

SUBSURFACE INVESTIGATION REPORT PERFORMED IN MARCH 2019

Project 42-11 9th Street				Project No. 170514701			
Location Long Island City				Elevation and Datum NA			
Drilling Company AARCO Environmental Services Corp.				Date Started 2/27/19		Date Finished 2/27/19	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 7 ft		Rock Depth NA	
Size and Type of Bit				Number of Samples 1		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First NA		Undisturbed NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Completion NA	
Sampler 5-ft Macrocore				Drilling Foreman Rohn Dixon			
Sampler Hammer NA				Field Engineer Patrick Stovall			
Weight (lbs) NA				Drop (in) NA			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recon. (in)	Penetr. resist	PID Reading (ppm)	
		CONCRETE	0						
		R1 (6-30") olive to dark brown fine SAND, some brick, trace concrete, gravel, glass (dry) [FILL]	1					0.8	
			2					0.6	
			3					0.7	
			4					0.7	
			5					0.7	
			6	R1	MACROCORE	30/60			SP-01_0-2 collected at 11:25
			7						
			8						
			9						
			10						
			11						
			12						
			13						
			14						

\\LANGAN.COM\DATA\NYC\DATA\170514701\PROJECT DATA_DISCIPLINE\ENVIRONMENTAL\GINTLOGS\42-11 9TH STREET.GPJ ... 3/4/2019 3:09:37 PM ... Report: Log - LANGAN

Project 42-11 9th Street				Project No. 170514701			
Location Long Island City				Elevation and Datum NA			
Drilling Company AARCO Environmental Services Corp.				Date Started 2/28/19		Date Finished 2/28/19	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 6.5 ft		Rock Depth NA	
Size and Type of Bit				Number of Samples 1		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First NA		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA	
Sampler 5-ft Macrocore				Drilling Foreman Rohn Dixon			
Sampler Hammer NA				Field Engineer Patrick Stovall			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
		CONCRETE	0						
		R1 (6-24") olive to dark brown fine SAND, some brick, gravel, trace timber (dry) [FILL]	1					0.0	
			2	R1	MACROCORE	27/60		0.0	SP-02_0-2 collected at 11:10
			3						Refusal at 2ft below grade surface, offset boring 2ft south
			4						Refusal at 3ft below grade surface, offset boring 5ft west of original point
			5						Refusal at 6.5ft below grade surface, offset boring 5ft east of original point
			6	R2	MACROCORE	0/18			Refusal at 2ft below grade surface
			7						End of boring at 6.5ft below grade surface. Backfilled with clean cuttings and patched with concrete.
			8						
			9						
			10						
			11						
			12						
			13						
			14						

Project 42-11 9th Street				Project No. 170514701			
Location Long Island City				Elevation and Datum NA			
Drilling Company AARCO Environmental Services Corp.				Date Started 2/27/19		Date Finished 2/27/19	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 22 ft		Rock Depth NA	
Size and Type of Bit				Number of Samples		Disturbed 3	
Casing Diameter (in) 3-inch		Casing Depth (ft) 19.5		Water Level (ft.) First 9.5		Undisturbed NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Core NA	
Sampler 5-ft Macrocore				Drilling Foreman Rohn Dixon			
Sampler Hammer NA				Field Engineer Patrick Stovall			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
		CONCRETE	0						
		R1 (6-20") olive to dark brown fine SAND, trace glass, slag, brick, ceramics (dry) [FILL]	1					0.0	
			2					0.1	
			3					0.1	
			4						
			5						
			6						
			7						
		R2A (0-22") olive to dark brown fine SAND, trace brick, glass, slag, coarse gravel (dry) [FILL]	8					0.2	
			9					0.4	
			10					0.4	
		R2B (22-30") olive to dark brown find SAND, some clay, trace silt (wet)	11					0.4	
			12					0.4	
			13						
		R3 (0-42") tan to reddish-brown silty fine SAND (moist)	14					0.0	

I:\LANGAN.COM\DATA\NYC\DATA\170514701\PROJECT DATA\DISCIPLINE\ENVIRONMENTAL\GINTLOGS\42-11 9TH STREET.GPJ ... 3/4/2019 3:09:44 PM ... Report: Log - LANGAN

