MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-1
SHEET 1 OF 3
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. SIDEWALK/8.3±
RES. ENGR. J. BIELBY/T. SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:15							DRILLED	Hand auger to 5'.
05-18-15							AHEAD	
Monday							4"	
Cloudy								
63°F					F	5		Vacuum excavated to
								6'.
	1D	6.0	1-1	Brown silty fine sand, trace medium to coarse				6-8': 0 ppm, no odor
		8.0	1-1	sand, clay (SM)		8		
	2D	8.0	1-1	Black to brown organic silty clay, some fine				2D-3D, 9D: REC=5"
		10.0	2-2	sand, trace gravel (OL)		10		
	3D	10.0	3-4	Black organic clayey fine sand (SC)				8-10': 0 ppm, faint organic odor
		12.0	3-2					10-12': 0 ppm,
								organic odor
					O			
						15		
	4D	15.0	2-2	Black organic clayey fine sand, trace shells (SC)				WC=65, pp=0.23
		17.0	2-3					15-17': 0.0 ppm, no
								odor
						18.5		
						20		
	5D	20.0	7-7	Red brown clayey fine to medium sand, trace				REC=2"
		22.0	8-12	gravel, coarse sand (SC)				20-28': 0 ppm, no
	6D	22.0	12-9	Top 10": Gray brn fine sand, some silt (SM)				odor
		24.0	9-8	Bot 4": Red brn f-m sand, some silt (SM)				
	7D	24.0	4-4	Red brown fine sand, some silt (SM)		25		
		26.0	5-7					
	8D	26.0	8-6	Red brown silty fine sand (SM)				
		28.0	7-7		S			WC=Water Content
	9D	28.0	5-6	Red brown clayey silt (ML)				in percent of dry
		30.0	6-8			30		weight.
	10D	30.0	5-4	Red brown silty fine sand varved with some				28-30': 0 ppm
		32.0	7-11	fine sand, some silt (SM)				pp=Pocket
								Penetrometer
								Unconfined Compres-
						35		sive Strength in tsf.
	11D	35.0	5-12	Top 5": Red brn f-m sand, sm silt, gravel (SM)		36		30-32': 0 ppm
		36.4	100/5"	Bot 4": Brn f-c sa, tr rock fgmts, silt, mica (DR) (SP-SM)	**	36.5		**Decomposed rock
09:00	1C	37.0	REC=94%	Hard unweathered gray gneissic schist,				from 36' to 36.5'.
05-19-15		42.0	RQD=86%	moderately jointed				Rig chatter at 36.5'.
Tuesday						40	*	1C: *Coring time from
Cloudy								09:20 to 09:38.
60°F					R			35-37': 0 ppm
	2C	42.0	REC=100%	Do1C			*	*Coring time from 09:51
		47.0	RQD=94%					to 10:09.
						45		
10:15						47		End of Boring at 47'.
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-1
SHEET 3 **OF** 3

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. SIDEWALK/8.3±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED						
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	37	
SKID		HYDRAULIC		DIA., IN.		DEPTH, FT. FROM		TO		
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER	TRACK CME-45									

TYPE AND SIZE OF:		DRILLING MUD USED	X	YES		NO
D-SAMPLER	2" O. D. SPLIT SPOON	DIAMETER OF ROTARY BIT, IN.	3-7/8			
U-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL			
S-SAMPLER						
CORE BARREL	NX DOUBLE BARREL	AUGER USED		YES	X	NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.				
DRILL RODS	NWJ					

CASING HAMMER, LBS. _____ AVERAGE FALL, IN. _____
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ____ YES X NO SKETCH SHOWN ON _____

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.		
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.		
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	37	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS HELPERS DANNY ROMERO
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER JEREMY M. BIELBY/TERESA SANDIFORD DATE 05-19-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: _____

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-2
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 8.8±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
12:15							DRILLED	Vacuum excavated to
05-11-15							AHEAD	6'.
Monday							4"	Hand augered to 6'.
Sunny								0-6': faint odor
80°F						5		
	1D	6.0	3-2	Black, brown clayey fine to medium sand (SC)				1D, 4D: REC=6"
		8.0	1-1					6-8': no odor
	2D	8.0	1/12"	Black brown fine to medium sand, some silt,				Odor.
		10.0	1-1	trace wood (SM)	F	10		2D: REC=7"
	3D	10.0	1-3	Black brown silty fine sand (SM)				8-10': 0 ppm, no odor
		12.0	1-1					10-12': 0 ppm
						15		
	4D	15.0	5-10	Black brown fine to medium sand, some silt,				15-17': 0 ppm, no odor
		17.0	9-9	trace gravel (SM)				
						18.5		
						20		
	5D	20.0	6-13	Brown black gravelly fine to coarse sand, trace	S			20-24': 0 ppm, no odor
		22.0	11-13	silt (SP-SM)				
	6D	22.0	8-15	Do 5D (SP-SM)				
		24.0	16-14			24		
	7D	24.0	10-10	Brown clayey silt, trace fine sand, gravel (ML)		25		WC=18
		26.0	11-11					24-32': 0 ppm, no odor
	8D	26.0	4-8	Brown fine to medium sand, trace gravel, silt				
		28.0	10-11	(SP-SM)				
	9D	28.0	7-12	Brown fine to coarse sand, trace gravel, silt				
		30.0	9-7	(SP-SM)		30		
	10D	30.0	12-10	Brown fine to coarse sand, trace silt, gravel				
		32.0	11-12	(SP-SM)				
					S			
14:15						35		
09:00	11D	35.0	2-2	Brown silty fine sand (SM)				35-37': 0 ppm, no odor
05-12-15		37.0	3-4					
Tuesday								
Sunny								
88°F						40		
	12D	40.0	1-4	Top: Do 11D (SM)		41		
		41.5	100/5.5"	Bot: Gray micaceous fine to medium sand, trace				
				silt (Decomposed Rock) (SP-SM)	DR			
								Easy drilling at 44'.
						45		
	1C	45.0	REC=100%	Medium hard to hard gray schistose gneiss,			*	*Coring time from 11:45
		50.0	RQD=85%	trace pegmatite, slightly weathered to				to 12:18.
				unweathered to intermediate to moderately				
				jointed, weathered joints	R			
						50		
	2C	50.0	REC=100%	Hard unweathered gray, green gneiss, some			*	*Coring time from 12:35
		55.0	RQD=90%	pegmatite, moderately jointed to jointed				to 12:45.

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-2
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 8.8±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 05-12-15 Tuesday Sunny 88°F, 14:00					R	55		Paused run near 2' at 13:10. End of Boring at 55'. WC=Water Content in percent of dry weight.

BORING NO. M-2

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-2
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 8.8±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
					X	YES		NO	
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X	YES	NO
DIAMETER OF ROTARY BIT, IN.	3-7/8		
TYPE OF DRILLING MUD	QUIK GEL		
AUGER USED		YES	X NO
TYPE AND DIAMETER, IN.			

CASING HAMMER, LBS. _____ AVERAGE FALL, IN. _____
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ____ YES X NO SKETCH SHOWN ON _____

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	45	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER JOHN CAMPBELL HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-12-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-3
SHEET 1 OF 3
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 9.0±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
13:30							DRILLED	Hand augered with
05-07-15							AHEAD	vacuum to 6'.
Thursday							4"	0-6': no odor
Sunny								
70°F						5		*No geotech sampling
								--> drill to 20'
						10		
						15		
						20		
	1D	20.0	9-16	Brown, black clayey fine to medium sand (SC)				Medium sand & black
		22.0	19-14					3" band mid sample.
	2D	22.0	17-17	Brown fine to medium sand, trace gravel, silt				20-22': 0 ppm, faint
		24.0	25-32	(SP-SM)				odor
	3D	24.0	6-4	Top: Brown clayey silt, trace fine sand (ML)		25		3D Top: WC=18
09:00		26.0	10-8	Bot: Brown f-m sand, tr silt, coarse sand (SP-SM)				22-24': 0 ppm, no odor
05-08-15	4D	26.0	8-11	Brown fine to coarse sand, trace gravel, silt				
Friday		28.0	10-9	(SP-SM)				24-30': 0 ppm, no odor
Sunny	5D	28.0	5-6	Brown silty fine sand (SM)				
75°F		30.0	7-6		S	30		
						35		
								Hard drilling from 37.5'
	1C	38.5	REC=88%	Medium hard slightly weathered gray gneissic		38.5		to 38.5'. Top of rock at
		43.5	RQD=52%	schist, jointed to closely jointed, weathered		40		38.5'. Mica & black rock
				joints				in wood.
	2C	43.5	REC=87%	Medium hard unweathered gray gneissic schist,	R			Hole collapsed; drilling
		48.5	RQD=76%	jointed		45		out before 2C.
13:00								
						48.5		End of Boring at 48.5'.
						50		WC=Water Content
								in percent of dry
								weight.

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-3
SHEET 3 **OF** 3

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 9.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED						
					X	YES		NO		
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30	
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO		
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER	TRACK									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X	YES	NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL		
CORE BARREL	NX DOUBLE BARREL	AUGER USED		YES	X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				

CASING HAMMER, LBS. _____ AVERAGE FALL, IN. _____
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ____ YES X NO SKETCH SHOWN ON _____

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.		
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.		
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	38.5	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER JOHN CAMPBELL HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-08-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-4P
SHEET 1 OF 5
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION: NEW YORK, NEW YORK **SURFACE ELEV.** 12.0±
RES. ENGR. NATHAN SEGUIN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
13:00	1D	0.0	23-14	Dark brown to black fine to coarse sand, some	**	**0.25**	DRILLED	**Pavement from 0' to
04-22-15		2.0	15-15	silt, gravel (Fill) (SM)			AHEAD	0.25'.
Wednesday	2D	2.0	8-10	Brown silty fine to medium sand, some gravel			4"	0-4': 0 ppm, no odor
Clear		4.0	10-15	& brick fragments (Fill) (SM)				
60°F	3NR	4.0	7-6	No recovery		**5**		
		6.0	5-4					
	4D	6.0	4-10	Dark gray silt, some fine sand, gravel (ML)				6-8': 8 ppm, faint odor
		8.0	10-6					
	5D	8.0	3-16	Brown fine to coarse sandy gravel, some silt				5D, 10D, 14D: REC=6"
		10.0	9-11	(Fill) (GM)		**10**		8-12': 0 ppm, no odor
	6D	10.0	7-6	Red brown brick fragments, some fine to				Spoon bouncing on
14:40		12.0	8-50/2"	coarse sand, some silt & wood fgmts (Fill) (SM)				wood; tip from 10' to
09:00	7D	12.0	52-5	Wood & gravel wash (Fill) (GP)				12'; REC=1"
04-23-15		14.0	7-7					12-14': 0 ppm
Thursday	8D	14.0	4-7	Dark gray coarse to fine sand, some gravel,	F	**15**		REC=4"
Clear		16.0	8-8	trace wood, silt, brick (Fill) (SP-SM)				14-16': 1 ppm, no odor,
55°F								black
						20		
	9D	20.0	4-11	Dark gray gravelly coarse to fine sand, trace				Casing moved down
		22.0	26-12	brick, silt (Fill) (GP)				with blows from 0" to
	10D	22.0	2-2	Dark gray fine to medium sand, gravel, trace				18".
		24.0	5-28	silt (Fill) (GP-GM)				9D, 14D: REC=6"
	11D	24.0	11-27	Dark gray fine to coarse sandy gravel, trace		**25**		20-22': 1 ppm, faint
		26.0	17-11	silt, brick (GP-GM)				odor
	12D	26.0	5-9	Gray fine to coarse sand, some gravel, trace				22-24': 0 ppm, faint
		28.0	12-18	silt (SP-SM)		**28**		odor
	13D	28.0	11-12	Red brown coarse to fine sand, some gravel,				24-26': 1 ppm, faint
		30.0	11-11	trace silt (SP-SM)		**30**		odor
	14D	30.0	1-1	Red brown fine to coarse sand, trace silt				26-32': 0 ppm, no odor
		32.0	2-9	(SP-SM)				
						35		
	15D	35.0	3-3	Red brown silty fine sand varved with some				35-37': 0 ppm, no odor
		37.0	8-7	brown silt layers (SM&ML)				
					S			
						40		
	16D	40.0	4-4	Brown silty fine sand (SM)				40-42': 0 ppm, no odor
		42.0	5-5					
						45		
	17D	45.0	6-7	Top 15": Red brn fine sand, sm silt, tr mica (SM)				45-47': 0 ppm, no odor
		46.9	10-50/5"	Bot 3": Gray brn f-m sand, tr silt (DR) (SP-SM)		**46.6**		
	1C	47.0	REC=79%	Intermediate slightly weathered gray gneissic	DR	**48**		
		54.0	RQD=14%	schist, broken to closely jointed, iron stained				
				& weathered joints	R	**50**		

