED IN @ 12:10 PM -HAVE TO DRILL ANOTHER HOLE RIGHT NEXT TO FIRST ONE FOR ROCK CORE SAMPLES
			153					
			154					
			155					
			156					
			157					

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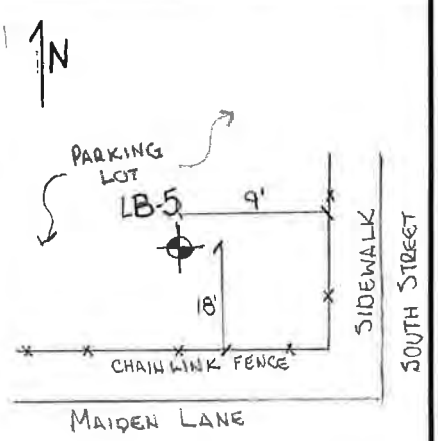
LOG OF BORING LB-5 **SHEET** 1 **OF** 10

PROJECT 151 TO 161 MAIDEN LN.		**PROJECT NO.** 170166606 01	
LOCATION NEW YORK, NY		**ELEVATION AND DATUM** EL 4± (MANHATTAN DATUM)	
DRILLING AGENCY CRAIG TEST BORING		**DATE STARTED** 3/28/12	**DATE FINISHED** 3/30/12
DRILLING EQUIPMENT CME 75 TRUCK MOUNTED RIG		**COMPLETION DEPTH** 168'	**ROCK DEPTH** 166'
SIZE AND TYPE OF BIT 2 7/8" Ø TRICONE ROLLER BIT		**NO. SAMPLES**	**DIST.** 37 **UNDIST.** 1 **CORE** 1
CASING 4" Ø FLUSH JOINT STEEL CASING		**WATER LEVEL**	**FIRST** - **COMPL.** 14' **24 HR.** -
CASING HAMMER AUTO	**WEIGHT** 140 LB. **DROP** 30"	**FOREMAN** CRAIG & ED	
SAMPLER 2" Ø SPLIT SPOON BARREL		**INSPECTOR** CORRIE CAMPBELL	
SAMPLER HAMMER AUTO	**WEIGHT** 140 LB. **DROP** 30"		

NYBC CLASS / SYMBOL	SAMPLE DESCRIPTION	PID (ppm)	CASING BLOWS	DEPTH SCALE	SAMPLES NO.LOC.	TYPE	RECOV. FT.	PENETR. RESIST BLG in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 17 FILL	~2" GRAVEL PARKING LOT SURFACE dk. brn. f-c SAND WITH SOME f. GRAVEL, TRACE SILT, TRACE BRICK, DRY [FILL]	0.0	PUSH	1	S-1	SS	8"	12 6 5 7	
	mottled f-c SAND and some f. GRAVEL, trace silt, trace wood, trace brick, dry [FILL]	0.0		2 3	S-2	SS	5"	16 50/3"	
	mottled f-c SAND with some gravel, some brick, trace silt, moist [FILL]	0.0	28	4 5	S-3	SS	5"	4 3 2 2	
	dk. brn. f-c SAND AND SOME f. GRAVEL, TRACE BRICK, TRACE WOOD, TRACE SILT, MOIST [FILL]	0.0	10 10	6 7	S-4	SS	3"	3 1 3 2	- START DRILLING @ 8:45 ON 3/28/12 - DRIVE SS 0'-2', TAKE S-1 - ATTEMPT TO DRIVE SS 2'-4', HAD REFUSAL => TAKE S-2 - FILLED TUB WITH WATER, ADDED QUIK GEL - DRILL DOWN TO 4' - RIG CHATTER 3' TO 3 1/2' - DRIVE SS 4'-6', TAKE S-3 - DRIVE SS 6'-8', TAKE S-4 - INSTALL 10' OF CASING, PUSH IN FIRST 5', DROVE ~5' TO 8 1/2' - BROWN WASH - AT 5', WHEN DRILLING DOWN WOOD FOUND IN WASH - DRILL DOWN TO 10', DRIVE SS 10'-12', TAKE S-6 - INSTALL 5' OF CASING FROM 8 1/2' TO 13 1/2', PUSH CASING FOR ALL 5' - DRILL DOWN TO 15' - TAKE S-7 AT 15'-17' - FOUND SILT, BAD RECOVERY - TAKE S-8 AT 17'-19'
	mottled f-c SAND WITH SOME GRAVEL, SOME BRICK, TRACE SILT, moist [FILL]	0.0	10	8 9	S-5	SS	16"	2 3 1 2	
	mottled f-c SAND WITH SOME GRAVEL, SOME BRICK, TRACE SILT TRACE SEASHELL, MOIST [FILL]	0.0	PUSH	10 11 12	S-6	SS	7"	2 5 4 5	
				13 14					



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JOB NO. 170166601
DATE 3/28/12

LOG OF BORING NO. LB-5

SHEET 2 OF 10

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	PPM	CASING BLOWS	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
					14					- INSTALL 5' OF CASING, PUSH FROM 13½ TO 18½'
		dk brn. f-c SAND AND SILT WITH SOME f GRAVEL [FILL]	0		15				2	
					16	S-7	SS	>1"	2	
					17				2	
									1	
		dk. brn. f-c SAND AND GRAVEL WITH TRACE SILT [FILL]	0		18	S-8	SS	>1"	2	
									1	
									2	
					19				4	- DRILL FROM 15' TO 20'
										- BROWN WASH FROM 15' TO 20'
					20					- INSTALL 5' OF CASING, PUSH FROM 18½' TO 23½'
		dk brn. PEAT AND f-c SILTY SAND WITH TRACE GRAVEL, moist, odor	3.5						1	- TAKE S-9 FROM 20' TO 22'
CLASS 4	FILL				21	S-9	SS	8"	1	
									WOH	
					22				1	
										- DRILL DOWN TO 25' => BROWN WASH
					23					- ODOR COMING FROM HOLE
					24					
		dk. brn CLAY, WITH GRAVEL, TRACE SAND, TRACE BRICK, SOME SILT [CH]	PUSH		25	SAR				- HIT LAYER OF COHESIVE MATERIAL GOT RETURN FROM DRILLING => S-9 cl
										- PLACE U-1
					26	U-1	SHELBY			- BOTTOM OF TUBE CRUSHED UPON REMOVAL, SAMPLE UNUSABLE WOOD @ TIP OF SHELBY TUBE
			441		27					
		GREY WOOD AND CLAY TRACE f-c SAND, MOIST [CH]	3.8	127					5	- TAKE S-10 FROM 27' TO 29'
					28	S-10	SS	16"	5	
									4	
					29				6	
										- DRILL DOWN TO 30'
					30					- LOTS OF WOOD CHUNKS IN RETURN
		GREY CLAY WITH SOME WOOD SOME SILT, MOIST [CH]	0	337					WOH	- TAKE S-11 FROM 30' TO 32'
					31	S-11	SS	14	1	- INSTALL 5' CASING, PUSH TO 25', DRIVE TO 27', HIT OBSTRUCTION, FINISHED DRIVING TO 28½'
									1	
									WOH	

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JOB NO. 170166601
DATE 3/28/12