Project			Project No.						
42-11 9th Street			170514701						
Location			Elevation and Datum						
Long Island City			NA						
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/6in	PID Reading (ppm)	
			14	R3		42/60		0.0	SP-04_20-22 collected at 13:00 End of boring at 22ft below grade surface due to refusal. Installed monitoring well (MW-04), see well construction log for details.
			15					0.0	
			16					0.0	
			17					0.0	
		R4A (0-24") soft reddish-brown SILT, trace find sand (moist-wet)	18	R4	MACROCORE	42/60		0.0	
			19					0.0	
			20					0.0	
			21					0.0	
		R4B (24-30") reddish-brown find SAND, trace silt (moist-wet)	22	R5	MACROCORE	24/24		0.0	
		R4C (30-42") olive to reddish-brown SILT, some clay, trace fine sand (moist)	23					0.0	
			24					0.0	
			25					0.0	
		R5 (0-24") firm reddish-brown SILT, some clay, trace decomposed rock, mica (moist)	26					0.0	
			27					0.0	
			28					0.0	
			29					0.0	
			30					0.0	
			31					0.0	
			32					0.0	
			33					0.0	

Project 42-11 9th Street				Project No. 170514701			
Location Long Island City				Elevation and Datum NA			
Drilling Company AARCO Environmental Services Corp.				Date Started 2/28/19		Date Finished 2/28/19	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 14 ft		Rock Depth NA	
Size and Type of Bit				Number of Samples 0		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First NA		Undisturbed NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Core NA	
Sampler 5-ft Macrocore				Drilling Foreman Rohn Dixon			
Sampler Hammer NA				Field Engineer Patrick Stovall			
Weight (lbs) NA				Drop (in) NA			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
		CONCRETE	0						
		R1 (6-14") olive to dark brown find SAND, trace brick, glass, concrete (dry) [FILL]	1					1.6	
			2	R1	MACROCORE	8/60			
			3						
			4						
			5						
			6						
			7	R2	MACROCORE	6/60			
			8						
			9						
		R2 (0-6") olive to dark brown find SAND, some brick, gravel, sheet metal (moist) [FILL]	10					1.7	
			11						Refusal at 14ft below grade surface, offset boring 5ft west of original point.
			12	R3	MACROCORE	0/48			Refusal at <1ft below grade surface, no samples taken due to low recovery
			13						End of boring at 14ft below grade surface. Backfilled with clean soil cuttings and patched with concrete.
			14						

\\LANGAN.COM\DATA\NYC\DATA\170514701\PROJECT DATA - DISCIPLINE\ENVIRONMENTAL\GINTLOGS\42-11 9TH STREET.GPJ ... 3/4/2019 3:09:50 PM ... Report: Log - LANGAN

Project 42-11 9th Street				Project No. 170514701			
Location Long Island City				Elevation and Datum NA			
Drilling Company AARCO Environmental Services Corp.				Date Started 2/26/19		Date Finished 2/26/19	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 26.5 ft		Rock Depth NA	
Size and Type of Bit				Number of Samples 3		Disturbed NA	
Casing Diameter (in) 3-inch		Casing Depth (ft) 18		Water Level (ft.) First 10.5		Completion NA	
Casing Hammer NA	Weight (lbs) NA	Drop (in) NA		Drilling Foreman Rohn Dixon			
Sampler 4-ft Macrocore				Field Engineer Patrick Stovall			
Sampler Hammer NA	Weight (lbs) NA	Drop (in) NA					

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist BL/in	PID Reading (ppm)	
		CONCRETE	0						
		R1A (6-15") olive to black find SAND, trace coarse sand, brick, glass, concrete (dry) [FILL]	1					0.9	
		R1B (15-24") white coarse GRAVEL, trace brick (dry) [FILL]	2	R1	MACROCORE	24/48		0.6	
			3					0.5	
			4					0.4	
			5					0.4	
			6						
		R2 (0-24") olive to dark brown fine SAND, some coarse gravel, brick, glass (dry) [FILL]	7	R2	MACROCORE	27/48		0.6	
			8					0.0	
			9					0.0	
			10					0.0	
		R3A (0-6") olive to dark brown fine SAND, some coarse gravel, brick (dry) [FILL]	11	R3	MACROCORE	32/48		0.3	
		R3B (6-18") firm reddish-brown silty CLAY, trace glass (moist-wet) [FILL]	12					0.3	
		R3C (18-32") soft dark brown sandy SILT, trace glass (wet) [FILL]	13					0.3	
			14					0.4	
		R4A (0-18") gray clayey SILT, trace coarse sand (moist)		R4	MACROCORE	48/48		0.2	
								0.3	
		R4B (18-30") gray fine SAND, trace clay (moist)						0.4	
								0.5	

\\LANGAN.COM\DATA\NYC\DATA\170514701\PROJECT DATA DISCIPLINE\ENVIRONMENTAL\GINTLOGS\42-11 9TH STREET.GPJ ... 3/4/2019 3:09:54 PM ... Report: Log - LANGAN