MRCE Form BL-1

BORING NO. M-4P

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-4P
SHEET 2 OF 5
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 12.0±
RES. ENGR. JAMES BRICKMAN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
04-23-15					R		*	*Coring time not taken.
Thurs., Clear								Inspecting two rigs.
55°F, 14:00						54		End of Boring at 54'.
						55		
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MRCE Form BL-1

BORING NO. M-4P

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-4P
SHEET 5 **OF** 5

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 12.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	45
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

CASING USED: [X] YES [ ] NO

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED: [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED: [ ] YES [X] NO
TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [X] YES [ ] NO SKETCH SHOWN ON SEE SHEET NO. 4

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	47	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	7	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMINIC PEPE HELPERS GEORGE RAYMOND
REMARKS PIEZOMETER INSTALLED.
RESIDENT ENGINEER NATHAN SEGUIN/JAMES BRICKMAN DATE 04-23-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-5
SHEET 1 OF 3
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 10.0±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:00							DRILLED	Vacuum excavated to 5'.
05-14-15							AHEAD	
Thursday							4"	Advanced unsampled 6' to 20'.
Sunny								
65°F						5		Casing shifting East at 4'. Driller will not pull & realign.
								0-6': Petroleum odors noted. *No geotech sampling --> drill to 20' bgs
					F	10		
						15		
						20		
	1D	20.0	2-3	Brown silty fine sand, trace mica (SM)				20-22': 1 ppm at top of spoon. 0.0 ppm for remainder of sample, no odor.
		22.0	2-4					
	2D	22.0	4-4	Do 1D (SM)				
		24.0	6-6					
	3D	24.0	2-4	Brown clayey silt varved with trace light brown		25		22-30': 0 ppm, no odor
		26.0	4-6	silty clay (ML)				
	4D	26.0	6-3	Brown silty fine sand, trace mica (SM)				
		28.0	5-8					
	5D	28.0	3-5	Do 4D (SM)				
		30.0	5-7		S	30		
						35		
								Advanced unsampled to top of rock at 40'. Soft rock at 38'. Core to realign at 40' at 12:00.
						40		
	1C	40.0	REC=93%	Medium hard slightly weathered to unweathered			*	*Coring time from 12:05 paused at 12:10, 12:12 to 12:40. Slow drilling; core bouncing side to side.
		45.0	RQD=88%	gray gneissic schist to schistose gneiss, jointed				
				to iron stained & weathered joints				
						45		
	2C	45.0	REC=100%	Medium hard unweathered gray gneissic schist	R		*	*Coring time from 12:55 to 13:38; slow drilling.
		50.0	RQD=90%	to schistose gneiss, jointed to moderately				
				jointed to moderately jointed, weathered joints				
13:45						50		End of Boring at 50'.

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-5
SHEET 3 **OF** 3

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 10.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

CASING USED: [X] YES [ ] NO

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED: [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK MUD

AUGER USED: [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. ____ AVERAGE FALL, IN. ____
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	40	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER JOHN CAMPBELL HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-14-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-6
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. +12.0±
RES. ENGR. NATHAN SEGUIN

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:30	1D	0.0	49-13	Black fine to coarse sand, some silt, trace	**	0.25	DRILLED	**Pavement from 0' to
04-21-15		2.0	24-45	gravel, brick fragments (Fill) (SM)			AHEAD	0.25'.
Wednesday	2D	2.0	39-66	Red brick, brown fine to medium sand, silt			4"	0-10': 0 ppm
Partly Sunny		4.0	72-80	(Fill) (SM)				
60°F	3D	4.0	9-54	Do 2D (Fill) (SM)		5		
		5.8	112-65/3"					
	4D	6.0	7-100	Do 2D (Fill) (SM)				
		7.0						
	5D	8.0	48-100/3"	Do 2D (Fill) (SM)				
		8.8				10		
	6D	10.0	50-100/1"	Brown silty fine to medium sand, some brick				10-10'7": 0.6 ppm
		10.6		fragments (Fill) (SM)				
					F			
						15		
	7D	15.0	115/3"	Do 6D (Fill) (SM)				REC=2"
		15.3						Difficult advancement
								with roller bit below 16'.
								15-15'3": 5 ppm, faint
						20		odor
	8NR	20.0	100/3"	No recovery				20-20'3": 0 ppm
		20.3						Highly contaminated;
	9D	22.0	100/3"	Red brown brick fragments, some fine to				sheen/petroleum.
		22.3		coarse sand, silt (Fill) (SM)				22-22.5': Brick w/sheen
	10D	24.0	100/3"	Brown silty fine to medium sand, some gravel		25		& globule (black), 29
		24.3		(Fill) (SM)				ppm
	11NR	25.0	26-17	No recovery		27		24-24.5': Sheen &
		27.0	7-10					globules (black), odor,
	12D	27.0	12-23	Red brown gravelly fine to coarse sand, some				8 ppm
		29.0	23-21	silt (SM)		30		Rig bounce from 24.5'
	13D	29.0	29-8	Brown fine to coarse sand, trace silt, gravel				to 25'.
		31.0	8-8	(SP-SM)				Spoon sample split
	14D	31.0	7-7	Top 1.5': Do 13D (SP-SM)				at 29.5'.
		33.0	8-6	Bot 0.5': Red brown silty fine to medium sand				
				(SM)		35		Spoon sample split
09:00	15D	35.0	6-7	Red brown fine sandy silt (ML)				at 32.5'.
04-22-15		37.0	7-6		S			REC=6"
Thursday								27-33': 0 ppm
Clear								
60°F						40		
	16NR	40.0	6-5	No recovery				
		42.0	7-9					
						45		Weathered rock in tip.
	17D	45.0	7-100/5"	Brown fine to coarse sand, some silt, gravel		45.9		
		45.9		(SM)			*	*Coring time at 7
	1C	47.0	REC=100%	Medium hard slightly weathered to unweathered				minutes per foot.
		52.0	RQD=58%	gray schistose gneiss, closely jointed to jointed,	R			
				iron stained & weathered joints		50		

MRCE Form BL-1

BORING NO. M-6

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-6
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. +12.0±
RES. ENGR. NATHAN SEGUIN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
04-22-15							*	*Coring time from 12
Thursday	2C	52.0	REC=100%	Medium hard slightly weathered gray schistose				to 13 minutes per foot.
Clear		54.0	RQD=0%	gneiss, broken to closely jointed, Fe & WJts	R		*	*Coring time at 5
60°F	3C	54.0	REC=100%	Medium hard slightly weathered to unweathered		55		minutes per foot.
		57.0	RQD=90%	gray schistose gneiss to gneissic schist,				
11:50				jointed, iron stained joints		57		End of Boring at 57'.
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-6
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. +12.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
				X	YES		NO		
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	40
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X YES		NO
DIAMETER OF ROTARY BIT, IN.	3-7/8		
TYPE OF DRILLING MUD	QUIK GEL		
AUGER USED	YES	X	NO
TYPE AND DIAMETER, IN.			

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	47	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMENIC PEPE HELPERS GEORGE RAYMOND
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER THERESA SANDIFORD DATE 04-22-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-7
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 8.9±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:00							DRILLED	0-6': no odor
05-01-15							AHEAD	
Friday							4" 3"	
Cloudy								
55°F						5		
	1D	6.0	5-5	Brown, tan gravel (GP)				1D, 4D: REC=1"
		8.0	4-4		F			
	2D	8.0	4-3	Brown, tan fine to coarse sandy gravel, trace				REC=2"
		10.0	3-3	silt (GP-GM)		10		6-14': 0 ppm, no odor
	3D	10.0	7-5	Brown gravelly fine to coarse sand, some silt				
		12.0	3-5	(SM)				
	4D	12.0	2-7	Black gravel, trace fine to coarse sand (GP)				
		14.0	5-7					
						14.5		
	5D	15.0	19-7	Stiff gray organic silty clay, trace shells, fine				WC=53
		17.0	4-3	sand (OH)				15-17': 0 ppm, no odor
					O			
						20		
	6D	20.0	7-11	Stiff gray organic silty clay, some fine sand (OH)				WC=36
		22.0	15-19			22		Blows from driller.
	7D	22.0	11-9	Brown fine to medium sand, some silt, trace				
		24.0	11-11	coarse sand (SM)				Cobbles spun from
	8D	24.0	8-8	Brown fine to medium sand, trace silt (SP-SM)		25		10:40 to 12:00.
		26.0	9-8					Blows from driller.
	9D	26.0	10-9	Do 8D (SP-SM)				Blows from driller.
		28.0	9-9					20-32': 0 ppm, no odor
	10D	28.0	6-8	Brown, green silt, some fine sand (ML)				
		30.0	6-7			30		
	11D	30.0	9-10	Brown fine to coarse sand, some silt, trace				
		32.0	9-9	gravel, clay (SM)				
						35		
	12D	35.0	6-17	Brown gravel, trace fine to coarse sand (GP)				35-37': 0 ppm, no odor
		37.0	14-10		S			
09:00								
05-04-15								
Monday						40		
Sunny	13NR	40.0	26-13	No recovery				
80°F		42.0	17-12					
						45		
	14D	45.0	8-5	Brown silty fine sand, trace clay (SM)				45-47': 0 ppm, no odor
		47.0	5-8					
						50		
	15D	50.0	5-4	Brown, red brown silty fine sand, trace mica				50-52': 0 ppm, no odor
		52.0	5-5	(SP)				

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-7
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 8.9±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd							DRILLED	
05-04-15							AHEAD	
Monday							3"	
Sunny								
80°F						55		
	16D	55.0	8-5	Do 15D (SM)	S			55-57': 0 ppm, no odor
		57.0	6-8					
								Hard drilling at 58'.
						60		3" Casing to 60'.
	1C	60.0	REC=92%	Medium hard slightly weathered to unweathered			*	*Coring time from 12:55
		65.0	RQD=83%	gray gneissic schist, closely jointed to jointed,				to 13:15 at 4 minutes
				slightly weathered joints				per foot.
						65		
	2C	65.0	REC=100%	Medium hard unweathered gray schistose	R			Did not get core times;
		70.0	RQD=80%	gneiss & gneissic schist, closely jointed to				covering two rigs.
				jointed, slightly weathered joints				
14:30						70		End of Boring at 70'.
								WC=Water Content
								in percent of dry
								weight.
						75		
						80		
						85		
						90		
						95		
						100		

MRCE Form BL-1

BORING NO. M-7

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-7
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 8.9±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED						
					X	YES		NO		
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	40	
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM	0	TO	60	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER	TRACK									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED: X YES ☐ NO
DIAMETER OF ROTARY BIT, IN.: 3-7/8
TYPE OF DRILLING MUD: QUIK MUD

AUGER USED: ☐ YES X NO
TYPE AND DIAMETER, IN.:

CASING HAMMER, LBS.: AVERAGE FALL, IN.:
*SAMPLER HAMMER, LBS.: 140 AVERAGE FALL, IN.: 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ☐ YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	60	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR: AQUIFER DRILLING & TESTING CO., INC.
DRILLER: PAUL GADDIS HELPERS: CHRIS RUBAN
REMARKS: BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER: TERESA SANDIFORD DATE: 05-04-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-8
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 9.6±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:00							DRILLED	Drove casing to 20'.
04-30-15							AHEAD	0-5': 0 ppm, no odor
Thursday							4"	
Sunny								
60°F						5		
						10		
						15		
						20		
	1D	20.0	8-6	Red brown fine to coarse sandy gravel, trace				REC=2"; no contami-
		22.0	7-5	silt (GP)				nation from 20' to 30'.
	2D	22.0	8-7	Red brown fine to coarse sand, some gravel,				20-22': 0 ppm, no odor
		24.0	7-6	trace silt (SP-SM)				22-24': 3 ppm
	3D	24.0	4-5	Red brown fine to coarse sand, trace gravel,		25		24-26': 0 ppm, no odor
		26.0	6-7	silt (SP-SM)				26-28': 0 ppm, no odor
	4D	26.0	8-7	Red brown silty fine sand, trace mica (SM)				
		28.0	10-10					
	5D	28.0	17-12	Do 4D (SM)				
		30.0	10-9			30		
						35		
					S			
						40		
						45		
						50	*	*Coring time from
	1C	50.0	REC=100%	Medium hard slightly weathered gray gneissic	R			13:28 to 13:44 at 3.2
		55.0	RQD=83%	schist, moderately jointed to jointed, WJts				minutes per foot.

