

APPENDIX B
SOIL BORING LOGS

**2014 LIMITED PHASE II INVESTIGATION
AND VAPOR INTRUSION STUDY**

EGMS	EGMS 15 Briar Hill Road Orchard Park, NY 14127 Phone: 716-445-2105				BORING LOG		Boring No.	SB-1
							Sheet 1 of:	1
							Project No.:	
Project Name: High Park Plaza						Surface Elev.:		
Location: Colvin & Highland Parkway, Tonawanda, NY						Datum:		
Client: Buffalo Business Park						Start Date:	5/13/14	
Drilling Firm: SJB, Inc						Finish Date:	5/13/14	
Groundwater		Depth	Date & Time	Drill Rig: Geoprobe 6620 DT		Inspector: N. Wohlabaugh		
While Drilling:				Casing:	Macrocore	Rock Core:	Undist:	
Before Casing Removal:				Sampler:	Macrocore	Notes:		
After Casing Removal:				Hammer:	Direct Push			
(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)								
Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION			COMMENTS	
				<small>c - coarse m - medium f - fine</small>				
				<small>a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10%</small>				
				<small>S - Sand, \$ - Silt, G - Gravel, C - Clay, cly - clayey</small>				
1	S-1			0 - 1 ft Asphalt (0 - 6") and crushed stone (6 - 12")				
2								
3				1 - 4 ft Red-brown CLAY, some silt, little sand, trace gravel			PID = 0.1 ppm	
4				Moist				
5	S-2							
6				4 - 8 ft Red-brown CLAY, some silt, little sand, trace gravel			PID = 0.0 ppm	
7				Moist to wet				
8								
End of boring at 8.0 ft								



EGMS
 15 Briar Hill Road
 Orchard Park, NY 14127
 Phone: 716-445-2105

BORING LOG

Boring No. SB-2

Sheet 1 of: 1

Project No.:

Project Name: High Park Plaza

Location: Colvin & Highland Parkway, Tonawanda, NY

Client: Buffalo Business Park

Drilling Firm: SJB, Inc

Groundwater

Depth

Date & Time

Drill Rig: Geoprobe 6620 DT

While Drilling:

Casing: Macrocore

Rock Core:

Surface Elev.:

Datum:

Start Date: 5/13/14

Finish Date: 5/13/14

Inspector: N. Wohlabaugh

Before Casing Removal:

Sampler: Macrocore

Notes:

Undist:

After Casing Removal:

Hammer: Direct Push

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS
				c - coarse m - medium f - fine a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10% S - Sand, \$ - Silt, G - Gravel, C - Clay, cly - clayey	(e.g., N-value, recovery, relative moisture, core run, RQD, % recovered)
1	S-1			0 - 1 ft Asphalt (0 - 6") and crushed stone (6 - 12")	
2					
3				1 - 4 ft Red-brown CLAY, some silt, little sand, trace gravel <i>Moist</i>	PID = 0.1 ppm
4					
5	S-2				
6				4 - 8 ft Red-brown CLAY, some silt, little sand, trace gravel <i>Moist to wet</i>	PID = 0.0 ppm
7				<i>Soil sample from 4 - 8 feet for lab analysis</i>	
8				<i>Fitted with temporary 1 inch PVC screen and riser to 8 ft to collect water sample for laboratory analysis</i> <i>End of boring at 8.0 ft</i>	



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BORING LOG

Boring No. SB-3

Sheet 1 of: 1

Project No.:

Project Name: High Park Plaza

Location: Colvin & Highland Parkway, Tonawanda, NY

Client: Buffalo Business Park

Drilling Firm: SJB, Inc

Surface Elev.:

Datum:

Start Date: 5/13/14

Finish Date: 5/13/14

Inspector: N. Wohlabaugn

Groundwater **Depth** **Date & Time** **Drill Rig:** Geoprobe 6620 DT

While Drilling: **Casing:** Macrocore **Rock Core:**

Before Casing Removal: **Sampler:** Macrocore **Notes:**

After Casing Removal: **Hammer:** Direct Push

Undist:

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS
				<small>c - coarse m - medium f - fine</small> <small>a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10%</small> S - Sand, \$ - Silt, G - Gravel, C - Clay, cly - clayey	(e.g., N-value, recovery, relative moisture, core run, RQD, % recovered)
1	S-1		0 - 1 ft	Asphalt (0 - 6") and crushed stone (6 - 12")	
2					
3			1 - 4 ft	Red-brown CLAY, some silt, little sand, trace gravel <i>Moist Soil sample from 1 - 4 ' for lab analysis</i>	PID = 0.0 ppm
4					
5	S-2				
6			4 - 8 ft	Red-brown CLAY, some silt, little sand, little gravel <i>Moist to wet</i>	PID = 0.0 ppm
7					
8					

End of boring at 8.0 ft



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BORING LOG

Boring No. SB-4

Sheet 1 of: 1

Project No.:

Project Name: High Park Plaza

Location: Colvin & Highland Parkway, Tonawanda, NY

Client: Buffalo Business Park

Drilling Firm: SJB, Inc

Groundwater **Depth** **Date & Time** **Drill Rig:** Geoprobe 6620 DT

While Drilling: **Casing:** Macrocore **Rock Core:** **Inspector:** N. Wohlabaugh

Before Casing Removal: **Sampler:** Macrocore **Notes:**

After Casing Removal: **Hammer:** Direct Push

Surface Elev.:

Datum:

Start Date: 5/13/14

Finish Date: 5/13/14

Inspector: N. Wohlabaugh

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS
				<small>c - coarse m - medium f - fine</small>	
				<small>a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10%</small>	
				<small>S - Sand, \$ - Silt, G - Gravel, C - Clay, cly - clayey</small>	
1	S-1			0 - 1 ft Asphalt (0 - 6") and crushed stone (6 - 12")	
2					
3				1 - 4 ft Red-brown CLAY, some silt, some sand, little gravel Dry	PID = 0.0 ppm
4					
5	S-2				
6				4 - 8 ft Red-brown CLAY, some silt, little sand, little gravel Moist	PID = 0.2 ppm
7					
8	S-3				
9					
10				8-12 ft Red-brown CLAY, some silt, little sand, little gravel Moist <i>Soil sample from 8 - 12' for lab analysis</i>	PID = 0.8 ppm
11					
12				<i>Fitted with temporary 1 inch PVC screen and riser to 12 ft to collect water sample. No water after 4 hours</i> <i>End of boring at 12.0 ft</i>	



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 15 Briar Hill Road
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BORING LOG

Boring No. SB-5

Sheet 1 of: 1

Project No.:

Project Name: High Park Plaza				Surface Elev.:	
Location: Colvin & Highland Parkway, Tonawanda, NY				Datum:	
Client: Buffalo Business Park				Start Date: 5/13/14	
Drilling Firm: SJB, Inc				Finish Date: 5/13/14	
Groundwater		Depth	Date & Time	Drill Rig: Geoprobe 6620 DT	Inspector: N. Wohlabough
While Drilling:			Casing: Macrocore	Rock Core:	Undist:
Before Casing Removal:			Sampler: Macrocore	Notes:	
After Casing Removal:			Hammer: Direct Push		

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS
				c - coarse m - medium f - fine a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10% S - Sand, \$ - Silt, G - Gravel, C - Clay, cly - clayey	(e.g., N-value, recovery, relative moisture, core run, RQD, % recovered)
1	S-1		0 - .25 ft	Concrete	
			.25-1.0 ft	Crushed stone	
2			1-1.5 ft	Brown CLAY	
3			1.5 - 4 ft	Red-brown CLAY, some silt, little sand, trace gravel	PID = 4.7 ppm
4			<i>Damp</i>	<i>Soil sample from 1 - 4 ' for lab analysis</i>	
5	S-2				
6			4 - 8 ft	Red-brown CLAY, some silt, little sand, little gravel	PID = 10.9 ppm
7				<i>Damp</i>	<i>Soil sample from 4 - 8 ' for lab analysis</i>
8					
9	S-3				
10			8-12 ft	Red-brown CLAY, some silt, little sand, little gravel	PID = 8.7 ppm
11				<i>Moist</i>	
12				<i>Fitted with temporary 1 inch PVC screen and riser to 12 ft to collect water sample. No water after 3 hours</i>	
				<i>End of boring at 12.0 ft</i>	