\\LANGAN.COM\DATA\NYC\DATA7\170514701\PROJECT DATA_DISCIPLINE\ENVIRONMENTAL\GINTLOGS\42-11 9TH STREET.GPJ ... 3/4/2019 3:09:55 PM ... Report: Log - LANGAN

Project 42-11 9th Street				Project No. 170514701			
Location Long Island City				Elevation and Datum NA			
Drilling Company AARCO Environmental Services Corp.				Date Started 2/26/19		Date Finished 2/26/19	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 21 ft		Rock Depth NA	
Size and Type of Bit				Number of Samples	Disturbed 3	Undisturbed NA	Core NA
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 13	Completion NA	24 HR. NA	
Casing Hammer NA	Weight (lbs) NA	Drop (in) NA		Drilling Foreman Rohn Dixon			
Sampler 5-ft Macrocore				Field Engineer Patrick Stovall			
Sampler Hammer NA	Weight (lbs) NA	Drop (in) NA					

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist BLU/in	PID Reading (ppm)	
		CONCRETE	0						
		R1 (6-20") olive to dark brown fine SAND, some gravel, brick, concrete, slag (dry) [FILL]	1					0.5	
			2					0.4	
			3					0.3	
			4					0.3	
			5						
			6						
			7						
			8						
			9						
		R2 (0-12") white coarse GRAVEL (dry) [FILL]	10					0.0	
			11					0.0	
			12					0.0	
		R3A (0-12") reddish-brown fine SAND, some brick, trace silt (moist) [FILL]	13					0.0	
			14					0.0	
		R3B (12-24") soft dark brown to black SILT, trace fine sand (wet)						0.0	
		R3C (24-48") olive to gray fine SAND, some silt, trace clay						0.0	

I:\LANGAN.COM\DATA\NYC\DATA\170514701\PROJECT DATA DISCIPLINE\ENVIRONMENTAL\GINTLOGS\42-11 9TH STREET.GPJ ... 3/4/2019 3:10:00 PM ... Report: Log - LANGAN

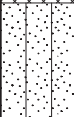
Project	42-11 9th Street	Project No.	170514701
Location	Long Island City	Elevation and Datum	NA

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/6in	PID Reading (ppm)	
			14	R3		48/60		0.0	
			15					0.0	
			16					0.0	
			17	R4	MACROCORE	26/60			
		R4A (0-8") dark brown to black medium SAND, some gravel (wet)	18					0.0	
		R4B (8-22") reddish-brown fine SAND, trace fine gravel, clay (wet)	19					0.0	
			20					0.0	
		R4C (22-26") dark brown fine SAND, trace clay (wet)	21	R5	MACROCORE	12/12		0.0	
		R5 (0-12") reddish-brown fine SAND, trace clay (wet)	22					0.0	
			23					0.0	
			24					0.0	
			25					0.0	
			26					0.0	
			27					0.0	
			28					0.0	
			29					0.0	
			30					0.0	
			31					0.0	
			31.5					0.0	
									SP-09_20-21 collected at 15:05 End of boring at 21ft below grade surface. Backfilled with clean soil cuttings and patched with concrete.

Project 42-11 9th Street			Project No. 170514701		
Location Long Island City			Elevation and Datum NA		
Drilling Company AARCO Environmental Services Corp.			Date Started 2/26/19		Date Finished 2/26/19
Drilling Equipment Geoprobe 7822 DT			Completion Depth 21 ft		Rock Depth NA
Size and Type of Bit			Number of Samples	Disturbed 4	Undisturbed NA
Casing Diameter (in) NA	Casing Depth (ft) NA	Water Level (ft.) First 12	Completion NA	24 HR. NA	Core NA
Casing Hammer NA	Weight (lbs) NA	Drop (in) NA	Drilling Foreman Rohn Dixon		
Sampler 5-ft Macrocore			Field Engineer Patrick Stovall		
Sampler Hammer NA	Weight (lbs) NA	Drop (in) NA			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
		CONCRETE	0						
		R1 (6-36") olive to dark brown fine SAND, some brick, glsas, timber fibers, mica (dry) [FILL]	1					0.6	
			2					0.6	
			3					0.7	
			4					0.5	
			5					0.5	
			6					0.5	
			7						
			8						
			9						
		R2 (0-12") white coarse GRAVEL (moist) [FILL]	10					0.0	
			11					0.0	
			12					0.0	
		R3A (0-12") reddish brown fine SAND, trace clay (wet) [FILL]	13					0.7	
		R3B (12-20") black COAL ASH, some brick, trace gravel, slag (wet) [FILL]	14					1.2	
		R3C (20-25") tan fine SAND, trace silt, fine gravel (wet) [FILL]	15					0.8	
			16					0.6	
			17					0.6	