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-8
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 9.6±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
05-20-15								
Wednesday								
Partly Sunny								
65°F						55		
	2C	55.0	REC=85%	Top 1.5": Do 1C	R		*	*Coring time from
		60.0	RQD=58%	Bot: Hard unweathered gray pegmatite, moderately jointed				14:00 to 14:28 at 5.6 minutes per foot.
14:30						60		End of Boring at 60'.
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-8
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 9.6±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED						
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30	
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO		
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER	TRACK									

TYPE AND SIZE OF:					
D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X	YES	NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL		
CORE BARREL	NX DOUBLE BARREL	AUGER USED		YES	X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				

CASING HAMMER, LBS. _____ AVERAGE FALL, IN. _____
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ____ YES X NO SKETCH SHOWN ON _____

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.		
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.		
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	50	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOUG WOOD HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 04-30-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-9
SHEET 1 OF 3
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 8.8±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:45							DRILLED	Hand auger to 1.5'.
05-11-15							AHEAD	Vacuum excavated to
Monday							4"	1.5'. Roller bit slowly
Sunny								through brick obstruc-
50°F	1D	4.0	5-3	Brown, red fine to coarse sand, some gravel,		5		tion.
		6.0	2-2	clay, trace brick fragments (SC)				Harder drilling at 3.5'.
	2D	6.0	3-3	Do 1D (SC)				Wash shows brick &
		8.0	4-4		F			gravel pieces; 4'
	3NR	8.0	16-5	No recovery				softened.
		10.0	4-2			10		1D: REC=6"
	4D	10.0	1-1	Brown clayey fine to coarse sand, trace gravel				2D: REC=2"
		12.0	1-3	(SC)				4D: REC=3"
								4-8': 0 ppm, no odor
								10-12': 0 ppm, no odor
						15		
	5D	15.0	2-2	Black, brown gravelly organic silty clay (OH)				15-17': 1 ppm, faint
		17.0	8-11					organic odor
						20		
	6D	20.0	7-7	Brown black clayey silt, some fine sand (ML)				1" Coarse gravel & 2"
14:45		22.0	7-11					medium sand at top of
09:00	7D	22.0	12-11	Interlayered brown fine to medium sand, some				sample.
05-12-15		24.0	10-8	silt & fine to coarse sand, trace silt (SM&SP-SM)				6D: WC=19
Tuesday	8D	24.0	6-8	Brown black fine to coarse sand, trace silt		25		Top had 1" band of
Sunny		26.0	9-12	(SP-SM)				silty clay.
86°F	9D	26.0	4-5	Brown fine to coarse sand, trace silt (SP-SM)				
		28.0	9-12		S			
	10D	28.0	11-11	Brown clayey fine sand, trace silt, gravel (SM)				REC=1"
		30.0	11-12			30		20-32': 0 ppm, no odor
	11D	30.0	9-7	Brown silty fine sand varved with some clayey				
		32.0	7-10	silt (SM&ML)				
						35		35-37': 0 ppm, no odor
	12D	35.0	1-2	Red brown silty fine sand (SM)				WC=Water Content
		37.0	4-8					in percent of dry
								weight.
								40-42': 0 ppm
						39.5		Hard drilling at 39.5'.
	13D	40.0	100/1"	Gray micaceous fine to medium sand, trace	DR	41	*	1C: *Coring time from
		40.1		silt (Decomposed Rock) (SP-SM)				12.58 to 13:11 at 8.6
	1C	41.0	REC=83%	Medium hard unweathered to slightly weathered				minutes per foot.
		42.5	RQD=50%	gray gneissic schist, jointed to MdJtd				At 13:11, core barrel
	2C	42.5	REC=98%	Do 1C		45		jammed.
		46.0	RQD=98%				*	2C: *Coring time from
	3C	46.0	REC=97%	Do 1C	R			13:25 to 13:40 at 4.3
		51.0	RQD=87%					minutes per foot.
							*	3C: *Coring time from
						50		13:51 to 14:02 at 2.2
14:00						51		minutes per foot.
								End of Boring at 51'.

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-9
SHEET 3 **OF** 3

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 8.8±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED						
					X	YES		NO		
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30	
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO		
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER	TRACK									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X	YES	NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL		
CORE BARREL	NX DOUBLE BARREL	AUGER USED		YES	X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				

CASING HAMMER, LBS.		AVERAGE FALL, IN.	
SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ☐ YES ☒ NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	41	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-12-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-10
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. 14.0±
RES. ENGR. J. BRICKMAN/T. SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
14:00	1D	0.0	27-18	Black fine to coarse sand, some silt, trace gravel,	**	0.33	DRILLED	**Asphalt from 0' to
04-23-15		2.0	28-31	brick (SM)			AHEAD	0.33'.
Thurs., Clear	2D	2.0	20-24	Gray fine to coarse sand, some silt, trace			4"	0-2': 90 ppm, odor at
55°F, 14:15		4.0	20-21	gravel (SM)				tip
11:30	3D	4.0	13-9	Gray & brown fine to coarse sand, some silt,		5		3D, 5D, 8D: Petroleum
04-24-15		6.0	10-10	trace gravel (SM)	F			odor.
Friday	4D	6.0	10-14	Gray fine to coarse sand, some silt, gravel (SM)				2-4': 500 ppm, strong
Clear		8.0	15-18					odor
50°F	5D	8.0	9-16	Gray fine to coarse sand, some gravel, silt				4-6': 1080 ppm, strong
		10.0	62-33	(SM)		10		odor
	6D	10.0	17-21	Gray fine to coarse sand, some gravel fragments,				6-8': 850 ppm, strong
		12.0	41-22	trace silt (SP-SM)				odor
								8-10': 355 ppm, strong
								odor
						15		10-12': 163 ppm
	7D	15.0	12-14	Gray gravel fragments, some fine to coarse				REC=3"
		17.0	12-10	sand, trace silt (GP)	S			15-17': 2 ppm, faint
								odor
						20		
14:00	8D	20.0	100/4"	Brown fine to coarse sand, some gravel, trace				
09:15		20.3		clayey silt (SP-SM)				Wood pieces from 22'
04-27-15	9D	22.0	15-73	Brown fine to medium sand, some gravel, silt				to 24'.
Monday		24.0	50-17	(SM)		24		
Cloudy	10D	24.0	41-60	Red brown fine to coarse sand, some gravel,		25		22-24': 1 ppm, faint
60°F		26.0	36-34	silt (SM)				odor
	11D	26.0	27-21	Do 10D (SM)				24-26': 1 ppm, faint
		28.0	20-39					odor
	12D	28.0	15-25	Do 10D (SM)				26-32': 0 ppm, no odor
		30.0	20-20			30		
	13D	30.0	10-15	Brown fine to medium sand, trace silt (SP-SM)				
		32.0	15-17					
						35		
	14D	35.0	8-9	Do 13D (SP-SM)				35-37': 0 ppm, no odor
		37.0	9-13		S			
						40		
	15D	40.0	4-7	Brown fine sand, some silt, trace mica (SM)				40-42': 0 ppm, no odor
		42.0	11-11					
						45		
	16D	45.0	WH-2	Brown silty fine sand, trace mica (SM)				45-47': 0 ppm, no odor
		47.0	4-7					
	1C	48.0	REC=92%	Medium hard slightly weathered gray gneissic		48		Hard drilling at 48'.
		53.0	RQD=92%	schist, jointed, iron stained joints			*	*Coring time between
					R	50		13:06 to 13:20 at 2.8
								minutes per foot.

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-10
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION: NEW YORK, NEW YORK **SURFACE ELEV.** 14.0±
RES. ENGR. J. BRICKMAN/T. SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								Coring time not taken;
04-27-15								covering two rigs.
Monday								
Cloudy	2C	53.0	REC=100%	Medium hard unweathered gray gneissic schist,	R			
60°F		58.0	RQD=88%	jointed		55		
14:00						58		End of Boring at 58'.
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-10
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 14.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		X YES		NO		
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30	
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO		
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER	TRACK (CME)									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED X YES NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED YES X NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.		
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.		
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	48	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOUG/DOMINICK PEPE HELPERS LEO/GEORGE RAYMOND
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER JAMES BRICKMAN/TERESA SANDIFORD DATE 04-27-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-11
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 11.8±
RES. ENGR. N. SEGUIN/J. BRICKMAN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:30	1D	0.0	35-51	Dark brown to black silty fine to coarse sand,	**	0.25	DRILLED	**Pavement from 0' to
04-22-15		2.0	34-22	some gravel, trace brick fragments (SM)			AHEAD	0.25'.
Wednesday	2D	2.0	12-20	Red brick & fine to coarse sand, some gravel,			4"	0-4': 0 ppm, no odor
Clear		3.5	47-25/0"	silt (SM)	F			
65°F	3D	4.0	11-16	Red brown fine to coarse sand, trace brick,		5		REC=6"
		6.0	21-15	silt (SP-SM)				4-6': 0 ppm
	4D	6.0	6-10	Top: Red brn f-c sand, some silt, gravel (SM)		7		4D, 10D: Spoon sample
		8.0	6-9	Bot: Brown silty fine sand, trace gravel (SM)				split.
	5D	8.0	11-11	Brown silty fine sand, some gravel (SM)				6-8': 25 ppm, faint
		10.0	7-8			10		odor, no sheen
	6D	10.0	6-5	Do 5D (SM)	S			8-10': 0 ppm, no odor
		12.0	6-6					10-12': 0 ppm, no odor
						13.5		
						15		
	7D	15.0	3-2	Dark gray to brown clayey silt, some fine sand				15-17': 5 ppm, faint
		17.0	2-3	(ML)				odor, no sheen
					M			
						20		
	8D	20.0	2-1	Dark gray clayey silt, some fine sand, trace				20-22': 2 ppm, no odor
		22.0	1-3	gravel (ML)		22		22-24': 5 ppm, faint
	9D	22.0	4-6	Dark gray gravelly fine to coarse sand, some				odor
		24.0	7-11	silt (SM)				24-26': 18ppm, faint
	10D	24.0	7-11	Dark gray fine to medium sand, some silt, trace		25		odor
		26.0	29-29	gravel (SM)				26-28': 11 ppm, faint
	11D	26.0	14-13	Red brown fine to medium sand, some silt				odor
		28.0	17-19	(SP-SM)				28-30': 5 ppm, faint
	12D	28.0	13-15	Red brown fine to coarse sand, some gravel,				odor
		30.0	21-18	trace silt (SP-SM)		30		
	13D	30.0	11-9	Top: Brown fine to coarse sand, some gravel,				Highly contaminated
		32.0	8-9	silt (SM)				spoon sample split.
				Bot: Brown silty fine sand (SM)				30-31': Tar-like
					S			material at top, 20 ppm
						35		31-32': 0 ppm
	14D	35.0	8-9	Brown silty fine sand (SM)				35-37': 0 ppm, no odor
14:40		37.0	10-11					
09:00								
04-23-15								
Thursday						40		
Clear	15D	40.0	7-11	Brown silty fine sand (SM)				40-42': 2 ppm, faint
55°F		42.0	12-12					odor
						45		Intermediate rock from
	16D	45.0	69-50/1"	Gray brown micaceous fine to medium sand,	DR	46		46' to 48.5', medium
		45.6		some silt (Decomposed Rock) (SM)			3.5*	hard below.
	1C	46.0	REC=92%	Medium hard slightly weathered to unweathered			4*	*Coring time in
		51.0	RQD=87%	gray gneissic schist, schistose gneiss, jointed	R		4*	minutes per foot.
				to blocky, iron stained & weathered joints		50	5*	
							3*	