LOG OF BORING NO. LB-5
SHEET 3 OF 10

NYSDEC CLASS	SYMBOL	SAMPLE DESCRIPTION	PID (ppm)	CASING BLOWS	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 7	FILL	BROWN f-c SAND WITH SOME WOOD TRACE f. GRAVEL, TRACE SILT, MOIST [SP]	0	14 BLOWS/5FT	32 33 34 35 36 37	S-12	SS	15"	3 7 12 14	- DRILL DOWN TO 35' - WOOD ODOR WHEN DRILLING - WOOD PIECES COMING OUT WITH RETURN - SLOW DRILLING HARD TIME GETTING THROUGH WOOD STUCK IN CASING - LOSING WATER AT 33' - ADD MORE WATER TO BASIN - TAKE S-12 AT 35'-37'
		? ? ? ?			38 39					- DRIVE IN CASING 28.5' TO 33.5' - DRILL TO 40' - ADD MORE WATER & QUIK GEL AT 40' - WASH NOW A LIGHTER SHADE OF BROWN THAN BEFORE - SOME WOOD STILL COMING UP WITH RETURN
CLASS 6	SAND	BRN. m-f SAND WITH TRACE GRAVEL, MOIST [SP]	0	13 2 BLOWS/5FT	40 41 42	S-13	SS	11"	3 3 5 5	- TAKE S-13 AT 40'
		? ? ? ?			43 44 45					- DRILL DOWN TO 45'
CLASS 3	SAND	BRN. c-f SAND WITH TRACE GRAVEL, MOIST [SP]	0	6 36 BLOWS/5FT	46 47 48 49	S-14	SS	18"	5 7 7 10	- TAKE S-14 AT 45'-47' - INSTALL 5' OF CASING FROM 33.5' TO 38.5' - INSTALL ANOTHER 5' OF CASING FROM 38.5' TO 43.5' - INSTALL ANOTHER 5' OF CASING FROM 43.5' TO 48.5'
		? ? ? ?								

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

JOB NO. 170166601

DATE 3/28/12

LOG OF BORING NO. LB-5

SHEET 4 OF 10

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	PID (ppm)	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLOS/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
				50					-DRILLED DOWN TO 50'
		MARVED BROWN f. SAND AND GREY SILT TRACE GRAVEL [SP & MH]	0	51	S-15	SS	21"	10 14 18 26	-SLOW DRILLING [illegible] -TAKE S-15 AT 50'
				52					-END 3/28/12 @ 2:15 ON ACCOUNT OF RAIN
				53					-START 3/29/12 @ 7:40 A.M. -TOOK GW READING BEFORE DRILLING COMMENCED -ADDED MORE QUIKGEL TO TUB -SMOOTH DRILLING DOWN TO 55'
				54					
				55					
		BROWN f-m SAND WITH SOME SILT, TRACE MICA [SP]	0	56	S-16	SS	17"	9 15 17 18	-TAKE S-16 AT 55' TO 57'
				57					
				58					-DRILL DOWN TO 60' -SMOOTH DRILLING, BROWN WASH
				59					
CLASS 3	SAND			60					
		BROWN f-m SAND WITH SOME SILT, TRACE MICA [SP]	0	61	S-17	SS	18"	5 9 11 12	-TAKE S-17 AT 60' TO 62'
				62					
				63					-SMOOTH DRILLING DOWN TO 65' -BROWN WASH
				64					
				65					
		BROWN f-m SAND WITH SOME SILT, TRACE MICA [SP]	0	66	S-18	SS	15"	9 16 16 17	-TAKE S-18 AT 65' TO 67'
				67					

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ENGINEERING & ENVIRONMENTAL SERVICES

JOB NO. 170166601
DATE 3/29/12

LOG OF BORING NO. LB-5

SHEET 5 OF 10

NYBC CLASS SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO.LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/IN.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
		68					-SMOOTH DRILLING DOWN TO 70' -BROWN WASH
		69					
		70				6	-TAKE S-19 AT 70' TO 72'
	BROWN f-m SAND TRACE SILT, TRACE MICA [SP]	71	S-19	SS	17"	10 15	
		72				17	-SMOOTH DRILLING DOWN TO 75' -BROWN WASH
		73					
		74					
		75				12	-TAKE S-20 FROM 75' TO 77'
	BROWN f-m SAND TRACE SILT, TRACE MICA [SP]	76	S-20	SS	14"	15 15	
		77				16	-DRILL DOWN TO 80', SMOOTH DRILLING -BROWN WASH
CLASS 3 SAND		78					
		79					
		80				20	-TAKE S-21 FROM 80' TO 82'
	BROWN f-m SAND WITH TRACE SILT TRACE MICA [SP]	81	S-21	SS	18"	33 35	
		82				32	-DRILL DOWN TO 85' -SMOOTH & FAST DRILLING -BROWN WASH
		83					
		84					
		85				20	-TAKE S-22 FROM 85' TO 87'
	BROWN f-m SAND WITH TRACE SILT, MOIST [SP]		S-22	SS	18"	33	

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JOB NO. 170116606 01
DATE 3/29/12

LOG OF BORING NO. LB-5
SHEET 6 OF 10

NYBC CLASS.	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3	SAND	BROWN f-m SAND WITH TRACE SILT, MOIST [SP]	86	S-22	SS	18"	35	
			87				32	-DRILL DOWN TO 90' -SMOOTH DRILLING -BROWN WASH
			88					
			89					
			90				12	-TAKE S-23 FROM 90' TO 92'
		BROWN f-m SAND WITH SOME SILT, MOIST [SP]	91	S-23	SS	19"	19 22	
			92				27	-DRILL DOWN TO 95' -SMOOTH DRILLING -BROWN WASH
			93					
			94					
			95				11	-TAKE S-24 FROM 95' TO 97'
		BROWN, f. SILTY SAND, MOIST [SM]	96	S-24	SS	16"	18 23	
			97				26	-DRILL DOWN TO 100' -SMOOTH DRILLING -BROWN WASH
			98					
			99					
			100				8	-TAKE S-25 FROM 100' TO 102'
		BROWN f-m SAND WITH SOME SILT, MOIST [SP]	101	S-25	SS	20"	12 13	
			102				18	
			103					

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JOB NO. 170166606O1

DATE 3/29/12

LOG OF BORING NO. LB-5

SHEET 7 OF 10

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	TYPE	RECOV. FT.	PENETR. RESIST BLWS/IN.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3	SAND		104					-DRILL DOWN TO 105' -SMOOTH DRILLING -BROWN WASH
		BROWN f-m SAND WITH TRACE SILT, MOIST [SP]	105	S-26	SS	18"	14 19 21 20	-TAKE SS SAMPLE S-26 FROM 105' TO 107'
			106					
			107					-SMOOTH DRILLING DOWN TO 110' -BROWN WASH
			108					
			109					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	110	S-27	SS	24"	14 16 18 16	-TAKE SS SAMPLE FROM 110' TO 112'
			111					
			112					-SMOOTH DRILLING DOWN TO 115' -BROWN WASH
			113					
			114					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA [SP]	115	S-28	SS	20"	14 19 16 18	-TAKE SS SAMPLE S-28 FROM 115' TO 117'
			116					
			117					-SMOOTH DRILLING DOWN TO 120' -BROWN WASH
			118					
			119					
		VARIED BROWN f-m SAND AND THIN LAYERS OF BROWN SILT, TRACE MICA, MOIST [SP&MH]	120	S-29	SS	19"	10 15 17 23	-TAKE S-29 FROM 120' TO 122' WITH SS
			121					

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JOB NO. 170166601

DATE 3/30/12

LOG OF BORING NO. LB-5

SHEET 8 OF 10

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/FT.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
			122					- DRILL DOWN TO 125' - SMOOTH DRILLING - BROWN WASH
		BROWN f-m SAND, TRACE MICA, MOIST [SP]	125	S-30	SS	15"	7 17 20 24	- TAKE S-30 FROM 125' TO 127' WITH SS
			127					- DRILL DOWN TO 130' - SMOOTH DRILLING - BROWN WASH
CLASS 3	SAND	BROWN f-m SAND TRACE MICA MOIST [SP]	130	S-31	SS	20"	8 14 19 19	- TAKE S-31 FROM 130' TO 132' WITH SS
			132					- DRILL DOWN TO 135' - SMOOTH DRILLING - BROWN WASH
		BROWN f-m SAND TRACE MICA, MOIST [SP]	135	S-32	SS	20"	19 26 28 29	- TAKE S-32 FROM 135' TO 137' WITH SS
			137					- ADDED QUIK GEL TO TUB - DRILL DOWN TO 140' - SMOOTH DRILLING - BROWN WASH
			139					