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 Phone: 716-445-2105

BORING LOG

Boring No. SB-6

Sheet 1 of: 1

Project No.:

Project Name: High Park Plaza		Surface Elev.:	
Location: Colvin & Highland Parkway, Tonawanda, NY		Datum:	
Client: Buffalo Business Park		Start Date: 5/13/14	
Drilling Firm: SJB, Inc		Finish Date: 5/13/14	
Groundwater	Depth	Date & Time	Drill Rig: Geoprobe 6620 DT
While Drilling:		Casing: Macrocore	Rock Core:
Before Casing Removal:		Sampler: Macrocore	Notes:
After Casing Removal:		Hammer: Direct Push	
		Inspector: N. Wohlabough	Undist:

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS
			c - coarse m - medium f - fine	a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10%	(e.g., N-value, recovery, relative moisture, core run, RQD, % recovered)
				S - Sand, s - Silt, G - Gravel, C - Clay, cly - clayey	
1	S-1		0-0.5 ft	Concrete	
2			0.5-2 ft	Dark Brown stained CLAY	PID = 0.0 ppm
3			2 - 4 ft	Red-brown CLAY, some silt, little sand, trace gravel	PID = 0.0 ppm
4				Damp Soil sample from 1 - 4' for lab analysis	
5	S-2				
6			4 - 8 ft	Red-brown CLAY, some silt, little sand, little gravel	PID = 6.7 ppm
7				Damp	
8					

End of boring at 8.0 ft



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 15 Briar Hill Road
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BORING LOG

Boring No. **SB-7**

Sheet 1 of: 1

Project No.:

<i>Project Name:</i> High Park Plaza				<i>Surface Elev.:</i>	
<i>Location:</i> Colvin & Highland Parkway, Tonawanda, NY				<i>Datum:</i>	
<i>Client:</i> Buffalo Business Park				<i>Start Date:</i> 5/13/14	
<i>Drilling Firm:</i> SJB, Inc				<i>Finish Date:</i> 5/13/14	
<i>Groundwater</i>	<i>Depth</i>	<i>Date & Time</i>	<i>Drill Rig:</i> Geoprobe 6620 DT	<i>Inspector:</i> N. Wohlabaug	
<i>While Drilling:</i>			<i>Casing:</i> Macrocore	<i>Rock Core:</i>	<i>Undist:</i>
<i>Before Casing Removal:</i>			<i>Sampler:</i> Macrocore	<i>Notes:</i>	
<i>After Casing Removal:</i>			<i>Hammer:</i> Direct Push		

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS	
				<small>c - coarse m - medium f - fine</small> <small>a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10%</small> S - Sand, \$ - Silt, G - Gravel, C - Clay, cly - clayey	(e.g., N-value, recovery, relative moisture, core run, RQD, % recovered)	
1	S-1		0 -.5 ft	Concrete		
			.5-.75ft	Dark black SAND	PID = 0,8 ppm	
2			.75-1.5ft	Brown Clay Soil sample from .5 - 1.5 ' for lab analysis	PID = 1.6 ppm	
3			1.5 - 4 ft	Red-brown CLAY, some silt, little sand, trace gravel	PID = 1.1 ppm	
4				<i>Damp</i>		
5	S-2					
6			4 - 8 ft	Red-brown CLAY, some silt, little sand, little gravel	PID = 0.0 ppm	
7					<i>Damp</i>	
8						
<i>End of boring at 8.0 ft</i>						



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 15 Briar Hill Road
 Orchard Park, NY 14127
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BORING LOG

Boring No. SB-8

Sheet 1 of: 1

Project No.:

Project Name: High Park Plaza		Surface Elev.:	
Location: Colvin & Highland Parkway, Tonawanda, NY		Datum:	
Client: Buffalo Business Park		Start Date: 5/13/14	
Drilling Firm: SJB, Inc		Finish Date: 5/13/14	
Groundwater	Depth	Date & Time	Drill Rig: Geoprobe 6620 DT
While Drilling:		Casing: Macrocore	Rock Core:
Before Casing Removal:		Sampler: Macrocore	Notes:
After Casing Removal:		Hammer: Direct Push	Inspector: N. Wohlabaugn