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-11
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION: NEW YORK, NEW YORK **SURFACE ELEV.** 11.8±
RES. ENGR. JAMES BRICKMAN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd					**DR**	**51**		
04-23-15	2C	51.0	REC=100%	Hard unweathered gray schistose gneiss,			-	- No coring time taken.
Thursday		56.0	RQD=100%	massive			-	
Clear					**R**		-	
55°F						**55**	3.5*	
12:00						**56**	3*	End of Boring at 56'.
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-11
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 11.8±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG	TYPE OF FEED DURING CORING		CASING USED					
			X YES					NO
TRUCK	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	
SKID	HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE	OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER TRACK								

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X YES		NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL		
CORE BARREL	NX DOUBLE BARREL	AUGER USED	YES	X	NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				
	WITH 2' AWJ ABV SPOON	*CASING HAMMER, LBS.	140	AVERAGE FALL, IN.	30
		*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ☐ YES ☒ NO SKETCH SHOWN ON

STANDPIPE:	TYPE	ID, IN.	LENGTH, FT.	TOP ELEV.			
INTAKE ELEMENT:	TYPE	OD, IN.	LENGTH, FT.	TIP ELEV.			
FILTER:	MATERIAL	OD, IN.	LENGTH, FT.	BOT. ELEV.			

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	46	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOUG WOOD HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER NATHAN SEGUIN/JAMES BRICKMAN DATE 04-23-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-12
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 11.0±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:00	1D	0.0	32-11	Gray fine to coarse sand, some silt, trace gravel	**	**0.33**	DRILLED	**Asphalt from 0' to
04-27-15		2.0	17-15	(SM)			AHEAD	0.33' at surface.
Monday	2NR	2.0	11-13	No recovery			4"	No recovery.
Cloudy		4.0	14-11					0-2': no odor
50°F	3D	4.0	7-7	Gray fine to coarse sand, some gravel, silt (SM)		**5**		4-6': 5 ppm,
		6.0	5-6					faint odor
	4D	6.0	4-5	Gray fine to coarse sand, some gravel, silt (SM)				4D, 13D: REC=1"
		8.0	5-3					6-8': 0 ppm
	5D	8.0	9-12	Gray & red fine to coarse sand, some brick				REC=5"; brick in
		10.0	4-3	fragments, gravel, silt (Fill) (SM)		**10**		sample.
	6D	10.0	1-1	Gray black fine to medium sand, some organic				Rig chatter; stopped
		12.0	2-1	clay (SC)				filling from 12:24 to
								11:27.
								10-12': 1 ppm, faint
						15		odor
	7D	15.0	9-12	Gray black fine to medium sand, some gravel,	**F**			15-17': 1 ppm, faint
		17.0	6-6	trace silt, mica (SP-SM)				odor
						20		
	8D	20.0	6-5	Gray, red fine to medium sand, some clay, brick				8D-10D: Petroleum
		22.0	3-6	fragments (SC)				odor.
	9D	22.0	100/5"	Gray to black fine to coarse sand, some gravel,				8D: REC=5"
		22.4		silt (SM)				9D: Spoon bouncing.
	10D	24.0	4-5	Do 9D (SM)		**25**		20-22': Tar-like
		26.0	15-15					material at tip; asphalt-
	11D	26.0	12-13	Brown silt, trace fine to coarse sand (ML)				like w/sheen; 17 ppm,
		28.0	14-26					moderate odor
	12NR	28.0	15-14	No recovery				22-22.5': Tar and tar-
		30.0	14-9			**30**		like material w/
	13D	30.0	6-7	Gray gravel (GP)				globules; black; 78 ppm
		32.0	9-6					24-26': 7 ppm,
09:00								moderate odor; sheen
04-28-15								26-28': 0 ppm, no odor
Tuesday						**35**		
Cloudy	14D	35.0	2-4	Red brown fine to medium sand, some silt,				35-37': 0 ppm, no odor
50°F		37.0	2-4	trace mica (SM)				
					S	**40**		
	15D	40.0	3-4	Brown to red brown silty fine sand, trace mica				40-42': 0 ppm, no odor
		42.0	3-4	(SM)				
						45		
	16D	45.0	2-1	Brown silty fine sand varved with trace fine sandy				45-47': 0 ppm, no odor
		47.0	2-3	silt (SM)				
						48.5		
					DR	**50**		
	17D	50.0	60-100/1"	Gray to black micacaceous fine to medium		**51**		REC=6"
		50.6		sand, trace silt (Decomposed Rock) (SP-SM)				

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-12
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION: NEW YORK, NEW YORK **SURFACE ELEV.** 11.0±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								No coring time
04-28-15	1C	51.0	REC=92%	Medium hard unweathered gray gneissic				recorded; covering
Tuesday		56.0	RQD=78%	schist, closely jointed to jointed				2 rigs.
Cloudy								
50°F						**55**		
					R			
	2C	56.0	REC=79%	Hard unweathered gray schistose gneiss,				
		61.0	RQD=75%	moderately jointed				
						60		
14:00						**61**		End of Boring at 61'.
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-12
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 11.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
				X	YES		NO		
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X	YES	NO
DIAMETER OF ROTARY BIT, IN.	3-7/8		
TYPE OF DRILLING MUD	QUIK GEL		
AUGER USED		YES	X NO
TYPE AND DIAMETER, IN.			

CASING HAMMER, LBS. _____ AVERAGE FALL, IN. _____
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ____ YES X NO SKETCH SHOWN ON _____

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	51	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS/DOMINIC PEPE HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 04-28-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-13
SHEET 1 OF 3
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 9.3±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:00							DRILLED	Hand auger to 6'.
05-13-15							AHEAD	Vacuum excavated to
Wednesday							4"	6'.
Cloudy								Advanced unsampled
65°F						5		to 20'.
								0-6': sandy fill, petroleum odor; *No geotech sampling --> environmental sampling 20-30' ONLY
					F	10		
						15		
						20		
	1D	20.0	3-3	Brown silty fine sand, trace mica (SM)				20-30': 0 ppm, no odor
		22.0	3-3					
	2D	22.0	2-5	Do 1D (SM)				
		24.0	4-6					
	3D	24.0	2-3	Do 1D (SM)		25		
		26.0	4-4					
	4D	26.0	5-5	Do 1D (SM)				
		28.0	7-9		S			
	5D	28.0	6-7	Do 1D varved with trace silt (SM)				
		30.0	9-9			30		
								Chunky drilling at 33.5'.
								Advanced unsampled
						35		to 35'; top of rock.
	1C	35.0	REC=100%	Medium hard slightly weathered to unweathered			*	*Coring time from 12:15
		40.0	RQD=73%	gray gneissic schist to schistose gneiss,				to 12:34 at 3.8 minutes
				jointed to moderately jointed, weathered joints				per foot.
						40		
	2C	40.0	REC=100%	Hard unweathered gray schistose gneiss,	R		*	*Coring time from 12:45
		45.0	RQD=100%	moderately jointed to jointed				to 13:02 at 3.4 minutes
								per foot.
13:15						45		End of Boring at 45'.
						50		

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BORING NO. M-13

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-13
SHEET 3 **OF** 3

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 9.3±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

CASING USED: [X] YES [ ] NO

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED: [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK MUD

AUGER USED: [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. ____ AVERAGE FALL, IN. ____
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	35	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER JOHN CAMPBELL HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-13-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-14
SHEET 1 OF 2
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 10.9±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE		BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
13:30 04-28-15 Tuesday Sunny 55°F							DRILLED AHEAD 4" 5"	Advanced unsampled to 20'.
						5		
						10		
						15		
						20		4" Casing to 20'.
	1D	20.0	2-3	Black, brown fine to medium sand, some silt, gravel (SM)	S			1D-2D: Petroleum odor.
		22.0	2-1					
09:00 05-29-15 Wednesday Sunny 65°F, 10:00	2D	22.0	100/4"	Brown fine to coarse sand, some gravel, silt (SM)		22.4		5" Casing over top to 22.4'.
		22.4						
						25		Obstruction at 22.4' causing water pressure from spinning casing to cause leak in pave-ment 15' away.
						30		Cobbles observed in casing at 22.4'. Boring offset 11' North. End of Boring at 22.4'.
						35		20-22': 7 ppm, moderate odor; black; debris (brick and mortar) 22-22.5': 35 ppm, moderate odor; mortar-like debris w/ black silt
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-14
SHEET 2 **OF** 2

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 10.9±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED			X	YES		NO		
TRUCK	X	MECHANICAL		DIA., IN.	5	DEPTH, FT. FROM	0	TO	22.5			
SKID		HYDRAULIC	X	DIA., IN.	4	DEPTH, FT. FROM	0	TO	20			
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO				
OTHER												

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.		
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.		
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	22.4	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.		OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMINICK HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 04-29-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-14A
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 10.9±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:30				Advanced down to 22' unsampled.			DRILLED	Spun 4" casing.
04-29-15							AHEAD	Advanced down to 22'
Wednesday							4"	unsampled; offset
Sunny								12' North of M-14.
65°F						5		
						10		
						15		
						20		
						22		
	1D	22.0	4-7	Brown, black gravel, some fine to coarse				REC=4"
		24.0	10-12	sand, trace silt (GP)				22-24': 1 ppm, faint odor; grey
	2D	24.0	10-6	Brown, black medium to fine sand, trace		25		
		26.0	7-8	coarse sand, silt (SP-SM)				24-26': 3 ppm, faint odor
	3D	26.0	4-4	Brown fine to coarse sand, trace gravel, silt				
		28.0	5-4	(SP-SM)				26-30': 0 ppm, faint odor
	4D	28.0	4-5	Brown fine to medium sand, trace silt (SP-SM)				
		30.0	6-4			30		Casing to 30'.
								Clearing mud tub at
								11:20.
						35		
					S			
						40		
						45		
14:45						49		Top of rock at 49'.
09:00	1C	49.0	REC=100%	Medium hard to hard slightly weathered to		50	*	*Coring time from 09:00
04-30, Thurs.		59.0	RQD=78%	unweathered gray gneissic schist, jointed to	R			to 09:55 at 5 minutes
Cldy., 55°F				moderately jointed, iron stained & WJts				per foot 10' core.