\\LANGAN.COM\DATA\NYC\DATA\170514701\PROJECT DATA DISCIPLINE\ENVIRONMENTAL\GINTLOGS\42-11 9TH STREET.GPJ ... 3/4/2019 3:10:07 PM ... Report: Log - LANGAN

Project			42-11 9th Street			Project No.			170514701		
Location			Long Island City			Elevation and Datum			NA		
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)		
				Number	Type	Recov. (in)	Penetr. resist. BL/6in	PID Reading (ppm)			
		R3D (25-42") black silty fine SAND, trace clay, brick, fine gravel (wet) [FILL]	14	R3		42/60		0.6	Organic decay-like odor		
			15					0.7			
		R4A (0-22") black silty fine SAND, trace clay (wet) [FILL]	16	R4	MACROCORE	54/60		0.7			
			17					0.8			
			18					0.9			
			19					14.1			
		R4B (22-32") soft dark brown to black silty CLAY, trace fine SAND, timber (wet) [FILL]	20	17.6							
			21	19.4							
			22	1.6							
			23	0.9							
		R4C (32-54") olive to reddish-brown silty fine SAND, trace mica (wet) R5 (0-12") olive fine SAND, trace decomposed rock (wet)	24	R5	MACROCORE	12/12		0.6			
			25					0.5			
			26					0.9	SP-10_20-21 collected at 12:25 End of boring at 21ft below grade surface. Backfilled with clean soil cuttings and patched with concrete.		
			27								
			28								
			29								
			30								
			31								
			32								
			33								
			34								
			35								

Project 42-11 9th Street				Project No. 170514701			
Location Long Island City				Elevation and Datum NA			
Drilling Company AARCO Environmental Services Corp.				Date Started 2/27/19		Date Finished 2/27/19	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 24 ft		Rock Depth NA	
Size and Type of Bit				Number of Samples		Disturbed 3	
						Undisturbed NA	
						Core NA	
Casing Diameter (in) 3-inch		Casing Depth (ft) 17		Water Level (ft.) First 9		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA	
Sampler 5-ft Macrocore				Drilling Foreman Rohn Dixon			
Sampler Hammer NA				Field Engineer Patrick Stovall			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recon. (in)	Penetr. resist	PID Reading (ppm)	
		CONCRETE	0						
		R1 (6-22") dark brown to black fine SAND, trace brick, fine gravel, concrete, mica (dry) [FILL]	1					0.1	
			2					0.0	
			3					0.0	
			4					0.0	
			5					0.0	
			6						
			7						
			8						
			9						
			10						
			11						
			12						
			13						
			14						

\\LANGAN.COM\DATA\NYC\DATA\170514701\PROJECT DATA\DISCIPLINE\ENVIRONMENTAL\GINTLOGS\42-11 9TH STREET.GPJ ... 3/4/2019 3:10:12 PM ... Report: Log - LANGAN

Project	42-11 9th Street	Project No.	170514701
Location	Long Island City	Elevation and Datum	NA

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/6in	PID Reading (ppm)	
			14					5.4	
			15	R3		32/60		1.6	
			16					1.5	
		R4A (0-24") olive to dark brown fine SAND (wet)	17					0.8	
			18	R4	MACROCORE	50/60		1.7	
		R4B (24-36") olive to reddish-brown fine SAND, some clay (wet)	19					1.8	
			20					1.8	
		R4C (36-48") olive fine SAND, trace fine gravel (wet)	21					1.8	
			22					1.9	
		R5 (0-48") olive to brown fine SAND, some silt, trace fine gravel (wet)	23					2.1	
			24	R5	MACROCORE	48/48		1.2	
			25					1.2	
			26					1.2	
			27					1.2	
			28					1.2	
			29					1.2	
			30					1.2	
			31					1.3	
			31.5					1.7	
								0.9	
								0.9	SP-11_22-24 collected at 8:55
									End of boring at 24ft below grade surface. Installed monitoring well (MW-11), see well construction log for details.