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS
				c - coarse m - medium f - fine S - Sand, s - Silt, G - Gravel, C - Clay, cly - clayey a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10%	(e.g., N-value, recovery, relative moisture, core run, RQD, % recovered)
1	S-1		0 -.5 ft	Concrete	
2			.5-2.0 ft	Medium gray CLAY	PID =2.1 ppm
3				<i>Soil sample from .5 - 2.0 ' for lab analysis</i>	
4			2 - 4 ft	Red-brown CLAY, some silt, little sand, trace gravel	PID = 0.3 ppm
				<i>Damp</i>	
5	S-2				
6			4 - 8 ft	Red-brown CLAY, some silt, little sand, little gravel	PID = 1.7 ppm
7				<i>Damp</i>	
8					
<i>End of boring at 8.0 ft</i>					



EGMS
 15 Briar Hill Road
 Orchard Park, NY 14127
 Phone: 716-445-2105

BORING LOG

Boring No. SB-9

Sheet 1 of: 1

Project No.:

Project Name: High Park Plaza		Surface Elev.:	
Location: Colvin & Highland Parkway, Tonawanda, NY		Datum:	
Client: Buffalo Business Park		Start Date: 5/13/14	
Drilling Firm: SJB, Inc		Finish Date: 5/13/14	
Groundwater	Depth	Date & Time	Drill Rig: Geoprobe 6620 DT
While Drilling:		Casing: Macrocore	Rock Core:
Before Casing Removal:		Sampler: Macrocore	Notes:
After Casing Removal:		Hammer: Direct Push	Inspector: N. Wohlabaugn
			Undist:

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS
				<small>c - coarse m - medium f - fine</small> <small>a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10%</small> S - Sand, \$ - Silt, G - Gravel, C - Clay, cly - clayey	(e.g., N-value, recovery, relative moisture, core run, RQD, % recovered)
1	S-1		0 - .5 ft	Concrete	
2			.5-2.0 ft	Dark brown CLAY	PID =0.0 ppm
3				<i>Soil sample from .5 - 2.0 ' for lab analysis</i>	
4			2 - 4 ft	Red-brown CLAY, some silt, little sand, trace gravel	PID =0.0 ppm
5	S-2			<i>Damp</i>	
6			4 - 8 ft	Red-brown CLAY, some silt, little sand, little gravel	PID =0.0 ppm
7				<i>Damp</i>	
8				<i>End of boring at 8.0 ft</i>	



EGMS
 15 Briar Hill Road
 Orchard Park, NY 14127
 Phone: 716-445-2105

BORING LOG

Boring No. SB-10

Sheet 1 of: 1

Project No.:

Project Name: High Park Plaza				Surface Elev.:	
Location: Colvin & Highland Parkway, Tonawanda, NY				Datum:	
Client: Buffalo Business Park				Start Date: 5/13/14	
Drilling Firm: SJB, Inc				Finish Date: 5/13/14	
Groundwater	Depth	Date & Time	Drill Rig: Geoprobe 6620 DT	Inspector: N. Wohlabaug	
While Drilling:		Casing: Macrocore		Rock Core:	
Before Casing Removal:		Sampler: Macrocore		Notes:	
After Casing Removal:		Hammer: Direct Push			

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS
				<small>c - coarse m - medium f - fine</small> <small>a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10%</small> S - Sand, \$ - Silt, G - Gravel, C - Clay, cly - clayey	(e.g., N-value, recovery, relative moisture, core run, RQD, % recovered)
1	S-1		0 -.25 ft	Concrete	
2			.25-.5 ft	Medium gray SAND	PID =0.0 ppm
3			.5 - 4 ft	Red-brown CLAY, some silt, little sand, trace gravel <i>Damp</i>	PID =0.5 ppm
4			<i>Soil sample from .5 - 4.0 ' for lab analysis</i>		
5	S-2				
6			4 - 8 ft	Red-brown CLAY, some silt, little sand, little gravel <i>Damp</i>	PID =0.2 ppm
7					
8					
<i>End of boring at 8.0 ft</i>					



EGMS
 15 Briar Hill Road
 Orchard Park, NY 14127
 Phone: 716-445-2105

BORING LOG

Boring No. SB-11

Sheet 1 of: 1

Project No.:

Project Name: High Park Plaza		Surface Elev.:	
Location: Colvin & Highland Parkway, Tonawanda, NY		Datum:	
Client: Buffalo Business Park		Start Date: 5/13/14	
Drilling Firm: SJB, Inc		Finish Date: 5/13/14	
Groundwater	Depth	Date & Time	Drill Rig: Geoprobe 6620 DT
While Drilling:		Casing: Macrocore	Rock Core:
Before Casing Removal:		Sampler: Macrocore	Notes:
After Casing Removal:		Hammer: Direct Push	Inspector: N. Wohlabaugn

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS	
				c - coarse m - medium f - fine a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10%		
				S - Sand, s - Silt, G - Gravel, C - Clay, cly - clayey	(e.g., N-value, recovery, relative moisture, core run, RQD, % recovered)	
1	S-1		0 -.5 ft	Concrete & wood		
			.5-2.0 ft	Dark brown SILT, some clay	PID =0.8 ppm	
2				<i>Soil sample from .5 - 2.0 ' for lab analysis</i>		
3			2 - 4 ft	Red-brown CLAY, some silt, little sand, trace gravel	PID =0.90 ppm	
4				<i>Damp</i>		
5	S-2					
6			4 - 8 ft	Red-brown CLAY, some silt, little sand, little gravel	PID =0.0 ppm	
					Gravel zone at 5 - 5.5ft.	
7				<i>Damp</i>		
8						

End of boring at 8.0 ft



EGMS
 15 Briar Hill Road
 Orchard Park, NY 14127
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BORING LOG

Boring No. **SB-15**

Sheet 1 of: 1

Project No.:

Project Name: High Park Plaza		Surface Elev.:	
Location: Colvin & Highland Parkway, Tonawanda, NY		Datum:	
Client: Buffalo Business Park		Start Date: 5/13/14	
Drilling Firm: SJB, Inc		Finish Date: 5/13/14	
Groundwater	Depth	Date & Time	Drill Rig: Geoprobe 6620 DT
While Drilling:		Casing: Macrocore	Rock Core:
Before Casing Removal:		Sampler: Macrocore	Notes:
After Casing Removal:		Hammer: Direct Push	Inspector: N. Wohlabaugh

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS
				c - coarse m - medium f - fine a - and - 35-50% s - some - 20-35% l - little - 10-20% t - trace - 0-10%	(e.g., N-value, recovery, relative moisture, core run, RQD, % recovered)
1	S-1		0 - 1 ft	Asphalt (0 - 6") and crushed stone (6 - 12")	
			1-1.5 ft	Brown CLAY	PID + 0.8 ppm
2					
3			1.5-4 ft	Red-brown CLAY, some silt, little sand, trace gravel	PID = 0.8 ppm
4				Moist	
5	S-2				
6			4 - 8 ft	Red-brown CLAY, some silt, little sand, little gravel	PID = 0.9 ppm
7				Moist	Soil sample from 4 - 8 ' for lab analysis
8					

End of boring at 12.0 ft

2015 BCP REMEDIAL INVESTIGATION
HIGHLAND PLAZA BCP SITE
SITE NO. C915293

EGMS		SUBSURFACE BORING LOG			Start Date: 10/14	Boring No. SB
					End Date: 10/14	16/MW-1
Project Number:		Geologist: N. Wohlabauh			Weather: ~50°F, Overcast	
Client: HIGHLAND PLAZA		Project Manager: N. Wohlabauh			Datum:	
Location (City, State): Tonawanda, New York		Driller: R. Steiner			Easting:	
Drill Rig Type: GeoProbe 6620 (Track Mounted)					Borehole Diameter (ft.): 0.25	
Type of Sampling Device: GeoProbe Macro-Core Sampler				Type of Casing:		
Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)	
0			0 to 4" Asphalt			
			4" to 12" Crushed Stone		1.5	
1			<i>6" to 12" - Soil sample collected for lab analysis</i>		1.1	
2	1	44"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel		1.1	
			Moist and compact			
3					1.1	
4					1.1	
5					1.1	
6	2	42"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel		1.1	
			Damp and compact			
7					1.1	
8					1.1	
9					1.0	
10	3	46"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel		1.0	
			Damp and compact			
11					1.0	
12					1.0	
13					1.0	
14	4	48"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel		1.2	
			Damp to slightly moist; compact			
15					1.1	
16					1.0	
17					1.1	
18	5	47"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel		1.0	
			Slightly moist; less compact			
19					1.1	
20					1.0	
21					1.0	
22	6	46"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel		0.9	
			Slightly moist; less compact to pliable			
23			Drill rods are dry		0.9	
			<i>23' to 24' - Soil sample collectd for lab analysis</i>			
24			END OF BORING			1.0
Depth to Water: Not encountered				Comments: Converted to MW-1		Boring No. SB-16