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JOB NO. 170166601
DATE 3/29/12

LOG OF BORING NO. LB-5
SHEET 9 OF 10

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
		BROWN f-m SAND TRACE MICA, MOIST [SP]	140				17	-TAKE S-33 FROM 140' TO 142' WITH SS
			141	S-33	SS	21"	26	
			142				27	
							25	-DRILL DOWN TO 145'
			143					-SMOOTH DRILLING
			144					-BROWN WASH
			145					
		BROWN f-m SAND, TRACE MICA, MOIST [SP]					15	-TAKE S-34 AT 145' TO 147' WITH SS
			146	S-34	SS	19"	20	
							26	
			147				26	-DRILL DOWN TO 150'
			148					-SMOOTH DRILLING
			149					-BROWN WASH
CLASS 3	SAND		150					
		BROWN f-m SAND TRACE MICA, MOIST [SP]					24	-TAKE S-35 FROM 150' TO 152' WITH SS
			151	S-35	SS	21"	26	
							26	-END OF 3/29/12 AT 2:45 P.M
			152				30	
								-DRILL DOWN TO 155'
			153					-SMOOTH DRILLING DOWN
			154					-BROWN WASH
			155					
		BROWN f-m SILTY SAND WITH SOME GRAVEL, MOIST [SM]					23	-TAKE S-36 FROM 155' TO 157'
			156	S-36	SS	24"	32	
							33	
			157				47	

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JOB NO. 170166060601
DATE 3/30/12

LOG OF BORING NO. LB-5
SHEET 10 OF 10

NYSDOT CLASS	SYMBOL	SAMPLE DESCRIPTION	TIME TO CORE (MIN)	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
				158					- DRILL DOWN TO 160'
				159					- LOTS OF RIG CHATTER
				160					- BROWN WASH
CLASS 3	SAND	BROWN f-c GRAVELLY SAND, MOIST [SP]		161	S-37	SS	>1"	100/3"	- ATTEMPT TO TAKE S-37 FROM 160' TO 162' WITH SS - REFUSAL AT 160'-3'
				162					- DRILL DOWN TO 163' - SLOW PROGRESS - RIG CHATTER
		? ? START OF BEDROCK @ 163' ?		163					- START ROCK CORE C-1 AT 1108 A.M
		moHled DECOMPOSED ROCK	3 MIN	164					
			1 MIN	165					
		ASSUMED TOP OF COMPETANT BEDROCK	1 MIN	166	C-1	NX	REC: 26"/60" = 43%	RQD: 6"/60" = 10%	
CLASS 1d	ROCK	grey, moderately decomposed MICA SCHIST [Class 1d]	7 MIN	167					BOREHOLE TERMINATED @ 168' BECAUSE BOREHOLE COLLAPSED AND ROCK WEDGED/BLOCKED THE ROCK SOCKET
		E.O.B. AT 168' BELOW EXISTING GRADE	4 MIN	168					
				169					
				170					
				171					
				172					
				173					
				174					
				175					

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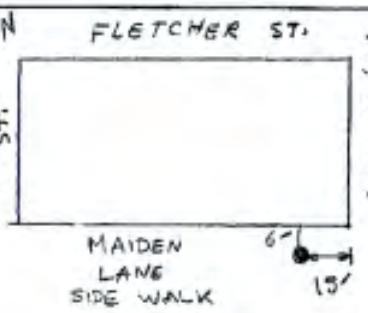
LOG OF BORING B-4(ow) SHEET 1 OF 10

PROJECT Maiden Lane Development	PROJECT NO. 9158301
LOCATION 151-161 Maiden Lane, NY, NY.	ELEVATION AND DATUM +3.3' sidewalk level
DRILLING AGENCY ADT	DATE STARTED 1/5/07 / DATE FINISHED 1/11/07
DRILLING EQUIPMENT MCE 75	COMPLETION DEPTH 166 ft / ROCK DEPTH 155 ft
SIZE AND TYPE OF BIT 3 7/8" Tricone Roller Bit	NO. SAMPLES DIST. 34 UNDIST. --- CORE 11 ft
CASING 4" ID - STEEL	WATER LEVEL FIRST – COMPL – 24 HR. –
CASING HAMMER AUTO WEIGHT 140 lbs DROP 30"	FOREMAN James
SAMPLER 2" OD - SPLIT SPOON	INSPECTOR Bachir Brimo
SAMPLER HAMMER AUTO WEIGHT 140 lbs DROP 30"	

NYCBC Symbol	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	TYPE	RECOV. FT	PENETR. RESIST BLWS/FT.
	SIDEWALK CONCRETE					
11-65 FILL	Brown (f-c) SAND & GRAVEL, tr. bricks (FILL)	1	S1	SS	6"	4 4 6
	Brown (f-c) SAND, some Gravel, tr. bricks (FILL)	2	S2	SS	6"	7 6 8 35
	Brown (f-c) SAND, some Gravel, tr bricks, concrete (FILL)	3	S3	SS	6"	9 13 6 4
	Black woods, coarse black Sand, tr. bricks (FILL)	4	S4	SS	8"	9 9 6 20
	Interbedded layers of woods and black coarse sands (strong smell) (FILL)	5	S5	SS	10"	11 47 8 65
11-65 FILL	Interbedded layers of woods and black coarse Sands smell (FILL)	6	S6	SS	12"	50 22 11 16
		7				
		8				
		9				
		10				
		11				
		12				
		13				
		14				

REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)



1/5/07

- Drill through concrete
- SS: 0.5 - 2 ft
- SS: 2 - 4 ft
- SS: 4 - 6 ft
- SS: 6 - 8 ft
- SS: 8 - 10 ft
- SS: 10 - 12 ft
- drill to 15 ft

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ENGINEERING & ENVIRONMENTAL SERVICES

JOB NO. 9158301
DATE 1/5/07

LOG OF BORING NO. B-9 (OW)
SHEET 2 OF 10

NYCBC Symbol	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	TYPE	RECOV. FT.	PENETR. RESIST BLS/6"	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
11-65 FILL	Gray SILT and SAND, some Woods (FILL)	15					4" casing to 15 ft
		16	S7	SS	12"	11 9 7 3	SS: 15-17 ft
		17					drill to 20 ft
	? ? ?	18					
		19					4" casing to 20 ft (hard)
11-65 WOODS	Woods (smell) (FILL)	20					SS: 20-22 ft
		21	S8	SS	3"	100/3"	
		22					drill to 25 ft
		23					
		24					4" casing to 25 ft (hard)
11-65 WOODS	Woods (smell) (FILL)	25					SS: 25-27 ft
		26	S9	SS	10"	9 5 12 15	
		27					drill to 30 ft
	? ? ? ?	28					
		29					4" casing to 30 ft
11-65 CLAYEY SILT	Gray CLAYEY SILT, some Woods tr. organics (MH)	30					SS: 30-32
		31	S10	SS	1"	WOH WOH WOH 3	
		32					drill to 35 ft

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ENGINEERING & ENVIRONMENTAL SERVICES

JOB NO. 9158301
DATE 1/8/07

LOG OF BORING NO. B-4 (OW)
SHEET 3 OF 10

NYCBC Symbol	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLS/6"	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
11-65 CL. SILT	? ? ?	33					1/8/07 - Driller centred rig on boring - 2 hours to pull out casing from wood's
7-65 SAND	Brown (f-m) SAND, tr. Mica (SP)	34					
		35					- SS: 35-37 ft
		36	SS1	SS	12"	10 14 17 17	
		37					drill to 40 ft
		38					
		39					
7-65 SAND	Brown (f-m) SAND, tr. Mica (SP)	40					SS: 40-42 ft
		41	SS2	SS	6"	12 9 6	
		42				10	drill to 45 ft
		43					
		44					
8-65 SAND	? ?	45					SS: 45-47 ft
BOULDER	NO RECOVERY	46	SS3	SS	0"	100/0"	- Boulder 4 ft long - Cored through boulder (2")
		47					- drilled through boulder (4" drilling bit) (2 hours)
		48					
		49					- Drill from 49-50 ft
		50					