Project 42-11 9th Street				Project No. 170514701			
Location Long Island City				Elevation and Datum NA			
Drilling Company AARCO Environmental Services Corp.				Date Started 2/28/19		Date Finished 2/28/19	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 23 ft		Rock Depth NA	
Size and Type of Bit				Number of Samples 3		Disturbed NA	
Casing Diameter (in) 3-inch		Casing Depth (ft) 19		Water Level (ft.) First 12		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA	
Sampler 5-ft Macrocore				Drilling Foreman Rohn Dixon			
Sampler Hammer NA				Field Engineer Patrick Stovall			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist BL/in	PID Reading (ppm)	
		CONCRETE	0						
		R1 (6-18") olive to dark brown fine SAND, some fine gravel, trace glass, brick (dry) [FILL]	1					0.0	
			2					0.0	
			3					0.1	
			4					0.1	SP-13_0-2 collected at 8:00
			5						
			6						Refusal at 6ft below grade surface, offset boring 2ft west
			7						
		R2 (0-20") olive to reddish-brown fine SAND, some fine gravel, brick, concrete, trace glass, mica (dry) [FILL]	8					0.0	
			9					0.0	
			10					0.9	
		R3A (0-36") olive to dark brown silty fine SAND, some clay, trace coal (wet) [FILL]	11					0.2	
			12					0.1	
			13					0.1	
			14					0.5	
		R3B (36-42") dark brown to black fine SAND, trace timber fiber, brick (wet) [FILL]						0.5	SP-13_11-13 collected at 8:55
		R3C (42-60") black clayey fine SAND, trace root fiber						1.6	
								2.6	
								2.4	Organic decay-like odor

\\LANGAN.COM\DATA\NYC\DATA\170514701\PROJECT DATA - DISCIPLINE\ENVIRONMENTAL\GINTLOGS\42-11 9TH STREET.GPJ ... 3/4/2019 3:10:20 PM ... Report: Log - LANGAN

Project	42-11 9th Street	Project No.	170514701
Location	Long Island City	Elevation and Datum	NA

MATERIAL SYMBOL		Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
					Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)		
			(moist)	14	R3	MACROCORE	60/60		2.4		
									0.7		
				15							0.8
					16						
				R4A (0-18") olive to black fine SAND, trace silt, mica, fine gravel (wet)	17	R4	MACROCORE	36/60			0.5
					18						0.5
					19						0.4
					20						0.4
				R4B (18-24") white medium SAND, trace mica (wet)					0.3		
				R4C (24-36") olive fine SAND, trace fine gravel (moist)					0.3		
									0.3		
				R5 (0-36") olive to reddish-brown fine SAND, trace silt (moist)					0.0		
									0.0		
					21	R5	MACROCORE	36/36			0.0
					22						0.0
					23						0.0
					24						
					25						
					26						
					27						
				28							
				29							
				30							
				31							
				31.5							

SP-13_21-23 collected at 9:00

End of boring at 23ft below grade surface. Installed monitoring well (MW-13), see well construction log for details.

PROJECT 42-11 9th Street			PROJECT NO. 170514701			
LOCATION Long Island City, NY			ELEVATION AND DATUM			
DRILLING AGENCY AARCO Environmental Services Corp.			DATE STARTED 2/27/2019		DATE FINISHED 2/27/2019	
DRILLING EQUIPMENT Geoprobe 7822 DT			DRILLER Rohn Dixon			
SIZE AND TYPE OF BIT			LANGAN REP. Patrick Stovall			
METHOD OF INSTALLATION 1. Boring was drilled to 22' and backfilled using soil cuttings to 19.5' bgs. 2. AARCO installed 10' of 2" 20-slot PVC screen and 9.5' of PVC riser. 3. Filled filter sand to a depth of 8.5' and sealed with bentonite. 4. Sealed around the well using cemet. Manhole cover installed flush to grade.						
METHOD OF WELL DEVELOPMENT Pumped until dry and allowed to recharge.						
TYPE OF CASING		DIAMETER	TYPE OF BACKFILL MATERIAL			
Steel		3"	Soil Cuttings			
TYPE OF SCREEN		DIAMETER	TYPE OF SEAL MATERIAL			
PVC		2"	Bentonite			
BOREHOLE DIAMETER			TYPE OF FILTER MATERIAL			
			Filpro Sand			
TOP OF CASING	ELEVATION	DEPTH (ft)	WELL DETAILS 		SUMMARY SOIL CLASSIFICATION FILL SILTY SAND	
TOP OF SEAL	ELEVATION	DEPTH (ft)				0.0 8.5 9.5 19.5
TOP OF FILTER	ELEVATION	DEPTH (ft)				
TOP OF SCREEN	ELEVATION	DEPTH (ft)				
BOTTOM OF BORING	ELEVATION	DEPTH (ft)				
SCREEN LENGTH						
SLOT SIZE						
GROUNDWATER ELEVATIONS						
ELEVATION	DATE	DEPTH TO WATER				
	2/28/2019	7.85'				