SUBSURFACE BORING LOG

Start Date: 10/14

End Date: 10/14

Boring No. SB-17/MW-2

Project Number: Geologist: N. Wohlabaugh Weather: ~50°F, Overcast

Client: HIGHLAND PLAZA Project Manager: N. Wohlabaugh Northing: Datum:

Location (City, State): Tonawanda, New York Driller: R. Steiner Easting:

Drill Rig Type: GeoProbe 6620 (Track Mounted) Borehole Diameter (ft.): 0.25

Type of Sampling Device: GeoProbe Macro-Core Sampler Type of Casing:

Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)
0			0 to 6" Asphalt		
			6" to 12" Crushed Stone		0.8
1			6" to 12" - Soil sample collected for lab analysis		0.7
2	1	45"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp and compact		0.7
3					0.7
4					0.7
5					0.7
6	2	46"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Dry to damp; very compact		0.7
7					0.7
8					0.7
9					0.5
10	3	45.5"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp and compact		0.5
11					0.5
12					0.5
13					0.5
14	4	45"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp and compact		0.4
15					0.4
16					0.5
17					0.4
18	5	47"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Slightly moist; less compact at 19' to 20'		0.4
19					0.4
20					0.4
21					0.4
22	6	46"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Moist; pliable to soft		0.4
23			23' to 24' - Soil sample collectd for lab analysis		0.4
			23.5 to 24' Red brown SILT , some Clay, minor fine Sand, little Gravel		
24			END OF BORING		0.4

Depth to Water: Not encountered

Comments: Converted to MW-2

Boring No.
SB-17



SUBSURFACE BORING LOG

Start Date: 10/14

Boring No.
SB-18

End Date: 10/14

Project Number:		Geologist: N. Wohlabaugh		Weather: ~50°F, Sunny	
Client: HIGHLAND PLAZA		Project Manager: N. Wohlabaugh		Northing:	Datum:
Location (City, State): Tonawanda, New York		Driller: R. Steiner		Easting:	
Drill Rig Type: GeoProbe 6620 (Track Mounted)				Borehole Diameter (ft.): 0.25	
Type of Sampling Device: GeoProbe Macro-Core Sampler			Type of Casing:		
Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)
0			0 to 6" Asphalt		
			6" to 12" Crushed Stone		0
1			12" to 16" Black stained Sand		0
			<i>12" to 18" - Soil sample collected for lab analysis</i>		
2	1	46"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp and compact		0
3					0
4					0
5					0
6	2	45"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Dry to damp; very compact		0
7					0
			<i>7' to 8' - Soil sample collected for lab analysis</i>		
8			END OF BORING		0
Depth to Water: Not encountered			Comments: Groundwater not encountered in completed geoprobe boring.		Boring No. SB-18



SUBSURFACE BORING LOG

Start Date: 10/14

End Date: 10/14

Boring No. SB-19/MW-3

Project Number: Geologist: N. Wohlabaugh Weather: ~50°F, Overcast

Client: HIGHLAND PLAZA Project Manager: N. Wohlabaugh Northing: Datum:

Location (City, State): Tonawanda, New York Driller: R. Steiner Easting:

Drill Rig Type: GeoProbe 6620 (Track Mounted) Borehole Diameter (ft.): 0.25

Type of Sampling Device: GeoProbe Macro-Core Sampler Type of Casing:

Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)
0			0 to 6" Asphalt		
			6" to 12" Crushed Stone		0.4
1			6" to 18" - Soil sample collected for lab analysis		0.3
2	1	42"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp and compact		0.3
3					0.3
4					0.3
5					0.2
6	2	43.5"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp; very compact		0.2
7					0.2
8					0.2
9					0.2
10	3	45.5"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp; very compact		0.2
11					0.2
12					0.2
13					0.1
14	4	46"	Red Brown CLAY , some Silt, very little fine Sand, very little Gravel Damp to moist; less compact		0.2
15					0
16					0.1
17					0.1
18	5	46"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Slightly moist; less compact at 19' to 20'		0.1
19					0.1
20					0.1
21					0
22	6	46"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Moist; pliable to soft		0.1
23					0
			23' to 24' - Soil sample collected for lab analysis		
24			END OF BORING		0.1

Depth to Water: Not encountered

Comments: Converted to MW-3

Boring No.
SB-19



SUBSURFACE BORING LOG

Start Date: 10/15
End Date: 10/15

Boring No.
SB-20

Project Number: _____ Geologist: N. Wohlabaugh Weather: ~48°F, Sunny

Client: HIGHLAND PLAZA Project Manager: N. Wohlabaugh Northing: _____ Datum: _____

Location (City, State): Tonawanda, New York Driller: R. Steiner Easting: _____

Drill Rig Type: GeoProbe 6620 (Track Mounted) Borehole Diameter (ft.): 0.25

Type of Sampling Device: GeoProbe Macro-Core Sampler Type of Casing: _____

Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)
0			0 to 6" Asphalt & crushed stone		
1			6" to 18" Dark Brown stained CLAY <i>6" to 18" - Soil sample collected for lab analysis</i>		0.2 2.3
2	1	45"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp and compact		0.1
3					0.1
4					1.4
5					0.2
6	2	46"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Dry to damp; compact		0.8
7					0
8			<i>7' to 8' - Soil sample collected for lab analysis</i> END OF BORING		0

Depth to Water: Not encountered _____	Comments: Groundwater not encountered in completed geoprobe boring.	Boring No. SB-20
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EGMS		SUBSURFACE BORING LOG			Start Date: 10/15	Boring No. SB-21
					End Date: 10/15	
Project Number:		Geologist: N. Wohlabaugh		Weather: ~48°F, Sunny		
Client: HIGHLAND PLAZA		Project Manager: N. Wohlabaugh		Northing:		Datum:
Location (City, State): Tonawanda, New York		Driller: R. Steiner		Easting:		
Drill Rig Type: GeoProbe 6620 (Track Mounted)				Borehole Diameter (ft.): 0.25		
Type of Sampling Device: GeoProbe Macro-Core Sampler				Type of Casing:		
Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)	
0			0 to 8" Asphalt & crushed stone		0	
1			8" to 20" Dark Brown stained CLAY <i>12" to 20" - Soil sample collected for lab analysis</i>		0	
2	1	45"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp and compact		0	
3					0	
4					0	
5					0	
6	2	44"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp and compact		0	
7					0	
8			END OF BORING <i>7' to 8' - Soil sample collected for lab analysis</i>		0	
Depth to Water: Not encountered				Comments: Groundwater not encountered in completed geoprobe boring.		Boring No. SB-21

EGMS		SUBSURFACE BORING LOG			Start Date: 10/15	Boring No. SB-22
					End Date: 10/15	
Project Number:		Geologist: N. Wohlabaugh		Weather: ~48°F, Sunny		
Client: HIGHLAND PLAZA		Project Manager: N. Wohlabaugh		Northing:		Datum:
Location (City, State): Tonawanda, New York		Driller: R. Steiner		Easting:		
Drill Rig Type: GeoProbe 6620 (Track Mounted)				Borehole Diameter (ft.): 0.25		
Type of Sampling Device: GeoProbe Macro-Core Sampler				Type of Casing:		
Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)	
0			0 to 10" Asphalt & crushed stone		0	
1			10" to 19" Dark Brown stained CLAY <i>6" to 18" - Soil sample collected for lab analysis</i>		0	
2	1	45"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp and compact		0	
3					0	
4					0	
5					0	
6	2	45.5"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel Damp and compact		0	
7					0	
8			END OF BORING <i>7' to 8' - Soil sample collected for lab analysis</i>		0	
Depth to Water: Not encountered				Comments: Groundwater not encountered in completed geoprobe boring.		Boring No. SB-22