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ENGINEERING & ENVIRONMENTAL SERVICES

JOB NO. 915 8301
DATE 1/8/07

LOG OF BORING NO. B-4 (OW)

SHEET 4 OF 10

USCS Symbol	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES: NO./LOC.	SAMPLES: TYPE	SAMPLES: RECOV. FT.	SAMPLES: PENETR. RESIST BLWS/6in	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
SAND	Brown fine SAND, tr. Mica (SP)	51	S14	SS	18"	11 29 39 38	SS; 50-52 ft
		52					drill to 55 ft
		53					
		54					
SAND	Brown fine SAND, tr. Mica (SP)	55	S15	SS	16"	9 18 24 29	SS; 55-57
		56					
		57					drill to 60 ft
		58					
		59					
SAND	Brown fine SAND, tr. Mica (SP)	60	S16	SS	16"	9 15 20 30	SS; 60-62 ft
		61					
		62					drill to 65 ft
		63					
		64					
SAND	Brown fine SAND, tr. Mica (SP)	65	S17	SS	14"	16 17 23	SS; 65-67 ft
		66					
		67					drill to 70 ft
		68					

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ENGINEERING & ENVIRONMENTAL SERVICES

JOB NO. 9158301
DATE 1/8/07

LOG OF BORING NO. B-4 (OW)
SHEET 5 OF 10

USCS Symbol	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	TYPE	RECOV. FT	PENETR. RESIST BLS/FT.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
SAND	Brown fine SAND, tr. Mica (SP)	69					
SAND		70					SS: 70-72 ft
SAND		71	S18	SS	18"	11 14 25 29	
SAND		72					drill to 75 ft
SAND		73					
SAND		74					
SAND	Brown fine SAND, tr. Mica (SP)	75					SS: 75-77 ft
SAND		76	S19	SS	18"	11 20 23 23	
SAND		77					drill to 80 ft
SAND		78					
SAND		79					
SAND	Brown fine SAND, tr. Mica (SP)	80					SS: 80-82 ft
SAND		81	S20	SS	18" =	15 21 25 30	STOPPED FOR THE DAY 1/9/08
SAND		82					drill to 85 ft
SAND		83					
SAND		84					
SAND	Brown fine SAND, tr. Mica silt (SP)	85					SS: 85-87 ft
		86	S21	SS	18"	19 31	

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ENGINEERING & ENVIRONMENTAL SERVICES

JOB NO. 9158301
DATE 1/9/07

LOG OF BORING NO. B-4 (OW)
SHEET 6 OF 10

NYCBC	Symbol	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES: NO./LOC.	TYPE	RECOV. ft.	PENETR. RESIST. BLK/ft.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
8-65	SAND		87	S21	SS		39 37	drill to 90 ft
			89					
8-65	SAND	Brown fine SAND, tr. Mica, tr. alternating varves of gray silt (SP)	90	S22	SS	20"	19 27 36 41	SS: 90 - 92 ft
			91					
			92					drill to 95 ft
			93					
			94					
8-65	SAND	Brown fine SAND, some gray silt, Mica (SP)	95	S23	SS	20"	12 19 34 40	SS: 95 - 97 ft
			96					
			97					drill to 100 ft
			98					
			99					
8-65	SAND	Brown fine SAND, tr. of Mica (SP)	100	S24	SS	24"	12 18 24 30	SS: 100 - 102 ft
			101					
			102					drill to 105 ft
			103					
			104					

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ENGINEERING & ENVIRONMENTAL SERVICES

JOB NO. 9158301
DATE 1/9/07

LOG OF BORING NO. B-4 (OW)

SHEET 1 OF 10

NYCDEC	Symbol	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
8-65	SAND	Brown fine SAND, tr. Mica (SP)	105					SS: 105-107
			106	S25	SS	1.8'	13 19 22 25	
			107					drill to 107 ft
			108					
			109					
8-65	SAND	Brown fine SAND, tr. Mica (SP)	110					SS: 110-112 ft
			111	S26	SS	1.8'	14 21 24 29	
			112					drill to 115 ft
			113					
			114					
8-65	SAND	Brown fine SAND, tr. Mica (SP)	115					SS: 115-117 ft
			116	S27	SS	2.1'	15 24 28 31	
			117					drill to 120 ft
			118					
			119					
8-65	SAND	Alternating varves of brown fine SAND and gray silt (SP)	120					SS: 120-122 ft
			121	S28	SS	2.2'	12 18 26 36	
			122					drill to 125 ft

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JOB NO. 915 8301
DATE 1/9/07

LOG OF BORING NO. B-4 (OW)

SHEET 8 OF 10

NYCBC Symbol	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./DIC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLS/6in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
SAND	Brown fine SAND, tr. Mica silt (SP)	123					
		124					
		125				9	SS: 125-127 ft
		126	S29	SS	16"	17	
						28	
		127				42	drill to 130 ft
		128					
		129					
SAND	Brown fine SAND, tr. Mica silt (SP)	130				16	SS: 130 - 132 ft
		131	S30	SS	18"	26	
						36	
		132				46	drill to 135 ft
		133					
		134					
SAND	Brown fine SAND, tr. Mica silt (SP)	135				25	SS: 135-137 ft
		136	S31	SS	12"	40	
						62	
		137				63	drill to 140 ft
		138					
		139					
		140					

GEE190

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JOB NO. 915830.1
DATE 1/9/07

LOG OF BORING NO. B-4 (OW)
SHEET 9 OF 10

N VALUE/RQD	Symbol	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLKS/FT.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
8-65	SAND	Brown fine SAND, tr. Mica (SP)	140	S32	SS	8"	29	SS: 140-142 ft
			141				35	
			142				42 50	drill to 145 ft
			143					
			144					
8-65	SAND	Brown fine SAND, tr. Mica (SP)	145	S33	SS	17"	21	SS: 145-147 ft
			146				29 45	- STOPPED FOR THE DAY - SPOON LEFT IN BORING
			147				47	1/10/07 drill to 150 ft The boring collapsed. Driller had to wash it out and use 3" casing to a depth of 130 ft.
			148					
			149					
8-65	SAND	Brown fine SAND, tr. Mica (SP)	150	S34	SS	15"	9	SS: 150-152 ft
			151				15 30	
			152				64	drill to 155 ft hard drilling @ 154 ft
			153					1/11/07
			154					
1-65	ROCK	Gray Manhattan Schist Rock	155	C1	NX	REC.= 60/60=100%	RQD = 60/60 = 100%	started coring @ 155 ft C1: 155-160 ft
			156					
			157					
			158					

DB6120

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JOB NO. 9158301
DATE 1/11/07

LOG OF BORING NO. B-4(OW)

SHEET 10 OF 10

NYCBE Symbol	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLS/in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
1-65 ROCK	Gray Manhattan Schist Rock 9 9	159	C-1	NX	100%	100%	
	Gray Manhattan Schist Rock 9 8 7 7 8	160 161 162 163 164 165	C-2	NX	REC. = 57/60 = 95%	R&D = 57/60 = 95%	- started coring second run - Driller started loosing water @ 161.0 ft. - Re-started coring C-2: 161-166 ft
	E.O.B.						A well was installed in this boring. Details are in a separate report.