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-14A
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 10.9±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
04-30-15								
Thursday								
Cloudy								
55°F					R	55		
								Boring offset 12' North
								of Boring Log M-14.
14:00						59		End of Boring at 59'.
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

BORING NO. M-14A

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-14A
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 10.9±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

CASING USED: [X] YES [ ] NO

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED: [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED: [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. _____ AVERAGE FALL, IN. _____
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	49	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMINICK HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 04-29-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-15
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. +10.0±
RES. ENGR. L. LINCOLN/N. SEGUIN

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:30	1D	0.0	61-9	Black fine to coarse sand, some gravel, silt,	**	0.25	DRILLED	**Asphalt from 0' to
04-19-15		2.0	7-16	trace brick (Fill) (SM)			AHEAD	0.25'.
Sunday	2D	2.0	13-9	Black brown fine to medium sand, some			4"	Petroleum odor.
Clear		4.0	22-34	gravel, silt, trace brick (Fill) (SM)				
60°F	3D	4.0	2-6	Black fine to coarse sandy gravel, trace silt,		5		3D, 6D: REC=5"
		6.0	12-7	brick (Fill) (GP-GM)				0-2': 200 ppm, strong odor; ash
	4D	6.0	4-4	Black fine to coarse sand, some silt, trace				4-6': 153 ppm, strong odor
		8.0	4-4	gravel (Fill) (SM)				6-8': 400 ppm, strong odor
	5NR	8.0	9-5	No recovery				10-12': 60 ppm, odor
		10.0	1-1			10		12-14': 5 ppm, fain odor; some debris (ash and brick)
	6D	10.0	WH/12"	Black fine to coarse sand, some clay (SC)				REC=3"
		12.0	1/12"					15-17': 5 ppm
	7D	12.0	WH/24"	Dark brown fine to medium sand, trace silt,	F			
		14.0		clayey silt seams (SP-SM)				
						15		
	8D	15.0	1-2	Black fine to coarse sand, some gravel, trace				
		17.0	1-4	silt (SP-SM)				
						20		
	9D	20.0	1-100/4"	Black fine to coarse sandy gravel, trace brick,				REC=4"
		22.0		silt (GP-GM)				20-22': 460 ppm, creosote-like odor; black coal tar and sand
	10D	22.0	19-18	Brown fine to coarse sandy gravel, some silt				
		24.0	14-13	(GM)		24		
	11D	24.0	4-3	Brown silty fine sand varved with trace clayey	S	25		22-24': 190 ppm, strong odor; 1" band of debris (ash-like), 1" band of sand w/sheen
		26.0	3-4	silt seams (SM)		26		
	12D	26.0	28-34	Brown fine sand, some silt varved with some	C			
		28.0	24-10	clayey silt (SM&ML)		28.5		
10:00	13D	28.0	4-12	Brown fine to coarse sandy gravel, trace silt				24-26': 10 ppm, faint odor
04-20-15		30.0	8-7	(GP-GM)		30		
Monday	14D	30.0	6-4	Top: Red brown fine to coarse sand, some		31		Spoon sample split.
Rain		32.0	5-5	gravel, silt (SM)				26-28': 5 ppm, faint odor
50°F				Bot: Red brown fine to medium sand, some				
				silt (SM)				28-30': 2 ppm
						35		30-32': 0 ppm, no odor
	15NR	35.0	4-5	No recovery				
		37.0	4-3					
						40		
	16D	40.0	2-3	Red brown fine sand, some silt (SM)	S			40-42': 0 ppm, no odor
		42.0	3-4					
						45		
	17D	45.0	6-5	Red brown silty fine sand (SM)				45-47': 0 ppm, no odor
		47.0	7-7					
						49		
						50		
	1C	50.0	REC=100%	Hard unweathered to slightly weathered gray	R		*	*Coring time at 4 minutes per foot.
		55.0	RQD=91%	gneissic schist, jointed to MdJtd, Fe & WJts				

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-15
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. +10.0±
RES. ENGR. L. LINCOLN/N. SEGUIN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
04-20-15								
Monday								
Rain								
50°F						**55**		
	2C	55.0	REC=100%	Hard unweathered gray gneissic schist, blocky	**R**		*	*Coring time at 4
		60.0	RQD=97%					minutes per foot.
13:15						**60**		End of Boring at 60'.
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-15
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. +10.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	50
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

CASING USED: [X] YES [ ] NO

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED: [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED: [ ] YES [X] NO
TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	50	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMENIC PEPE HELPERS GEORGE RAYMOND
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER LYSANDRA LINCOLN/NATHAN SEGUIN DATE 04-20-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-16
SHEET 1 OF 2
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. +12.0±
RES. ENGR. ALEXANDRA PATRONE

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:15	1D	0.0	36-18	Brown fine to medium sand, some silt, trace	**	0.25		**Asphalt from 0' to
04-18-15		2.0	20-20	gravel, concrete, brick (Fill) (SM)	F	2		0.25'.
Saturday	2D	2.0	11-15	Do 1D (Fill) (SM)				0-4': 0 ppm, no odor
Clear		3.5	50/2"					
70°F	3D	4.0	50/2"	Red brick fragments (Fill) (GP-GM)		5		
		4.2			BRICK WALL			
								Hard drilling to 8'.
								Offset Boring.
12:30						10		End of Boring at 10'.
	4D	10.0	50/2"					
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-16
SHEET 2 **OF** 2

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. +12.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
TRUCK		MECHANICAL		DIA., IN.		DEPTH, FT. FROM		TO	
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER	TRACK								

CASING USED: [ ] YES [X] NO

TYPE AND SIZE OF:

D-SAMPLER: 2" O. D. SPLIT SPOON
U-SAMPLER:
S-SAMPLER:
CORE BARREL: NX DOUBLE BARREL
CORE BIT: NX DIAMOND
DRILL RODS:

DRILLING MUD USED: [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN.:
TYPE OF DRILLING MUD:

AUGER USED: [ ] YES [X] NO
TYPE AND DIAMETER, IN.:

CASING HAMMER, LBS.: AVERAGE FALL, IN.:
*SAMPLER HAMMER, LBS.: 140 AVERAGE FALL, IN.: 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	10	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.		OTHER:	

BORING CONTRACTOR: AQUIFER DRILLING & TESTING CO., INC.
DRILLER: DOUG WOOD HELPERS:
REMARKS: BOREHOLE OFFSET BACKFILLED.
RESIDENT ENGINEER: ALEXANDRA PATRONE DATE: 04-18-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-16A
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. +12.0±
RES. ENGR. A. PATRONE/L. LINCOLN/N. SEGUIN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
12:30							DRILLED	
04-18-15							AHEAD	
Saturday							4"	
Clear								
70°F					BRICK WALL	5		
						10		Drilled ahead to 10'.
	1D	10.0	16-10	Top 4": Red brick fragments (GP-GM)				1D, 4D: Petroleum
		12.0	4-6	Bot 2": Black fine to medium sand, some				odor.
				organic silt (Fill) (SM)	F			10-12': 3 ppm, faint
								odor; black
						15		
	2D	15.0	WH-1	Black organic silty fine sand (SM)				15-17': 10 ppm,
		17.0	1-2					moderate odor; black
					S			
						20		
	3D	20.0	WH-2	Black fine to coarse sand, some silt (SM)				20-22': 5 ppm; grey/
14:40		22.0	5-14			22		black, ash-like material
07:30	4D	22.0	14-25	Black to brown fine to coarse sand, some brick,	F			22-24': 10 ppm; black/
04-19-15		24.0	96-66	gravel, silt (Fill) (SM)		24		grey, fill debris (brick,
Sunday	5D	24.0	14-14	Black to brown, red brown silty fine to medium		25		ash)
Clear		26.0	23-19	sand, trace gravel (SM)				24-26': 5 ppm, faint
60°F	6D	26.0	22-26	Brown fine to coarse sand, some gravel, silt				odor
		28.0	38-21	(SM)				26-28': 0 ppm, no odor
	7D	28.0	7-8	Brown silty fine to medium sand, trace gravel	S			28-30': 0 ppm, no odor
		30.0	12-26	(SM)		30		
	8D	30.0	16-17	Brown silty fine sand (SM)				
		32.0	20-29					
						33.5		
						35		
	9D	35.0	7-14	Brown fine sandy silt varved with some silty fine	V			35-37': 0 ppm, no odor
		37.0	15-19	sand (ML&SM)				
						38.5		
						40		
	10D	40.0	16-14	Red brown coarse to fine sand, some gravel,				40-42': 0 ppm, no odor
		42.0	14-13	trace silt (SP-SM)				
					G			
						45		
	11D	45.0	17-16	Top: Red brown gravelly coarse to fine sand,		46		
		47.0	19-26	trace silt (SP-SM)				45-47': 0 ppm, no odor
				Bot 12": Red brown clayey silt, some fine sand				11D Bot: WC=27
				(ML)	V			
						50		
	12D	50.0	12-14	Red brown fine sandy silt, trace gravel (ML)				REC=2"
		52.0	15-21					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-16A
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION: NEW YORK, NEW YORK **SURFACE ELEV.** +12.0±
RES. ENGR. A. PATRONE/L. LINCOLN/N. SEGUIN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 04-19-15 Sunday Clear 60°F					V	55		
14:30	13D	55.0	11-15	Red brown clayey silt varved with silt, some		56		
		56.5	21-50/2"	fine sand (ML&SM)	**	56.5		**Till from 56' to 56.5'.
11:50 04-20-15 Monday Rain 55°F	1C	56.5	REC=100%	Hard slightly weathered to unweathered gray			*	*Coring time in 2
		61.5	RQD=84%	gneissic schist, trace pegmatite, blocky				minutes per foot.
						60		
	2C	61.5	REC=100%	Hard slightly weathered to unweathered gray	R		*	*Coring time in 7
		64.8	RQD=93%	pegmatite, trace gneissic schist, jointed				minutes per foot.
	3C	64.8	REC=100%	Hard slightly weathered to unweathered gray		65	*	*Coring time in 10
		66.5	RQD=76%	pegmatite, moderately jointed				minutes per foot.
13:25						66.5		End of Boring at 66.5'.
						70		WC=Water Content in percent of dry weight.
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-16A
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. +12.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED						
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	35	
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO		
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER	TRACK									

CASING USED: [X] YES [ ] NO

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED: [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN.:
TYPE OF DRILLING MUD:

AUGER USED: [ ] YES [X] NO
TYPE AND DIAMETER, IN.:

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	56.5	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOUG WOOD HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER ALEXANDRA PATRONE/THERESA SANDIFORD/NATHAN SEGUIN DATE 04-20-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-17
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. +11.0±
RES. ENGR. A. PATRONE/L. LINCOLN

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:30					**	0.25	DRILLED	**Asphalt from 0' to
04-18-15	1D	1.0	10-12	Black, gray, red, medium to fine sand, some			AHEAD	0.25'.
Saturday		3.0	19-32	brick, gravel, concrete, tr silt (Fill) (SP-SM)			4"	Petroleum odor from
Clear	2D	3.0	10-10	Black gravel, some fine to coarse sand, trace				0' to 35'.
70°F		5.0	8-12	silt (GP-GM)		5		2D, 11D: REC=6"
	3NR	5.0	7-8	No recovery				1-5': 0 ppm, no odor
		7.0	6-8					
	4D	7.0	5-3	Gray medium to fine sand, some silt, trace				7-9': 3 ppm, faint odor
		9.0	4-4	gravel, brick (Fill) (SM)				9-11': 2 ppm, faint
	5D	9.0	12-7	Gray fine to medium sand, some silt, trace		10		odor
		11.0	5-4	coarse sand, gravel (SM)	F			11-12': 0.8 ppm, no
	6D	11.0	4-2	Gray fine to coarse sand, some gravel, silt,				odor
		13.0	5-5	trace coarse sand (SM)				
						15		
	7NR	15.0	4-2	No recovery				
		17.0	4-9					17-19': no odor
	8D	17.0	2-2	Black to red gravel & brick, trace fine to coarse				REC=2"
		19.0	5-8	sand, silt (Fill) (GP)				20-21': 3 ppm
						20		21-22': 10 ppm, some
	9D	20.0	5-50/2"	Black to red fine to coarse sand, trace brick,		20.5		coal tar
		20.8		gravel, silt (Fill) (SP-SM)				Refusal at 20.8'.
	1CNR	20.8	REC=0%	No recovery	CONC			Refusal at 22'.
		21.5				23		Drill ahead to 23'; rods
	10D	21.5	100/6"	Do 9D (Fill) (SP-SM)		25		drop.
		22.0						
	11D	23.0	13-19	Brown coarse to fine sand, some gravel, trace				REC=6"
		25.0	15-10	brick, concrete, silt (Fill) (SP-SM)				Safety hammer used
	12D	25.0	29-31	Black fine to medium sand, some gravel, trace	F			for Sample 12D.
		27.0	12-28	silt, coarse sand (Fill) (SP-SM)		30		23-25': 1 ppm
	13D	27.0	17-29	Brown black fine to medium sand, some silt,				25-27': 25 ppm
		29.0	12-12	trace coarse sand, gravel (SM)				27-29': 10 ppm, faint
	14NR	29.0	12-10	No recovery		33		odor
		31.0	11-13					29-31': 2 ppm, faint
						35		odor
	15D	35.0	7-7	Red brown fine sand, some silt (SM)				35-37': no odor
14:00		37.0	8-12					
07:00								Switch mud at 35'.
04-19-15								
Sunday						40		
Clear	16D	40.0	4-5	Red brown silty fine to medium sand (SM)	S			
60°F		42.0	6-7					
						45		
	17D	45.0	4-7	Do 16D varved with trace clayey silt (SM)				
		47.0	9-13					
								Hard drilling at 48'.
						48.5		
						50		
	1C	50.0	REC=100%	Medium hard to intermediate slightly weathered	R			
		55.0	RQD=52%	gray gneissic schist, jointed to broken, Fe & WJts				