PROJECT 42-11 9th Street			PROJECT NO. 170514701			
LOCATION Long Island City, NY			ELEVATION AND DATUM			
DRILLING AGENCY AARCO Environmental Services Corp.			DATE STARTED 2/26/2019		DATE FINISHED 2/26/2019	
DRILLING EQUIPMENT Geoprobe 7822 DT			DRILLER Rohn Dixon			
SIZE AND TYPE OF BIT			LANGAN REP. Patrick Stovall			
METHOD OF INSTALLATION 1. Boring was drilled to 26.5' and backfilled using soil cuttings to 18' bgs. 2. AARCO installed 10' of 2" 20-slot PVC screen and 8' of PVC riser. 3. Filled filter sand to a depth of 7' bgs and sealed with bentonite. 4. Sealed around the well using cemet. Manhole cover installed flush to grade.						
METHOD OF WELL DEVELOPMENT Pumped until dry and allowed to recharge.						
TYPE OF CASING		DIAMETER	TYPE OF BACKFILL MATERIAL			
Steel		3"	Soil Cuttings			
TYPE OF SCREEN		DIAMETER	TYPE OF SEAL MATERIAL			
PVC		2"	Bentonite			
BOREHOLE DIAMETER			TYPE OF FILTER MATERIAL			
			Filpro Sand			
TOP OF CASING	ELEVATION	DEPTH (ft)			SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
TOP OF SEAL	ELEVATION	DEPTH (ft)			FILL	0.0
TOP OF FILTER	ELEVATION	DEPTH (ft)				
TOP OF SCREEN	ELEVATION	DEPTH (ft)				
BOTTOM OF BORING	ELEVATION	DEPTH (ft)				
SCREEN LENGTH						
SLOT SIZE						
GROUNDWATER ELEVATIONS						
ELEVATION	DATE	DEPTH TO WATER			FINE SAND, TRACE CLAY	18.0
	2/28/2019	8.85'				

PROJECT 42-11 9th Street			PROJECT NO. 170514701			
LOCATION Long Island City, NY			ELEVATION AND DATUM			
DRILLING AGENCY AARCO Environmental Services Corp.			DATE STARTED 2/27/2019		DATE FINISHED 2/27/2019	
DRILLING EQUIPMENT Geoprobe 7822 DT			DRILLER Rohn Dixon			
SIZE AND TYPE OF BIT			LANGAN REP. Patrick Stovall			
METHOD OF INSTALLATION 1. Boring was drilled to 24' and backfilled using soil cuttings to 17' bgs. 2. AARCO installed 10' of 2" 20-slot PVC screen and 7' of PVC riser. 3. Filled filter sand to a depth of 6' bgs and sealed with bentonite. 4. Sealed around the well using cemet. Manhole cover installed flush to grade.						
METHOD OF WELL DEVELOPMENT Pumped until dry and allowed to recharge.						
TYPE OF CASING		DIAMETER	TYPE OF BACKFILL MATERIAL			
Steel		3"	Soil Cuttings			
TYPE OF SCREEN		DIAMETER	TYPE OF SEAL MATERIAL			
PVC		2"	Bentonite			
BOREHOLE DIAMETER			TYPE OF FILTER MATERIAL			
			Filpro Sand			
TOP OF CASING	ELEVATION	DEPTH (ft)	WELL DETAILS 		SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
TOP OF SEAL	ELEVATION	DEPTH (ft)				
TOP OF FILTER	ELEVATION	DEPTH (ft)				
TOP OF SCREEN	ELEVATION	DEPTH (ft)				
BOTTOM OF BORING	ELEVATION	DEPTH (ft)				
SCREEN LENGTH						
SLOT SIZE						
GROUNDWATER ELEVATIONS						
ELEVATION	DATE	DEPTH TO WATER				
	2/28/2019	10.85'				

GROUND WATER SAMPLE FIELD INFORMATION FORM

[illegible]

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. PPM = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mS/cm = milli-Siemans per centimeter
10. NTU = Nephelometric Turbidity Unit