08L08

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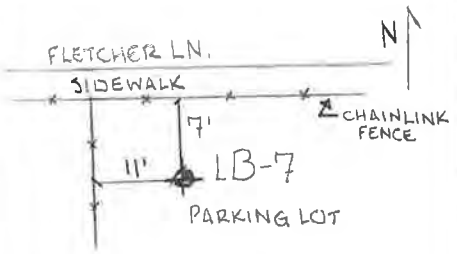
LOG OF BORING LB-7 **SHEET** 1 **OF** 9

PROJECT: 151 MAIDEN LN.		PROJECT NO.: 170166601	
LOCATION: NEW YORK, NY		ELEVATION AND DATUM:	
DRILLING AGENCY: CRAIG TEST DRILLING, INC.		DATE STARTED: 4/6/12	DATE FINISHED: 4/9/12
DRILLING EQUIPMENT: CME-75 TRUCK-MOUNTED RIG		COMPLETION DEPTH: 142FT	ROCK DEPTH: 132 FT
SIZE AND TYPE OF BIT: 3 7/8" Ø TRICONE ROLLER BIT		NO. SAMPLES: DIST. 31	UNDIST. – CORE 10 FT
CASING: 4" Ø FLUSH JOINT STEEL CASING		WATER LEVEL: FIRST –	COMPL. – 24 HR. –
CASING HAMMER: AUTO WEIGHT: 140 LB. DROP: 30"		FOREMAN: DAVE COOK	
SAMPLER: 2" Ø SPLIT SPOON SAMPLER		INSPECTOR: CORRIE CAMPBELL / KONSTANTINOS SYNGROS	
SAMPLER HAMMER: SAFETY/AUTO WEIGHT: 140 LB. DROP: 30"			

SAMPLE DESCRIPTION	PID (ppm)	CASING BLOWS	DEPTH SCALE	SAMPLES NO./LOC.	TYPE	RECOV. FT.	PENETR. RESIST BL/6 in.
~6" ASPHALT			0				
~3" SUBGRADE							
BROWN f-m SAND WITH SOME ASPHALT, TRACE SILT. TRACE BRICK, DRY [SP]	0	PUSH	1	S-1	SS	9"	9, 12, 18
MOTTLED f-c SAND AND RED BRICK WITH SOME GRAVEL, TRACE SILT, DRY [SP]	0	PUSH	2	S-2	SS	12"	15, 17, 50/5"
GRAY GRAVELLY SILT WITH SOME BRICK, MOIST [ML]	0	PUSH	3	S-3	SS	11"	8, 6, 2, 3
MOTTLED f. SANDY GRAVEL WITH SOME BRICK, MOIST [GP]	0.1	131 BLOWS/3FT	4	S-4	SS	5"	100/5"
BLACK SILTY SAND WITH TRACE GRAVEL, MOIST [SM]	0	11 BLOWS/2FT	5	S-5	SS	8"	3, 4, 6, 15
BLACK f. SANDY GRAVEL WITH TRACE WOOD, MOIST [GP]	0	215 BLOWS/5FT	6	S-6	SS	1"	12, 12, 80/1", 6
CLASS 7 FILL			7				
			8				
			9				
			10				
			11				
			12				
			13				
			14				

REMARKS
(DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)



- START DRILLING ON 4/6/12 AT 7:24 A.M.
- TAKE S-1 FROM 0.5' TO 2'
- TAKE S-2 FROM 2' TO 4'
- DRILL TO 4'
  - RIG CHATTER FROM 0.5' TO 4'
- TAKE S-3 FROM 4'-6'
- ATTEMPT TO TAKE S-4 FROM 6' TO 8'
  - REFUSAL @ 6'-5"
- DRILL TO 8'
  - RIG CHATTER FROM 6'-8'
  - DARK BROWN WASH
- INSTALL 8' OF CASING
- TAKE S-5 FROM 8' TO 10'
- INSTALL 2' OF CASING FROM 8'-10'
- DRILL TO 10'
  - SMOOTH DRILLING
  - BLACK WASH
- TAKE S-6 FROM 10'-12'
- INSTALL 5' OF CASING FROM 10' TO 15'
- DRILL TO 15'

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JOB NO. 170166060(3)
DATE 4/6/12

LOG OF BORING NO. LB-7

SHEET 2 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION		DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/6"	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
				14					
				15					
		BROWN f-m SAND AND WOOD WITH SOME SILT, MOIST [SP]	0.1	16	S-7	SS	0"	2 3 2 3	- TAKE S-7 W/SS FROM 15'-17' - NO RECOVERY - PUSHED DOWN 3" SS FOR SAMPLE (S-7a)
				17					
				18					- PUSH 5' OF CASING FROM 15' TO 20' - DRILL DOWN TO 20' - SOME WOOD IN RETURNS - BROWN WASH
				19					
				20					
		BROWN f-m SAND AND WOOD WITH SOME GRAVEL, TRACE SILT, TRACE BRICK, MOIST [SP]	0	21	S-8	SS	>1"	8 3 3 4	TAKE S-8 W/SS FROM 20' TO 22' - NO RECOVERY - USE 3" SS TO GET S-8a FROM 20' TO 22'
CLASS 7	FILL			22					
				23					- INSTALL 5' OF CASING FROM 20' TO 25' - DRILL DOWN TO 25' - SOME WOOD IN RETURN - BROWN ⇒ BLACK WASH @ ~23'
				24					
		BLACK ORGANIC SILT WITH SOME WOOD, MOIST [MH]	0	25	S-9	SS	0"	2 2 2 3	- TAKE S-9 W/SS FROM 25' TO 27' - NO RECOVERY - TAKE S-9a W/3" SS FROM 25'-27'
				26					
		BLACK ORGANIC SILT WITH SOME WOOD, TRACE GRAVEL [MH]	0	27	S-10	SS	22"	2 1 2 3	- TAKE S-10 W/SS FROM 27' TO 29'
				28					
?	?	? ? ? ?		29					
		BROWN f-c GRAVELLY SAND WITH TRACE SILT, MOIST [SP]	0	30	S-11	SS	10"	1 4 3 1	- PUSH IN 4' OF CASING - DRILL DOWN TO 29' - SMOOTH DRILLING - BLACK WASH - TAKE S-11 W/SS FROM 29' TO 31'
CLASS 3	SAND			31					- INSTALL 5' OF CASING FROM 29' TO 34'

PUSH
PUSH
PUSH
143 BLOWS/5FT

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JOB NO. 170106601

DATE 4/6/12.

LOG OF BORING NO. LB-7

SHEET 3 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	CASING BLOWS	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
				32					- DRILL TO 35' - BROWN WASH - SOME RIG CHATTER FROM 31' TO 35'
				33					
				34					
				35				8	- TAKE S-12 FROM 35' TO 37'
		BROWN f-m SAND WITH SOME SILT, TRACE MICA, TRACE GRAVEL, MOIST [SP]	0	36	S-12	SS	20"	11 16	
				37				22	- CHANGE WATER & QUIK GEL - DRILL TO 40' - BROWN WASH - SMOOTH DRILLING
				38					
				39					
				40				9	- TAKE S-13 WITH SS FROM 40'-42'
		BROWN f-m SILTY SAND WITH TRACE GRAVEL, MOIST [SM]	0	41	S-13	SS	18"	9 11	
CLASS 3 SAND				42				14	- DRILL DOWN TO 45' - BROWN WASH SMOOTH DRILLING
				43					
				44					
				45				10	- TAKE S-14 WITH SS FROM 45' TO 47'
		BROWN f-m SILTY SAND WITH TRACE MICA [SM]	0	46	S-14	SS	18"	11 12	
				47				18	- DRILL TO 50' - SMOOTH DRILLING - BROWN WASH
				48					
				49					