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-17
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. +11.0±
RES. ENGR. A. PATRONE/L. LINCOLN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
04-19-15								
Sunday								
Clear								
60°F						**55**		
	2C	55.0	REC=100%	Intermediate to medium hard slightly weathered	**R**			
		60.0	RQD=48%	gray gneissic schist, broken to jointed, iron				
				stained & weathered joints				
09:30						**60**		End of Boring at 60'.
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-17
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. +11.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
				X YES			NO		
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	40
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED X YES NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK MUD

AUGER USED YES X NO
TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER GUS SURI HELPERS SCOTT ODWYER
REMARKS
RESIDENT ENGINEER ALEXANDRA PATRONE/LYSANDRA LINCOLN DATE 04-19-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-18
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. +10.5±
RES. ENGR. A. PATRONE/L. LINCOLN

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:20	1D	0.0	33-15	Black fine to medium sand, some gravel, silt,	**	0.25	DRILLED	**Asphalt from 0' to
04-18-15		2.0	20-14	trace brick, concrete (Fill) (SM)			AHEAD	0.25'.
Saturday	2D	2.0	15-16	Red to black fine to coarse sand, some brick,			5"	Petroleum odor from
Clear		4.0	12-14	gravel, silt (Fill) (SM)				0' to 35'.
70°F	3D	4.0	8-11	Red to green fine to coarse sand, some gravel,		5		0-2': no odor
		6.0	6-7	brick, silt (Fill) (SM)				2-4': 137 ppm,
	4D	6.0	15-9	Black to gray fine to medium sand, some gravel,				petroleum odor
		8.0	6-6	silt (Fill) (SM)				4-6': 225 ppm
	5D	8.0	6-6	Gray fine to coarse sandy gravel, trace wood,				5D, 7D: REC=2"
		10.0	11-3	silt (Fill) (GP-GM)		10		
	6D	10.0	2-11	Gray fine to coarse sand, some gravel, trace	F			6D, 12D: REC=6"
		12.0	11-4	silt (Fill) (SP-SM)				6-8': 98 ppm, odor
								8-10': 23 ppm,
								moderate odor,
						15		no sheen
	7D	15.0	9-1	Gray to red gravel & brick, some fine to coarse				10-12': 11 ppm
		17.0	1-6	sand, trace silt (Fill) (GP-GM)				15-17': no odor
						20		Free phase (internal)
	8D	20.0	1/12"	Black fine to medium sand, some silt, organic	M/S			from 20' to 22'.
		22.0	24-45	silty clay layer, trace gravel (SM&OH)				Contaminated at bot-
	9D	22.0	64-30	Top 2": Brown f-m sand, some silt (SM)		22.3		tom of tank from 20' to
		24.0	21-44	Bot 22": Brn f-c sand, tr gvl, brk, si (Fill) (SP-SM)				22.3'.
	10NR	24.0	5-6	No recovery		25		20-22': 100 ppm,
		26.0	9-11					creosote-like odor;
	11D	26.0	15-15	Black fine to medium sand, some gravel, trace				black impacts (possibly
		28.0	19-30	silt, coarse sand (Fill) (SP-SM)	F			MGP)
	12D	28.0	30-12	Black fine to coarse sand, some gravel, trace				22-24': 50 ppm, same as
		30.0	15-14	brick, silt (Fill) (SP-SM)		30		above
	13D	30.0	22-18	Do 13D (Fill) (SP-SM)				Switch mud; drum
		32.0	12-13					cuttings.
								24-26': 2 ppm; sheen
						33.5		on split spoon
						35		26-28': 22 ppm, odor;
	14D	35.0	3-3	Red brown fine sand, some silt (SM)				black
		37.0	3-4					28-30': 1 ppm, faint
								odor; globules noted in
								drill mud
						40		30-32': 1ppm, faint
	15D	40.0	2-2	Do 14D (SM)				odor
		42.0	3-4		S			35-37': 0 ppm, no odor
								40-42': 0 ppm
						45		
	16D	45.0	2-2	Do 14D (SM)				45-47': 0 ppm
		47.0	4-3					
								Mica in return at 49.5'.
								***Decomposed rock
						49.5		from 49.5' to 50'.
	17D	50.0	50/0"	Gray micaceous fine to medium sand, trace	***			
14:00				silt (Decomposed Rock) (SP-SM)	R			

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-18
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. +10.5±
RES. ENGR. A. PATRONE/L. LINCOLN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
07:00							3*	*Coring time in
04-19-15	1C	50.5	REC=95%	Hard unweathered gray gneissic schist, jointed			2*	minutes per foot.
Sunday		55.5	RQD=92%	to moderately jointed, iron stained joints			2*	
Clear							3*	
60°F						**55**	3*	
	2C	55.5	REC=100%	Hard unweathered gray gneissic schist, blocky	**R**		2*	
		60.5	RQD=88%				2*	
							2*	
							2*	
							2*	
						60	2*	
09:15						**60.5**		End of Boring at 60.5'.
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-18
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. +10.5±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
TRUCK	X	MECHANICAL		DIA., IN.	5	DEPTH, FT. FROM	0	TO	35
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

CASING USED: [X] YES [ ] NO

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED: [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK MUD

AUGER USED: [ ] YES [X] NO
TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMENIC PEPE HELPERS GEORGE RAYMOND
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER ALEXANDRA PATRONE/LYSANDRA LINCOLN DATE 04-19-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-19
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 9.8±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:00							DRILLED	Vacuum excavated to 5'.
05-15-15							AHEAD	
Friday							4"	Hand excavated to 5'.
Cloudy								Cuttings & drill water contaminated from 0' to 30'.
60°F						5		
								Advanced unsampled from 6' to 18'.
					F			6-20': ambient odors noted during drillin; 1-5 ppm spike
						10		
								Hard drilling at 16' to 16.9'. Mud shows white specs. Possible foundation mat.
						15		
						18		18-20': 3 ppm, faint odor
	1D	18.0	6-5	Brown fine to coarse sand, some gravel, trace				
		20.0	5-4	silt (SP)		20		20-22': 0 ppm, no odor
	2D	20.0	5-5	Do 1D (SP)				
		22.0	4-5					REC=2"
	3D	22.0	3-4	Brown fine to coarse sand, trace gravel, silt (SP)	S			22-30': 0 ppm, no odor
		24.0	5-5					
	4D	24.0	2-3	Brown silty fine sand, trace mica (SM)		25		
		26.0	3-5					
	5D	26.0	3-4	Do 4D (SM)				
		28.0	5-8			28		
	6D	28.0	5-13	Red brown & brown silt, some fine sand (ML)				
		30.0	8-14			30		
						35		
						40		
						45		
						46		Chunky drilling at 46'.
					R		*	*Coring time from 13:22 to 13:37 at 3 minutes per foot.
	1C	47.0	REC=97%	Medium hard slightly weathered to unweathered				
		52.0	RQD=78%	gray gneissic schist, jointed, iron stained &				
				weathered joints		50		

MRCE Form BL-1

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-19
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 9.8±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
05-15-15								
Friday	2C	52.0	REC=97%	Hard unweathered gray gneissic schist to			*	*Coring time from
Cloudy		57.0	RQD=92%	schistose gneiss, moderately jointed	**R**			13:50 to 14:15 at 5
60°F						**55**		minutes per foot.
								Note: Rig pressure
14:15						**57**		inconsistant.
								End of Boring at 57'.
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-19
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 9.8±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
				X	YES		NO		
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X YES		NO
DIAMETER OF ROTARY BIT, IN.	3-7/8		
TYPE OF DRILLING MUD	QUIK MUD		
AUGER USED	YES	X	NO
TYPE AND DIAMETER, IN.			

CASING HAMMER, LBS.		AVERAGE FALL, IN.	
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ☐ YES ☒ NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	47	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-15-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-20
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 9.4±
RES. ENGR. MARK CHANCY

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:10							DRILLED	Unsampled to 20'.
04-28-15							AHEAD	Unsampled from 32'
Tuesday							4.5"	to 55'.
Sunny								
61°F						5		
						10		
						15		
								Hard drilling to 18'
								approximately; bore-
						20		hole keeps collapsing.
	1D	20.0	13-15	Black fine to coarse sandy gravel, trace silt				REC=6"
04-29-15		22.0	13-11	(GP-GM)				
Wednesday	2D	22.0	7-8	Black medium to coarse sand, trace silt				REC=5"
		24.0	7-6	(SP-SM)				
	3D	24.0	11-7	Black gravelly fine coarse sandy gravel, trace		25		REC=2"
		26.0	7-12	silt (SM)				
	4D	26.0	14-14	Black gravel, trace silt, some fine to coarse	S			REC=3"
		28.0	26-24	sand (GP-GM)				
	5D	28.0	14-10	Light brown fine to coarse sandy gravel, trace				20-22': 0 ppm, faint odor
		30.0	6-4	silt GP-GM)		30		22-24': 0 ppm, no odor
	6D	30.0	3-3	Brown fine to coarse sand, trace silt (SP-SM)				24-26': 0 ppm
		32.0	5-6			32		26-28': 0 ppm, no odor
								30-32': 3 ppm, faint odor
						35		35-37': 0 ppm, no odor
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-20
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION: NEW YORK, NEW YORK **SURFACE ELEV.** 9.4±
RES. ENGR. MARK CHANCY

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd							DRILLED	
04-29-15							AHEAD	
Wednesday							4.5"	
							↓	
						55		
	1C	55.0	REC=88%	Medium hard slightly weathered to unweathered			4*	*Coring time in
		60.0	RQD=76%	gray gneissic schist, trace pegmatite,			3.5*	minutes per foot.
				moderately to jointed, iron stained & weathered jo			3*	
							3*	
						60	3.5*	
	2C	60.0	REC=96%	Medium hard unweathered gray gneissic	**R**		5*	
		65.0	RQD=93%	schist, moderately jointed, iron stained &			1.5*	
				weathered joints			2*	
							2*	
						65	3*	End of Boring at 65'.
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-20
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 9.4±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		X YES		NO		
TRUCK		MECHANICAL		DIA., IN.	4.5	DEPTH, FT. FROM	0	TO	55	
SKID	X	HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO		
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER										

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	
CORE BIT	5-3/4"
DRILL RODS	NW