LANGAN Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor, New York

SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV-01

PROJECT: 42-11 9th Street		PROJECT NO.: 170514701																											
LOCATION: Long Island City, NY		SURFACE ELEVATION AND DATUM: NA																											
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services Corp.		INSTALLATION DATE STARTED: 2/28/2019	DATE FINISHED: 2/28/2019																										
INSTALLATION FOREMAN: Rohn Dixon		SAMPLE DATE STARTED: 3/1/2019	DATE FINISHED: 3/1/2019																										
INSTALLATION EQUIPMENT: Geoprobe 7822 DT		TYPE OF SAMPLING DEVICE: 2.7-Liter Summa Canister																											
INSPECTOR: Patrick Stovall		SAMPLER: Patrick Stovall																											
POTENTIAL SAMPLE INTERFERENCES:		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: N/A Wind: N/A Precipitation: N/A Pressure: N/A																											
METHOD OF INSTALLATION AND PURGING: Advance Geoprobe to 6.5-feet below grade surface (bgs) install 6.5-foot soil vapor probe backfill with FilPro #2 Sand and seal with bentonite to surface grade.																													
TUBING TYPE/DIAMETER: 1/4-inch polyethylene tubing		TYPE OF MATERIAL ABOVE SEAL: Bentonite																											
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: none		SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite																											
BOREHOLE DIAMETER: 2-inch		FILTER PACK MATERIAL (Sand or Glass Beads): Filpro #2 sand																											
PURGE VOLUME (L):	0.02	<table border="1"> <thead> <tr> <th colspan="2">IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)</th> <th>DEPTH (FEET FROM SURFACE)</th> <th>NOTES</th> </tr> </thead> <tbody> <tr> <td>SURFACE</td> <td>SURFACE</td> <td></td> <td></td> </tr> <tr> <td colspan="2" rowspan="2">  </td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td>Top of Seal</td> <td>0</td> <td></td> </tr> <tr> <td></td> <td>Top of Pack</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>6.5</td> <td></td> </tr> </tbody> </table>		IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)		DEPTH (FEET FROM SURFACE)	NOTES	SURFACE	SURFACE										Top of Seal	0			Top of Pack					6.5	
IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)				DEPTH (FEET FROM SURFACE)	NOTES																								
SURFACE	SURFACE																												
																													
	Top of Seal			0																									
	Top of Pack																												
				6.5																									
PURGE FLOW RATE (ML/MIN):	10																												
PID AFTER PURGE (PPM):	0.0																												
	61.2%																												
HELIUM TEST IN BUCKET(%):	0.0%																												
HELIUM TEST IN TUBE (PPM):																													
SAMPLE START DATE/TIME:	3/1/2019 12:15																												
SAMPLE STOP DATE/TIME:	3/1/2019 13:47:00 PM																												
TOTAL SAMPLE TIME (MIN):	92																												
FLOW RATE (L/MIN):	0.0293																												
VOLUME OF SAMPLE (LITERS):	2.7																												
PID AFTER SAMPLE (PPM):	0																												
SAMPLE MOISTURE CONTENT:	NA																												
CAN SERIAL NUMBER:	2201																												
REGULATOR SERIAL NUMBER:	1156																												
CAN START VACUUM PRESS. (" HG):	-28.65																												
CAN STOP VACUUM PRESS. (" HG):	-2.8																												
SAMPLE LOCATION SKETCH		NOTES																											

Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001-2727

SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV-11

PROJECT: 42-11 9th Street		PROJECT NO.: 170514701	
LOCATION: Long Island City, NY		SURFACE ELEVATION AND DATUM: NA	
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services Corp.		INSTALLATION DATE STARTED: 2/27/2019	DATE FINISHED: 2/27/2019
INSTALLATION FOREMAN: Rohn Dixon		SAMPLE DATE STARTED: 3/1/2019	DATE FINISHED: 3/1/2019
INSTALLATION EQUIPMENT: Geoprobe 7822 DT		TYPE OF SAMPLING DEVICE: 2.7-Liter Summa Canister	
INSPECTOR: Patrick Stovall		SAMPLER: Patrick Stovall	
POTENTIAL SAMPLE INTERFERENCES:		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: N/A Wind: N/A Precipitation: N/A Pressure: N/A	
METHOD OF INSTALLATION AND PURGING: Advance Geoprobe to 7-feet below grade surface (bgs) install 7-foot soil vapor probe backfill with FilPro #2 Sand and seal with bentonite to surface grade.			
TUBING TYPE/DIAMETER: 1/4-inch polyethylene tubing		TYPE OF MATERIAL ABOVE SEAL: Bentonite	
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: none		SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite	
BOREHOLE DIAMETER: 2-inches		FILTER PACK MATERIAL (Sand or Glass Beads): Filpro #2 sand	
PURGE VOLUME (L):	0.02	IMPLANT/PROBE DETAILS	
PURGE FLOW RATE (ML/MIN):	10	(SEAL, FILTER, ETC.)	
PID AFTER PURGE (PPM):	1.9	DEPTH	
HELIUM TEST IN BUCKET(%):	36.7%	(FEET FROM SURFACE)	
HELIUM TEST IN TUBE (PPM):	0.0%		
SAMPLE START DATE/TIME:	3/1/2019 8:02		
SAMPLE STOP DATE/TIME:	3/1/2019 10:31		
TOTAL SAMPLE TIME (MIN):	149		
FLOW RATE (L/MIN):	0.018		
VOLUME OF SAMPLE (LITERS):	2.7		
PID AFTER SAMPLE (PPM):	0.0		
SAMPLE MOISTURE CONTENT:	NA		
CAN SERIAL NUMBER:	495		
REGULATOR SERIAL NUMBER:	1095		
CAN START VACUUM PRESS. (" HG):	-30.2		
CAN STOP VACUUM PRESS. (" HG):	-4.04		
SAMPLE LOCATION SKETCH			
		NOTES	

Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001-2727

SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV-13

PROJECT: 42-11 9th Street		PROJECT NO.: 170514701	
LOCATION: Long Island City, NY		SURFACE ELEVATION AND DATUM: NA	
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services Corp.		INSTALLATION DATE STARTED: 2/28/2019	DATE FINISHED: 2/28/2019
INSTALLATION FOREMAN: Rohn Dixon		SAMPLE DATE STARTED: 3/1/2019	DATE FINISHED: 3/1/2019
INSTALLATION EQUIPMENT: Geoprobe 7822 DT		TYPE OF SAMPLING DEVICE: 2.7-Liter Summa Canister	
INSPECTOR: Patrick Stovall		SAMPLER: Patrick Stovall	
POTENTIAL SAMPLE INTERFERENCES:		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: N/A Wind: N/A Precipitation: N/A Pressure: N/A	
METHOD OF INSTALLATION AND PURGING: Advance Geoprobe to 7-feet below grade surface (bgs) install 7-foot soil vapor probe backfill with FilPro #2 Sand and seal with bentonite to surface grade.			
TUBING TYPE/DIAMETER: 1/4-inch polyethylene tubing		TYPE OF MATERIAL ABOVE SEAL: Bentonite	
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: none		SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite	
BOREHOLE DIAMETER: 2-inch		FILTER PACK MATERIAL (Sand or Glass Beads): Filpro #2 sand	
PURGE VOLUME (L):	0.02	IMPLANT/PROBE DETAILS	
PURGE FLOW RATE (ML/MIN):	10	(SEAL, FILTER, ETC.)	
PID AFTER PURGE (PPM):	0.0	DEPTH	
HELIUM TEST IN BUCKET(%):	61.2%	(FEET FROM SURFACE)	
HELIUM TEST IN TUBE (PPM):	0.0%		
SAMPLE START DATE/TIME:	3/1/2019 8:10		
SAMPLE STOP DATE/TIME:	3/1/2019 10:34		
TOTAL SAMPLE TIME (MIN):	144		
FLOW RATE (L/MIN):	0.01875		
VOLUME OF SAMPLE (LITERS):	2.7		
PID AFTER SAMPLE (PPM):	0		
SAMPLE MOISTURE CONTENT:	NA		
CAN SERIAL NUMBER:	2432		
REGULATOR SERIAL NUMBER:	1239		
CAN START VACUUM PRESS. (" HG):	-29.82		
CAN STOP VACUUM PRESS. (" HG):	-3.73		
SAMPLE LOCATION SKETCH			
		NOTES	

Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001-2727

AIR SAMPLING LOG SHEET

Sample Number: AA-01

PROJECT: 42-11 9th Street	PROJECT NO.: 170514701	
LOCATION: Long Island City, NY	SURFACE ELEVATION AND DATUM: N/A	
SAMPLER: Patrick Stovall	SAMPLE DATE STARTED: 3/1/2019	DATE FINISHED: 3/1/2019
INSPECTOR: Patrick Stovall	TYPE OF SAMPLING DEVICE: 2.7-Liter Summa Canister	
POTENTIAL SAMPLE INTERFERENCES: Light snow	WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: 30s F Wind: 0 mph Precipitation: Light snow Pressure: 30.37 in Hg	
METHOD OF INSTALLATION AND SAMPLING: Langan field screened the sample location with a MultiRAE photoionization detector prior to sampling. Sample consisted of 2.7-L Summa canister fitted with an 2-hour flow control valve. The flow controller was zeroed and valve opened to initiate the 2-hour sample collection. The sample and flow controller were checked each hour during sampling to ensure proper operation.		
SAMPLE DETAILS		SAMPLE LOCATION SKETCH
HEIGHT ABOVE GROUND (FT)	32"	See Sample Location Plan
PID BEFORE SAMPLE (PPM):	0.0	
SAMPLE START TIME:	8:16	
SAMPLE STOP TIME:	10:02	
TOTAL SAMPLE TIME (MIN):	106	
REGULATOR FLOW RATE (L/MIN)	0.0255	
VOLUME OF SAMPLE (LITERS)	2.7	
PID AFTER SAMPLE (PPM):	0.0	
SAMPLE MOISTURE CONTENT	N/A	
CAN SERIAL NUMBER:	1739	
REGULATOR SERIAL NUMBER	45	
CAN START VACUUM PRESS.	-29.82	
CAN STOP VACUUM PRESS. (in Hg)	-3.73	
NOTES		

Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C.

21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001-2727