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JOB NO. 170166601

DATE 4/6/12

LOG OF BORING NO. LB-7

SHEET 4 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO. LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLOS /6"	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3	SAND	BROWN f-m SILTY SAND WITH TRACE MICA MOIST [SM]	50	S-15	SS	20	14 24 29 30	TAKE S-15 W/SS FROM 50' TO 52'
			51					
			52					- DRILL TO 55' - BROWN WASH - SMOOTH DRILLING - ADD WATER & QUIK GEL TO TUB
			53					
			54					
		BROWN f-m SILTY SAND WITH TRACE MICA, MOIST [SP]	55	S-16	SS	17"	11 16 21 22	TAKE S-16 W/SS FROM 55' TO 57'
			56					
			57					- DRILL TO 60' - BROWN WASH - SMOOTH DRILLING
			58					
			59					
		VARVED BROWN f-m SAND AND BROWN SILT WITH TRACE MICA, MOIST [SP]	60	S-17	SS	16"	8 12 22 31	TAKE S-17 FROM 60'-62'
			61					
			62					- DRILL TO 65' - BROWN WASH - SMOOTH DRILLING
			63					
			64					
		BROWN f-m SAND WITH SOME SILT, TRACE MICA, MOIST [SP]	65	S-18	SS	17"	8 17 18 25	TAKE S-18 FROM 65' TO 67' W/ SS
			66					
			67					

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JOB NO. 170166601

DATE 4/6/12

LOG OF BORING NO. LB-7

SHEET 5 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3	SAND		68					- DRILL TO 70' - BROWN WASH - SMOOTH DRILLING
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA [SP]	69					
			70	S-19	SS	22"	11 14 21 27	- TAKE S-19 W/SS FROM 70' TO 72'
			71					
			72					- DRILL TO 75' - BROWN WASH - SMOOTH DRILLING
			73					
			74					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	75	S-20	SS	19"	8 16 23 30	- TAKE S-20 W/SS FROM 75' TO 77'
			76					
			77					- DRILL TO 80' - SLIGHT RIG CHATTER @ 77' - BROWN WASH
			78					
			79					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	80	S-21	SS	14"	15 24 20 25	- TAKE S-21 FROM 80' TO 82'
			81					
			82					- DRILL TO 85' - SMOOTH DRILLING - BROWN WASH
			83					
			84					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	85	S-22	SS	16"	24 34	- TAKE S-22 FROM 85' TO 87'

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JOB NO. 170160606001
DATE 4/6/12

LOG OF BORING NO. LB-7

SHEET 6 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BLWS/6in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
			86	S-22	SS		44 49	
			87					- DRILL TO 90' - SMOOTH DRILLING - BROWN WASH
			88					
			89					
			90				31	- TAKE S-23 WITH SS FROM 90' TO 92'
		VARVED BROWN f-m SAND AND BROWN SILT WITH TRACE MICA, MOIST [SP]	91	S-23	SS	20"	32 36	
			92				35	- DRILL TO 95' - SMOOTH DRILLING - BROWN WASH
			93					
			94					SWITCHED TO AUTO HAMMER
			95				9	- TAKE S-24 WITH SS FROM 95' TO 97'
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	96	S-24	SS	17"	15 22	
3	SAND		97				32	- DRILL TO 100' - SMOOTH DRILLING - BROWN WASH
CLASS			98					
			99					
			100				14	- TAKE S-25 FROM 100' TO 102'
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	101	S-25	SS	18"	17 22	
			102				22	- DRILL TO 105' - SMOOTH DRILLING - BROWN WASH
			103					

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JOB NO. 170166601
DATE 4/6/12

LOG OF BORING NO. LB-7

SHEET 7 OF 9

NYBC CLASS	SYMBOL	SAMPLE DESCRIPTION	DEPTH SCALE	SAMPLES NO./LOC.	TYPE	RECOV. FT.	PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3	SAND	BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	104					
			105	S-26	SS	20"	14	-TAKE S-26 W/SS FROM 105' TO 107'
			106				20	
			107				21 23	-DRILL TO 110' - BROWN WASH - SMOOTH DRILLING
			108					
			109					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	110	S-27	SS	19"	14	-TAKE S-27 W/SS FROM 110' TO 112'
			111				18 18	
			112				22	-WHEN TRYING TO PUT ROD BACK IN, HOLE CAVE-IN AT ~85' -HAVE TO DRILL BACK DOWN TO 115' -DRILL TO 115' -SMOOTH DRILLING -BROWN WASH
			113					
			114					
		BROWN f-m SAND WITH TRACE SILT, TRACE MICA, MOIST [SP]	115	S-28	SS	20"	11	-TAKE S-28 W/SS FROM 115' TO 117'
			116				17 18	
			117				22	-DRILL TO 120' -SMOOTH DRILLING -BROWN WASH
			118					
			119					
		BROWN f-m SILTY SAND WITH SOME GRAVEL, MOIST [SP]	120	S-29	SS	13"	12	-TAKE S-29 W/SS FROM 120'-122'
			121				28 43	
							46	

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JOB NO. 170166601
DATE 4/6/12 – 4/9/12

LOG OF BORING NO. LB-7
SHEET 8 OF 9

NYCBC	TYPE	SAMPLE DESCRIPTION	P/D (PPM)	DEPTH SCALE	SAMPLES NO./LOC.	SAMPLES TYPE	SAMPLES RECOV. FT.	SAMPLES PENETR. RESIST BL/6 IN.	CORING TIME	ROCK CORE SYSTEM	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 3a	SAND	Brown, f-m silty SAND, tr-sm f gravel tr c sand, dense, moist		125	S-30	S.S.	24-IN	14 20 25 40			- DRILL TO 125' - BROWN WASH - SMOOTH DRILLING - END OF 4/6/12 AT 2:35 P.M. 4/9/12 START 7:00 - CLEANED HOLE - FILLED HOLE WITH WATER - ADDED QUICK GEL - DRILLED TO 125 FT - BROWN WASH, SMOOTH DRILLING TO 125 FT - DROVE S.S. 125-127 FT - TOOK S-30 7:40 CABLE GOT JAMMED, NEEDED TO REPAIR 8:00 CABLE FIXED - DRILLED TO 130 FT
		—?— —?— —?— —?—		129							
CLASS 1d	DEC ROCK	DECOMPOSED MICA SCHIST BASED ON WASH RETURN AND DRILLING TIME.		130	S-31	S.S.	0	50/1"			- SLOW, SMOOTH DRILLING, BROWN WASH TRACE MICA, SLOW DRILLING WITH PRESSURE 129-130 FT, SPOON RUNNED WHEN DROPPED. - ATTEMPT DRIVE S.S. 130-132 FT - REFUSAL, NO RECOVERY - 8:35 START DRILLING @ 130 FT BIT PRESSURE @ 500 PSI RIG CHATTER @ 130.5 FT MICA IN WASH 8:41 @ 131 FT 8:44 @ 132 FT FLUSH HOLE W MUD UNTIL 9:08 START CORING, RUN 1 @ 9:47 132 FT TO 137 FT
CLASS 1b	BEDROCK	Gray, slightly fractured, slightly weathered MICA SCHIST		132	RUN 1	NX CORE BARREL	REC = 55/60 = 92%	RQD = 48/60 = 80%	3MIN 4MIN 3MIN 3MIN 3MIN	MB MB MB X	
		Gray, slightly fractured, slightly weathered, MICA SCHIST		137	RUN 2	NX CORE BARREL	REC = 56/60 = 92%	RQD = 49.5/60 = 83%	3MIN 6MIN 5MIN	MB MB MB	START CORING, RUN 2 @ 137-142 FT
				140							

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JOB NO. 170166601

DATE 4/9/2012

LOG OF BORING NO. LB-7

SHEET 9 OF 9

NYCBC		SAMPLE DESCRIPTION	TIME	CORE SKETCH	DEPTH SCALE	SAMPLES NO.LOC.	TYPE	RECOV. FT.	PENETR. RESIST BL/6 in.	REMARKS (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.)
CLASS 1b	-/- BEDROCK -/-		4 MIN 4 MIN	MB	140 141 142					
		END OF BORING @ 142 FT			143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158					