DRILLING MUD USED X YES NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED YES X NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. AVERAGE FALL, IN.
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.		
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.		
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	55	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER MARK CHANCY DATE 04-29-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-21
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 8.6±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
13:15							DRILLED	Vacuum excavated to
04-30-15							AHEAD	6'.
Thursday							4"	Hand excavated to 5'.
Sunny								Cobbles & coarse
65°F						5		gravel observed in
								cuttings of vacuum.
	1D	6.0	3-5	Brown gravel, trace fine to coarse sand (GP)				Part of recovery filled
		8.0	5-3					water observed at 6.5'.
	2D	8.0	5-4	Brown fine to coarse sand, some silt, trace				1D, 16D, 19D: REC=3"
		10.0	5-3	gravel (SM)		10		2D: REC=5"
	3D	10.0	2-2	Brown tan gravel, trace fine to coarse sand	F			REC=1"
		12.0	3-2	(GP)				Shells in sample.
								6-8': 0 ppm, no odor
								8-10': 0.5 ppm, no
						15		odor
	4D	15.0	3-3	Brown black fine to coarse sand, gravel,				10-12': 0 ppm, no
		17.0	6-3	trace silt, organic clay (GP-GM)				odor
								REC=2"
								Sand in sample.
						20		
	5NR	20.0	1-1	No recovery				15-17': 0 ppm
		22.0	2-1					Cuttings is clay &
	6D	22.0	3-2	Soft brown black organic silty clay, trace fine				gravel.
14:30		24.0	2-2	sand, shells (OH)				
09:00	7D	24.0	3-3	Brown gray clayey fine to medium sand (SC)	O	25		WC=63
05-01-15		26.0	7-7					
Friday	8D	26.0	8-9	Top: Do 7D, trace gravel (SC)				20-22': 0 ppm, no odor
Cloudy		28.0	7-12	Bot: Stiff light brown silty clay (CL)				8D Bot: WC=30
55°F	9D	28.0	4-6	Do with medium sand, some clay and stiff				22-32': 0 ppm, no odor
		30.0	11-14	brown silty (SC+CL)		30		
	10D	30.0	10-12	Brown silty fine sand (SM)				
		32.0	13-15					
						35		
	11D	35.0	6-5	Brown silt (ML)				Fixing hammer from
		37.0	6-6					10:00 to 11:45.
								35-37': 0 ppm, no odor
						40		
	12D	40.0	8-9	Brown fine to coarse sand with fine gravel	S			40-42': 0 ppm, no odor
		42.0	10-7	(GP)				
						45		
	13D	45.0	20-18	Do 12D (GP)				REC=6"
		47.0	24-10					45-47': 0 ppm, no odor
						50		
	14D	50.0	13-10	Do 12D (GP)				
		52.0	7-18					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-21
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 8.6±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
05-01-15								
Fri., Cloudy								
55°F								
13:00						**55**		
10:30	15NR	55.0	9-8	No recovery				
5-5-15		57.0	18-13					
Tuesday								Rig chatter at 58'.
Partly								
Cloudy						**60**		Hole collapsed at 60'.
77°F	16D	60.0	12-10	Purple clay (CL)				60-62': 0 ppm, no odor
		62.0	11-12					
						65		
	17D	65.0	10-14	Brown fine to medium sand (SP)				65-67': 0 ppm, no odor
		67.0	30-30					
								Rig chatter at 68'.
					S			
						70		
	18D	70.0	18-16	Brown medium to coarse sand, trace fine				70-72': 0 ppm, no odor
		72.0	18-16	gravel (SP)				
						75		
	19D	75.0	19-16	Do 18D (SP)				REC=3"
		77.0	18-12					75-77': 0 ppm, no odor
14:30						**80**		
09:00	20D	80.0	9-9	Brown fine sand, some silt (SM)				
05-06-15		82.0	10-10					
Wednesday								
Cloudy								
60°F						**85**		
	21D	85.0	8-15	Brown fine to medium sand, some silt, trace		**86**		
		86.1	100/2"	rock fragments (SM)	**DR**			
						88		
	1C	88.0	REC=100%	Hard slightly weathered to unweathered gray			*	*Coring time from
		93.0	RQD=92%	schistose gneiss to gneissic schist, jointed		**90**		13:29 to 13:50 at 4.2
				to moderately jointed, slightly weathered				minutes per foot.
				joints				Driller advanced to 88'
								for stick up purposes.
	2C	93.0	REC=95%	Hard unweathered gray gneissic schist,	**R**		*	*Coring time from
		98.0	RQD=82%	moderately jointed to jointed		**95**		14:09 to 14:28 at 3.8
								minutes per foot.
14:28						**98**		End of Boring at 98'.
						100		WC=Water Content
								in percent of dry
								weight.

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-21
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 8.6±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED						
TRUCK	X	MECHANICAL		DIA., IN.	4	X YES		NO		
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM	0	TO	35	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER				DIA., IN.		DEPTH, FT. FROM		TO		

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED X YES NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED YES X NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	88	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMINIC PEPE/PAUL GADDIS HELPERS GEORGE RAYMOND
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-05-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-22P
SHEET 1 OF 7
FILE NO. 12320
SURFACE ELEV. 8.0±
RES. ENGR. TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:00							DRILLED	Hand auger to 6'.
05-01-15							AHEAD	
Friday							4" 3"	Vacuum cleared of
Cloudy								utilities to 6'.
55°F						5		0-6': 0 ppm, no odor
								Driller accidentally
								advanced to 15' with-
								out sampling.
						10		Covering 3 rigs,
					F			inspection; did not
								noticed to revert.
						15		
	1D	15.0	22-21	Brown gravel, some fine to coarse sand, trace				REC=3"
		17.0	9-5	silt (GP-GM)				15-17': 60 ppm,
								petroleum odor
						20		
	2D	20.0	18-14	Brown, purple, gravel, some fine to coarse				Driller blows.
		22.0	10-10	sand, trace silt (GP-GM)				River deposit with
	3D	22.0	13-7	Top: Brn f-c sand, tr gravel, silt (SP-SM)				shell fragments from
		24.0	5-4	Bot: Brn blk organic si clay, tr f sand, shells (OH)				23' to 26'.
	4D	24.0	1-2	Do 3D Bottom (OH)		25		20-22': 3 ppm,
		26.0	2-3					moderate odor
	5D	26.0	7-4	Do 3D Bottom (OH)				WC=52
		28.0	4-4					22-28': 0 ppm
	6D	28.0	9-13	Brown fine to coarse sand, some gravel, trace				28-30': 0 ppm, no
		30.0	14-17	silt (SP-SM)		30		odor
	7D	30.0	29-32	Do 6D (SP-SM)				30-32': 0 ppm, no
		32.0	19-19					odor
						35		35-37': 0 ppm, no odor
	8D	35.0	12-19	Brown gravel, some fine to coarse sand, silt				
		37.0	25-34	(GM)	S			
						40		
	9D	40.0	12-17	Brown fine to medium sand, some silt (SM)				40-42': 0 ppm, no odor
		42.0	14-14					
						45		
	10D	45.0	9-16	Top: Brown fine to coarse sand, some gravel,				45-47': 0 ppm, no odor
13:15		47.0	18-23	trace silt (SP-SM)				
09:00				Bot: Red brown silt varved with trace clayey silt				10D Bot: WC=29
05-04-15				(ML)				
Monday						50		Casing to 50'.
Sunny	11D	50.0	39-73	Brown, gray gravelly fine to coarse sand (SP-SM)				50-52': 0 ppm, no odor
80°F		52.0	19-20					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-22P
SHEET 2 OF 7
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 8.0±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd							DRILLED	
05-04-15							AHEAD	
Monday							3"	
Sunny								
80°F						55		
	12D	55.0	19-21	Brown fine to medium sand, some gravel, trace				55-57': 0 ppm, no odor
		57.0	20-17	silt (SP-SM)				
						60		
	13D	60.0	11-29	Brown fine to coarse sand, some gravel, trace				60-62': 0 ppm, no odor
		62.0	32-37	silt (SP-SM)				
	1C	63.0	REC=	Cobble to sandstone, hard red brown				Hard drilling at 62.5'.
		68.0						1C Cored for 1' then
						65		rods dropped through
								68'.
	14D	68.0	17-26	Brown, red brown gravelly fine to coarse sand,				Borehole collapsed
13:00		70.0	53-42	trace silt (SP-SM)		70		at 70'; clearing out.
09:00	15D	70.0	18-21	Brown fine to coarse sandy gravel, trace silt				68-70': 0 ppm, no odor
05-05-15		72.0	31-22	(GP-GM)				70-72': 0 ppm, no odor
Tuesday								
Cloudy								
77°F						75		
	16D	75.0	18-21	Brown fine to coarse sand, trace gravel, silt	S			75-77': 0 ppm, no odor
		77.0	20-25	(SP-SM)				
						80		Hole collapsed at 80'
	17D	80.0	97-32	Do 16D (SP-SM)				pulling rods created
		82.0	26-24					vacuum for sand to
								fill hole up to 76'.
								Keeping possible
13:00						85		head while putting
09:00	18D	85.0	18-20	Brown fine to coarse sand, some gravel, trace				rods.
05-06-15		87.0	21-16	silt (SP-SM)				80-82': 0 ppm, no odor
Wednesday								85-87': 0 ppm, no odor
Cloudy,								
Rain						90		
60°F	19D	90.0	21-31	Brown clayey gravel (GC)				REC=0.25"
		92.0	31-46					90-92': 0 ppm, no odor
						95		
	20D	95.0	19-24	Brown fine to coarse sand, trace gravel, silt				95-97': 0 ppm
		97.0	26-26	(SP-SM)				
						100		
	21D	100.0	15-26	Do 20D (SP-SM)				100-102': 0 ppm
		102.0	33-34					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-22P
SHEET 3 OF 7
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION: NEW YORK, NEW YORK **SURFACE ELEV.** 8.0±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
05-06-15					S			
Wednesday								Mica & decomposed
Cldy., Rain						104		rock in wash at 104'.
60°F					DR	105		Hard drilling at 104'.
09:00	22D	105.0	50/1.5"	Top: Brn f-m sand, some silt (SP-SM)				Bit punched through
05-07-15		105.1		Bot: Gray f-m sand, some silt (DR) (SM)				to 105'.
Thursday	1C	105.0	REC=100%	Medium hard slightly weathered to unweathered				22D: REC=1.5"
Sunny		110.0	RQD=88%	gray & black hornblende schist, trace			*	*Coring time from
75°F				pegmatite, jointed, weathered joints	R	110		10:09 to 10:29 at 4
	2C	110.0	REC=100%	Hard unweathered gray hornblende schist,				minutes per foot.
		115.0	RQD=100%	moderately jointed, mineral coated & iron				
				stained joints				
14:25						115		End of Boring at 115'.
								WC=Water Content
								in percent of dry
								weight.
						120		
						125		
						130		
						135		
						140		
						145		
						150		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-22P
SHEET 7 **OF** 7

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 8.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED						
					X	YES		NO		
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	20	
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM	0	TO	80	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER	TRACK									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X	YES		NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8, 2-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL		
CORE BARREL	NX DOUBLE BARREL	AUGER USED		YES	X	NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				

CASING HAMMER, LBS. _____ AVERAGE FALL, IN. _____
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					SEE PIEZOMETER SHEET NO. 5.

PIEZOMETER INSTALLED X YES NO SKETCH SHOWN ON SEE SHEET NO. 5

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOUG WOOD HELPERS LEO
REMARKS PIEZOMETER INSTALLED.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-07-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-23
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 7.7±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:45							DRILLED	Hand excavated to 5'.
05-20-15							AHEAD	0-6': 0 ppm, no odor
Wednesday							4"	
Partly Cloudy								
65°F						5		
	1D	6.0	4-5	Brown gravelly fine to coarse sand, some silt,				6-8': 0 ppm, no odor
		8.0	6-6	trace organic silt clay layer (SM)				
	2D	8.0	3-3	Brown fine to coarse sand, some silt, trace				Petroleum odor.
		10.0	3-5	gravel (SM)		10		
	3D	10.0	5-3	Brown black fine to coarse sand, trace gravel,	F			REC=4"
		12.0	3-4	silt (SP-SM)				8-10': 0 ppm, no odor
								10-12': 0 ppm, no odor
						15		
	4D	15.0	4-3	Gray gravelly fine to coarse sand, trace silt				REC=1", possible wash.
		17.0	3-2	(SP)				
								15-17': 0 ppm, no odor
						20		20-22': 0 ppm, no odor
	5D	20.0	10-18	Top: Gray f-c sand, gravel, tr silt (GP-GM)		21		5D: WC=52
		22.0	6-2	Bot: Black organic silty clay (OH)				5D Bot: Petroleum odor.
	6D	22.0	4-3	Black organic silty clay, some fine to coarse				6D: WC=42
15:00		24.0	3-2	sand, trace shells (OH)				
09:00	7D	24.0	8-6	Black silty clay, trace fine sand, shell, wood		25		WC=51
05-21-15		26.0	3-4	(OH)				22-24': 0 ppm, no odor
Thursday	8D	26.0	6-6	Black organic silty clay, trace fine to medium				WC=41
Cloudy		28.0	3-3	sand, shells (OH)				24-26': 0 ppm, no odor
60°F	9D	28.0	5-4	Soft gray organic silty clay, trace shells (OH)				WC=56
		30.0	5-4		O	30		26-28': 0 ppm, no odor
	10D	30.0	WH/24"	Do 9D (OH)				WC=58
		32.0						30-32': 0 ppm, no odor
						35		
	11D	35.0	9-11	Do 9D, trace gravel (OH)				11D, 16D-17D: REC=1"
		37.0	10-11					
						38.5		
						40		
	12D	40.0	12-9	Brown fine to medium sand, some silt (SM)				40-42': 0 ppm, no odor
		42.0	9-8					
						44		
						45		
	13D	45.0	18-12	Brown clayey silt, trace silty clay (ML)				WC=33
		47.0	6-5		M			45-47': 0 ppm, no odor
						48.5		
						50		
	14D	50.0	15-14	Brown silty fine to medium sand, trace coarse	S			50-52': 0 ppm, no odor
		52.0	9-11	sand, gravel (SM)				

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-23
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 7.7±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd							DRILLED	
05-21-15							AHEAD	
Thursday							4"	
Cloudy								
60°F						55		
	15D	55.0	9-11	Brown gravelly fine to coarse sand, trace silt				55-57': no odor
		57.0	9-10	(SP-SM)				
						60		
	16D	60.0	25-24	Brown gravel (GP)				Gravel stuck in spoon
		62.0	28-17					tip.
					S			60-62': 0 ppm, no odor
						65		
	17D	65.0	10-9	Brown gravel, trace coarse to fine sand (GP)				65-67': 0 ppm, no odor
		67.0	11-7					
						70		
	18D	70.0	9-10	Brown coarse to fine sand, some gravel, trace				70-72': 0 ppm, no odor
14:00		72.0	7-9	silt (SP-SM)				
09:00								
05-22-15								Hard drilling from 74'
Friday						74.5		to 74.5'. TOR=74.5
Sunny	19D	75.0	100/0.5"	Boulder				from drilling.
70°F		75.0						Hard drilling from 75'
								to 80'.
13:30						80		
09:45	20D	80.0	100/0"	Gray rock fragments (GP)				
05-26-15	1C	80.0	REC=100%	Medium hard unweathered gray gneissic			*	Coring time from 10:32
Tuesday		85.0	RQD=84%	schist, moderately jointed to jointed				to 10:46 at 2.5
Sunny								minutes per foot.
70°F					R	85		
	2C	85.0	REC=100%	Hard unweathered gray gneissic schist,			*	Coring time from 11:02
		90.0	RQD=100%	massive				to 11:03 at 2 minutes
								per foot.
						90		
	3C	90.0	REC=92%	Hard unweathered gray gneissic schist,			*	*Coring time from
		95.0	RQD=92%	moderately jointed				11:44 to 11:58 at
								2.75 minutes per foot.
12:00						95		End of Boring at 95'.
								WC=Water Content
								in percent of dry
								weight.
						100		

MRCE Form BL-1

BORING NO. M-23

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-23
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 7.7±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED					
					X	YES		NO	
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	60
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED	X	YES	NO
DIAMETER OF ROTARY BIT, IN.	3-7/8		
TYPE OF DRILLING MUD	QUIK MUD		
AUGER USED		YES	X NO
TYPE AND DIAMETER, IN.			

CASING HAMMER, LBS. _____ AVERAGE FALL, IN. _____
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ____ YES X NO SKETCH SHOWN ON _____

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	80	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	15	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER JOHN CAMPBELL HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-26-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-24
SHEET 1 OF 3
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 7.7±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:00							DRILLED	Hand excavated to 3'.
05-20-15							AHEAD	Brick layer encountered
Wednesday							4"	roller bit from 3' to 6'.
Partly Sunny								
65°F						5		
	1D	6.0	9-3	Top: Brn gravelly f-c sand, some clay (SC)	F			6-8': 0 ppm, faint organic odor
		8.0	2-1	Bot: Black clayey f-m sand, trace gravel (SC)				
	2D	8.0	4-5	Black gravel, some medium to coarse sand (GP)				REC=1"
		10.0	5-4			10		
	3D	10.0	10-6	Brown, red gravelly fine to coarse sand, some				10-12': 0 ppm, no odor
		12.0	2-4	clay (SC)				
						13.5		
						15		
	4D	15.0	3-1	Soft black organic silty clay, trace fine sand &				WC=65
		17.0	1-2	gravel (OH)				REC=3"
								15-17': 2 ppm, faint
					O			odor
						20		
	5D	20.0	1-2	Soft gray organic silty clay, trace fine sand, shells				WC=58
		22.0	2-2	(OH)				5D, 12D: REC=6"
	6D	22.0	3-6	Do 5D (OH)				WC=48
		24.0	8-3			24		20-26': 0 ppm, no odor
	7D	24.0	3-4	Brown silty clay, trace to some fine sand, gravel		25		
		26.0	4-6	(CL)				
	8NR	26.0	5-9	No recovery	V			
		28.0	12-18					WC=30
	9D	28.0	11-8	Brown & red brown silt varved with some clayey				28-30': 0 ppm, no odor
		30.0	8-13	silt (ML)		30		30-32': 0 ppm, no odor
	10D	30.0	36-14	Red brown silty fine sand varved with some				
		32.0	11-13	brown fine sand, some silt (SM)				
						35		
	11D	35.0	8-8	Brown fine sand, some silt (SM)	S			35-37': 0 ppm, no odor
		37.0	13-20					
								WC=Water Content
						40		in percent of dry
	12D	40.0	8-5	Top 1": Red brown silty fine sand (SM)	DR			weight.
		41.2	100/3"	Bot: Gray mic f-m sand, some silt (DR) (SM)		42		40-42': 0 ppm, no odor
	1C	42.0	REC=97%	Hard, unweathered to slightly weathered, gray			*	*Coring time from 13:42
		47.0	RQD=88%	gneissic schist, blocky, iron stained weathered				to 14:00.
				joints		45		
	2C	47.0	REC=96%	Hard unweathered gray gneissic schist, trace	R		*	*Coring time from 14:13
		52.0	RQD=96%	pegmatite, moderately jointed, iron stained				to 14:30.
				joints		50		
14:30						52		End of Boring at 52'.

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-24
SHEET 3 **OF** 3

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 7.7±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG	TYPE OF FEED DURING CORING		CASING USED					
				X	YES		NO	
TRUCK	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30
SKID	HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE	OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER TRACK								

TYPE AND SIZE OF:					
		DRILLING MUD USED	X	YES	NO
D-SAMPLER	2" O. D. SPLIT SPOON	DIAMETER OF ROTARY BIT, IN.	3-7/8		
U-SAMPLER		TYPE OF DRILLING MUD	QUIK MUD		
S-SAMPLER					
CORE BARREL	NX DOUBLE BARREL	AUGER USED		YES	X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				
		CASING HAMMER, LBS.		AVERAGE FALL, IN.	
		*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ☐ YES ☒ NO SKETCH SHOWN ON

STANDPIPE:	TYPE	ID, IN.	LENGTH, FT.	TOP ELEV.			
INTAKE ELEMENT:	TYPE	OD, IN.	LENGTH, FT.	TIP ELEV.			
FILTER:	MATERIAL	OD, IN.	LENGTH, FT.	BOT. ELEV.			

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	42	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-20-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-25
SHEET 1 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION: NEW YORK, NEW YORK
SURFACE ELEV. 12.4±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:00	1D	0.0	38-25	Gray black fine to coarse sandy gravel, trace	**	**0.33**	DRILLED	**Asphalt from 0' to
04-28-15		2.0	21-24	silt (Fill) (GM)			AHEAD	0.33'.
Tuesday	2D	2.0	11-17	Brown fine to medium sand, brick, trace gravel,			4"	0-6': 0 ppm, no odor
Sunny		4.0	16-9	coarse sand, silt (Fill) (SP-SM)				
55°F	3D	4.0	8-18	Brown fine to coarse sand, some brick, trace		**5**		
		6.0	17-11	gravel, silt (Fill) (SM)				
	4D	6.0	8-9	Gray black fine to coarse sand, some silt,				4D-6D: Petroleum
		8.0	8-7	trace gravel (Fill) (SM)				odor.
	5D	8.0	11-17	Do 4D (Fill) (SM)				6-8': 18 ppm, faint odor
		10.0	15-11			**10**		
	6D	10.0	19-16	Gray black fine to coarse sandy gravel, trace				8-10': 175 ppm, odor
		12.0	30-41	silt (Fill) (GP-GM)				10-12': 280 ppm, odor; grey sand grades to schisty stone (0 ppm)
					F			
						15		
	7NR	15.0	5-2	No recovery				
		17.0	2-1					
						20		
	8D	20.0	3-8	Red brown fine to coarse sand and brick				8D-12D: Petroleum
		22.0	7-100/4"	fragments, trace gravel, silt (Fill) (SP-SM)				odor.
								Cobble dropped from
								22' to 24'.
	9D	24.0	1/12"	Brown gravel and brick fragments, trace fine		**25**		REC=2"
		26.0	1-4	to coarse sand (Fill)		**26**		
	10D	26.0	17-22	Black brown fine to coarse sand, trace silty				20-22': 1800 ppm, strong odor; lens of black sand
		28.0	21-19	gravel (SP-SM)				
	11D	28.0	5-6	Red brown fine to medium sand, trace silt,				24-26': 28 ppm, moderate odor; grey; some mortar
		30.0	10-12	some silt layer (SP-SM+ML)		**30**		
	12D	30.0	9-8	Red brown fine to medium sand, some silt,				26-28': 5 ppm, odor; black sand grades to brown
		32.0	11-12	trace mica (SM)				
					S	**35**		28-30': no odor
	13D	35.0	4-5	Red brown silty fine sand, trace mica (SM)				30-32': 0 ppm, no odor
		37.0	9-10					35-37': 0 ppm, no odor
						40		
	14D	40.0	3-8	Red brown fine to medium sand, some silt,				40-42': 0 ppm
		42.0	7-13	trace mica (SM)				
						43		
	1C	44.0	REC=87%	Medium hard slightly weathered gray gneissic		**45**	*	Coring time from
		49.0	RQD=78%	schist, closely jointed to jointed				01:09 to 01:14 at 3.8 minutes per foot.
					R			2C: Didn't observe coring time for 2C.
	2C	49.0	REC=93%	Medium hard slightly weathered to		**50**		Run paused for 20
		54.0	RQD=67%	unweathered gray gneissic schist, jointed to				minutes to fix pump.
				closely jointed				

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-25
SHEET 2 OF 4
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION: NEW YORK, NEW YORK **SURFACE ELEV.** 12.4±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
04-28-15								
Tues., Sunny					R			
55°F, 14:30						54		End of Boring at 54'.
						55		
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MRCE Form BL-1

BORING NO. M-25

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-25
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 12.4±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED						
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30	
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO		
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO		
OTHER	TRACK									

TYPE AND SIZE OF:					
D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X	YES	NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8		
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL		
CORE BARREL	NX DOUBLE BARREL	AUGER USED		YES	X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.			
DRILL RODS	NWJ				

CASING HAMMER, LBS. _____ AVERAGE FALL, IN. _____
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ____ YES X NO SKETCH SHOWN ON _____

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.		
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.		
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.		

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	44	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOUG WOOD HELPERS LEO
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 04-28-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: _____