086100

APPENDIX B

RA CONSULTANTS LLC
Geotechnical Engineering

Log of Boring: B-8

Sheet 1 of 7

PROJECT: 151 MAIDEN LANE, NY, NEW YORK, 10038		PROJECT NUMBER: 13C1126	
LOCATION: Bituminous Parking Lot (±150' from East River)		ELEVATION & DATUM: +5' (+/-) BMD	
DRILLING AGENCY: Warren George, INC.		DATE STARTED: Mon. 01-13-2014	DATE COMPLETED: Thursday, 01-16-2014
DRILLING EQUIPMENT: Acker 82 Truck Mount Rig		COMPLETION DEPTH (FT): 160'	ROCK DEPTH (FT): 155'
SIZE AND TYPE OF BIT: 3-7/8" ø roller-bit	SIZE AND TYPE CORE BARREL: 2" ID, NX barrel	NO.SAMPLES / DIST. 27	UNDIST. N/A / CORE (FT) 5
CASING SIZE AND TYPE: 4" ø NW		WATER LEVEL: FIRST	COMPL. / 24HR
CASING HAMMER WEIGHT: 300 lbs	DROP 24"	SAMPLING HAMMER TYPE	FOREMAN: MIKE KELLY
SAMPLER: 2" ø split spoon	DROP 30"		HELPER: ALAN DEPUE
SAMPLER HAMMER WEIGHT: 140 lbs.	☒ Safety ☐ Donut ☐ ATH		INSPECTOR: Michael B. Filler

DESCRIPTION	DEPTH (ft)	Samples Type No.	Recov. FT / %	Resist. BL/6" / RQD%	Lab. Results water cont. (%)	-200 (%)	STRATA	REMARKS
S-1: Fill - Tan, silty gravel with sand, brick, wood (class 7)	1–3	S1	0.34	5 7 14 6			FILL	[ ] = USCS Classification ( ) = NYC BC Class Driller arrived onsite @ 10:15-hrs Began drilling @ 10:30-hrs
								
S-2: Fill - Tan, well-graded gravel with sand, brick, wood (class 7)	5–7	S2	0.75	10 29 50+ —				Boulder encountered @ 7'-0" bgs Spun down 7' of 4" ø casing. drilled obstruction out from 7-10', and spun casing to 10'
Concrete & steel From 10-11' (class 7)	10–11							Boulder @ 10'-0". sent core barrel down. Concrete and steel recovery
	12						FILL	Spun down 4" ø casing to depth of 15'.
S-3: Fill - Grey, silty sand with gravel, some wood (class 7)	15–17	S3	1.25	12 13 8 10				
								
	18–20							

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Geotechnical Engineering

Log of Boring: B-8

Sheet 2 of 7

DESCRIPTION	DEPTH (ft)	Samples Type No.	Recov. FT / %	Resist. BL/6" / RQD%	Lab. Results water cont. (%)	-200 (%)	STRATA	REMARKS
S-4: Fill - Grey, poorly-graded sand with silt and gravel, wood, brick (class 7)	21	S4	0.75	14 12 20 18			FILL	
	22							
	23							
	24						~24'	
S-5: Dark grey, Organic Clay with sand [OH] (class 6)	25	S5	1.34'	WOR 12" 2 1	62.6	82.2		
	26							
	27							
	28							
	29							
S-6: Dark grey, sandy Organic Clay trace wood. [OH] (class 4c)	30	S6	1.75	WOR 2 3 3			CLAY	
	31							
	32							
	33							
	34							
S-7: Brown, poorly-graded sand [SP] (class 3a)	35	S7	1.0	15 22 20 21			~35'	
	36							
	37							
	38							
	39							
S-8: Brown, poorly-graded sand w/silt [SP-SM] (class 3a)	40	S8	1.8'	12 18 17 22	18.1	5.1	SAND	Stopped drilling @ 14:45-hrs Driller left site @ 15:00-hrs
	41							01/14: WGI arrived @ 07:00-hrs Drove 4"ø casing to 22' bgs
	42							
	43							Emptied and cleaned tub and mixed a batch of Quick GEL to keep borehole open.
	44							
	45							

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Log of Boring: B-8

Sheet 3 of 7

DESCRIPTION	DEPTH (ft)	Samples: Type / No.	Recov. FT / %	Resist. BL/6" / RQD%	Lab. Results: water cont. (%)	-200 (%)	STRATA	REMARKS
S-9: Brown/grey, sandy silt [ML] (class 5a)	46	S9	2.0	14 20 24 26			SAND ~46'	
	47							
	48						SILT	
	49							
S-10: NO Recovery	50	S10	NC	21 50 60 –				pushed cobble w/ SS; small piece in sampler
	51							
	52							
	53						~53'	
	54							
S-11: Brown, poorly-graded sand with silt [SP-SM] (class 3a)	55	S11	1.0'	15 18 28 33				
	56							
	57							
	58							
	59							
S-12: Reddish brown, poorly-graded sand with silt [SP-SM] (class 3a)	60	S12	1.34'	10 13 31 30			SAND	
	61							
	62							
	63							
	64							
S-13: Brown, poorly-graded sand [SP] (class 3a)	65	S13	1.0'	13 20 30 20				
	66							
	67							
	68							
	69							
	70							

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Log of Boring: B-8

Sheet 4 of 7

DESCRIPTION	DEPTH (ft)	Samples Type No.	Recov. FT / %	Resist. BL/6" / RQD%	Lab. Results water cont. (%)	-200 (%)	STRATA	REMARKS
S-14: Brown, Silty Sand [SM] (class 3a)	71	S14	0.85'	29 26 31 27			SAND	
	72							
	73							
	74							
S-15: Brown, lean clay with sand [CL] (class 6)	75	S15	0.5'	WOR 18" 19	27.2	70.8		WGI took break for WX (15 min)
	76							
	77							
	78							
	79							
S-16: Brown, poorly-graded sand with silt [SP-SM] (class 3a)	80	S16	0.75'	33 37 68 —				
	81							
	82							
	83						SAND	
	84							
S-17: Brown, poorly-graded sand with silt [SP-SM] (class 3a)	85	S17	1.0'	30 35 38 42				
	86							
	87							
	88							
	89							
S-18: Brown, silty sand and gravel trace shells, [SP-SM] (class 3a)	90	S18	0.5'	30 47 63 —				
	91							
	92						SAND	
	93							
	94							
	95							

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DESCRIPTION	DEPTH (ft)	Samples Type No.	Recov. FT / %	Resist. BL/6" / RQD%	Lab. Results water cont. (%)	-200 (%)	STRATA	REMARKS
S-19: Brown, sandy silt with gravel [ML] (class 5a)	96	S19	0.5'	31 31 35 49				
	97							01-15-14 WGI arrived @ 07:00 and began drilling @ 07:20-hrs.
	98							
	99						SILT	
100 S-20: Brown, sandy lean clay [CL-ML] (class 4a)	100							
	101	S20	0.75'	30 33 37 41	21.2	56.9		
	102							
	103							
	104							
	105						~104'	
S-21: Tan, poorly-graded sand [SP] (class 3a)	106	S21	1.0'	14 17 23 32				
	107							
	108							
	109							
	110							
S-22: Grey, poorly-graded sand [SP] (class 3a)	111	S22	0.75'	20 19 28 31			SAND	
	112							
	113							
	114							
S-23: Grey, poorly-graded sand [SP] (class 3a)	115							
	116	S23	0.85'	19 21 26 30				
	117							
	118							
	119							
	120							

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Log of Boring: B-8

Sheet 6 of 7

DESCRIPTION	DEPTH (ft)	Samples Type No.	Recov. FT / %	Resist. BL/6" / RQD%	Lab. Results water cont. (%)	-200 (%)	STRATA	REMARKS
S-24: Brown/grey, well-graded gravel with silt and sand [GW-GM] (class 2a)	121	S24	0.5'	59 / 100 / 4"			GRAVEL w/ SILT & SAND	
	122							
	123							
	124							
	125							
S-25: Brown/grey, well-graded gravel with silt and sand [GW-GM] (class 2a)	126	S25	0.25'	100 / 3"				
	127							
	128							
	129							Attempt rock core C1:R1: From 130'-139'
	130						~130	
	131							
	132	C1						
	133							
	134						~134'	core barrel advancement slowed down.
	135							
	136							
	137						~137'	core run advancement slowed
S-27: Core 1, run 1 Recovery Grey, Sandy silt with gravel (ML)	138	S26		*				* Core recovery
	139							
	140							WGI was unable to maintain open borehole. Spun 4" ø casing from 45' to 140'
	141							
	142							01-16-14: WGI arrived @ 7:15 Spun 4" ø casing to 145 and attempted SS sample.
	143						TILL	
	144							
	145							

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Log of Boring: B-8

Sheet 7 of 7

DESCRIPTION	DEPTH (ft)	Samples Type No.	Recov. FT / %	Resist. BL/6" / RQD%	Lab. Results water cont. (%)	-200 (%)	STRATA	REMARKS
S-27: Grey, sandy silt with gravel [ML] (class 5a)	146	S27	0.2'	100/2"				
	147							
	148							
	149							
	150						TILL	Drill rig bouncing
	151							
	152							
	153						~153'	
	154						wx Rock	SS refusal @ 155' Attempt rock core C2: R1
	155						155'	Run 60", Recovery = 100%
Core 2, Run 1: 155'-160' Grey, Mica Schist with Quartz NYC BC Class 1a - Hard Sound Rock	156							
	157	C2 R1	100	100				
	158						BEDROCK	
	159							
	160						160'	
Bottom of exploratory boring	161						EOB	
	162							
	163							
	164							
	165							
	166							
	167							
	168							
	169							
	170							

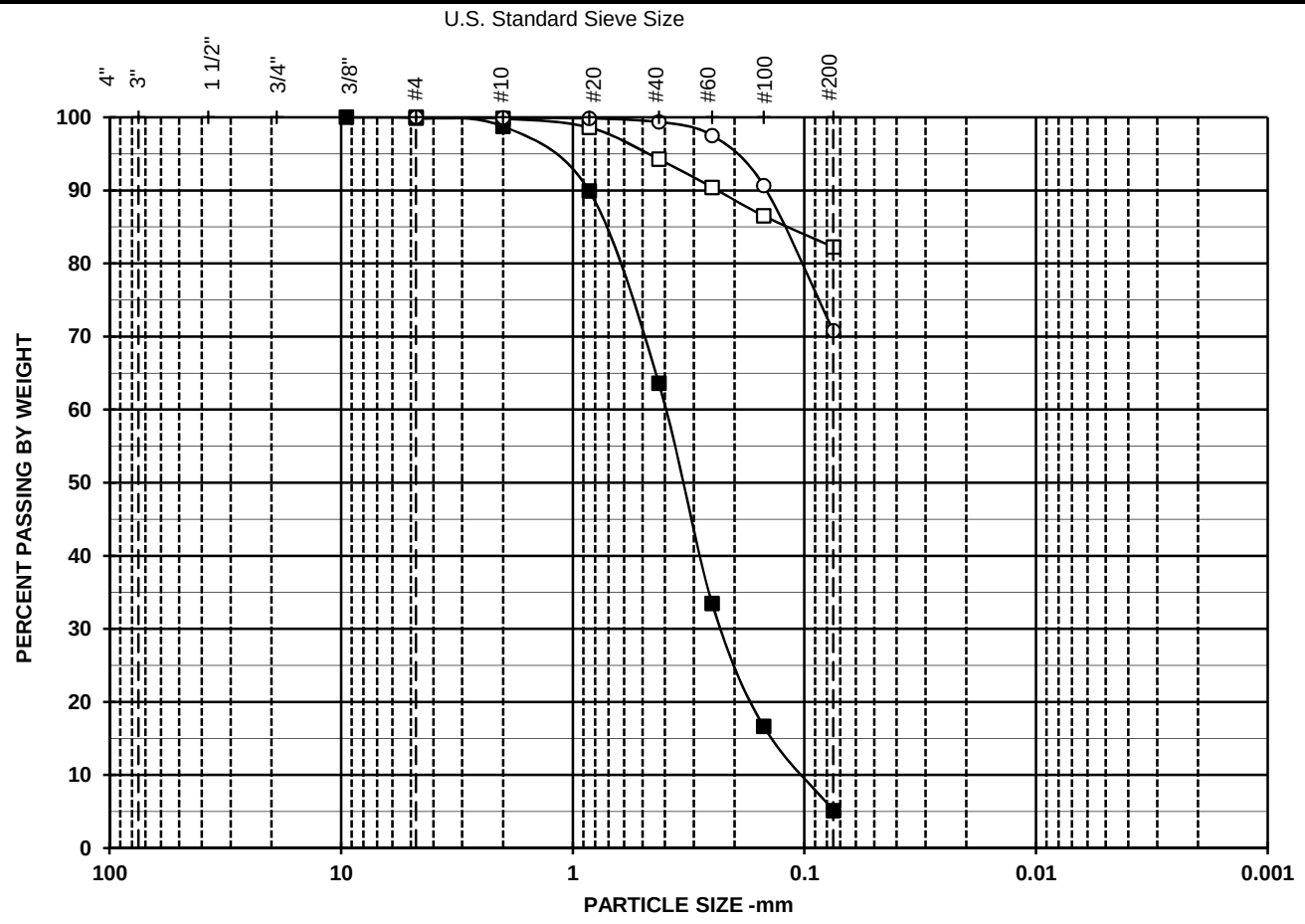
APPENDIX C

RA Consultants #13C1126
151 Maiden Lane New York,NY
LABORATORY TESTING DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS			REMARKS
			WATER CONTENT (%)	USCS SYMB. (1)	SIEVE MINUS NO. 200 (%)	
B-8	SS-5	25-27	62.6	OH	82.2	
B-8	SS-8	40-42	18.1	SP-SM	5.1	
B-8	SS-15	75-77	27.2	CL	70.8	
B-8	SS-20	100-102	21.2	CL-ML	56.9	

Note: (1) USCS symbol based on visual observation and Sieve results reported.

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



Symbol	□	■	○
Boring	B-8	B-8	B-8
Sample	SS-5	SS-8	SS-15
Depth	25-27	40-42	75-77
% +3"	0.0	0.0	0.0
% Gravel	0.0	0.1	0.0
% SAND	17.8	94.8	29.2
%C SAND	0.2	1.1	0.1
%M SAND	5.6	35.2	0.6
%F SAND	12.0	58.5	28.6
% FINES	82.2	5.1	70.8
% -2μ			
D_{100} (mm)	4.75	9.50	4.75
D_{60} (mm)		0.40	
D_{30} (mm)		0.23	
D_{10} (mm)		0.11	
Cc		1.2	
Cu		3.8	

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"			
3/8"		100.0	
4	100.0	99.9	100.0
10	99.8	98.8	99.9
20	98.6	89.9	99.8
40	94.3	63.6	99.4
60	90.4	33.5	97.5
100	86.5	16.7	90.6
200	82.2	5.1	70.8

SYMBOL	w (%)	LL	PL	PI	USCS	DESCRIPTION AND REMARKS	Date Tested
□	62.6				OH	Gray, Organic clay with sand	1/30/2014
■	18.1				SP-SM	Brown, Poorly-graded sand with silt	1/28/2014
○	27.2				CL	Brown, Lean clay with sand	1/28/2014

TerraSense, LLC — 7685-14002

RA Consultants — 13C1126

PARTICLE SIZE DISTRIBUTION

151 Maiden Lane New York,NY

Analysis File: 3SV-MasterRev3

siev.xls 2/3/2014