EGMS		SUBSURFACE BORING LOG			Start Date:	Boring No. SB-23
					End Date:	
Project Number:		Geologist: N. Wohlabaugh		Weather: -50°F, Overcast		
Client: HIGHLAND PLAZA		Project Manager: N. Wohlabaugh		Northing:		Datum:
Location (City, State): Tonawanda, New York		Driller: R. Steiner		Easting:		
Drill Rig Type: GeoProbe 6620 (Track Mounted)		Borehole Diameter (ft.): 0.25				
Type of Sampling Device: GeoProbe Macro-Core Sampler				Type of Casing:		
Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)	
0			0 to 8" Dark grey coarse SAND		0.3	
			8" to 10" Medium grey Coarse SAND		1.3	
1			10" to 17" Light grey angular GRAVEL (crushed stone)		0	
			17" to 24" Dark grey stained CLAY <i>Soil sample collected for lab analysis</i>			
2	1	40"	Red Brown CLAY, some Silt, little fine Sand, very little Gravel Damp and compact		0	
3					0	
4					0	
5					1.7	
6	2	45.5"	Red Brown CLAY, some Silt, little fine Sand, very little Gravel Damp and compact		1.7	
7			<i>6' to 7' - Soil sample collected for lab analysis</i>		1.6	
8			END OF BORING		0.4	
Depth to Water: Not encountered				Comments: Groundwater not encountered in completed geoprobe boring.		Boring No. SB-23



SUBSURFACE BORING LOG

Start Date: 10/15

Boring No. SB-24/MW-4

15-Oct

Project Number:	Geologist: N. Wohlabaugh	Weather: ~50°F, Sunny	
Client: HIGHLAND PLAZA	Project Manager: N. Wohlabaugh	Northing:	Datum:
Location (City, State): Tonawanda, New York	Driller: R. Steiner	Easting:	
Drill Rig Type: GeoProbe 6620 (Track Mounted)	Borehole Diameter (ft.): 0.25		

Type of Sampling Device: GeoProbe Macro-Core Sampler	Type of Casing:
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Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)
0			0 to 6" Dark grey angular GRAVEL (crushed stone)t		5.4
			6" to 12" Medium grey angular GRAVEL (crushed stone)		
1			12" to 14" Black coarse SAND (stained) <i>Sample collected for analysis</i>		92.6
			14" to 24" Black CLAY (stained) some Silt, little fine Sand, very little		13.1
2	1	41"	Gravel; Damp and compact		
			24" to 48" Red brown CLAY, some Silt, little fine Sand, very little Gravel		
3			Damp and compact		0.3
4					0.3
5					9.3
6	2	43"	Red Brown CLAY, some Silt, little fine Sand, very little Gravel		49.6
			Damp; very compact		
7					64.2
8					39.4
9					48.3
10	3	46"	Red Brown CLAY, some Silt, little fine Sand, very little Gravel		66.1
			Damp; very compact		
11					132.1
12					Not recorded
13					25.8
14	4	43"	Red Brown CLAY, some Silt, very little fine Sand, very little Gravel		66
			Damp to moist; less compact		
15			<i>14' to 15' - Soil sample collected for lab analysis</i>		203
16					44.2
17					36.5
18	5	44"	Red Brown CLAY, some Silt, little fine Sand, very little Gravel		22.8
			Slightly moist; less compact at 17.5' to 20'		
19					8.3
20					43.5
21					50.8
22	6	45.5"	Red Brown CLAY, some Silt, little fine Sand, very little Gravel		22.7
			Moist; pliable to soft		
23					8.3
			<i>23' to 24' - Soil sample collected for lab analysis</i>		
24			END OF BORING		4.4

Depth to Water: Not encountered	Comments: Converted to MW-4	Boring No. SB-24
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SUBSURFACE BORING LOG

Start Date: 10/16
16-Oct

Boring No.
SB-25

Project Number: Geologist: N. Wohlabaugh Weather: ~50°F, Sunny

Client: HIGHLAND PLAZA Project Manager: N. Wohlabaugh Northing: Datum:

Location (City, State): Tonawanda, New York Driller: R. Steiner Easting:

Drill Rig Type: GeoProbe 6620 (Track Mounted) Borehole Diameter (ft.): 0.25

Type of Sampling Device: GeoProbe Macro-Core Sampler Type of Casing:

Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)
0			0 to 3" Dark grey Topsoil		7.4
			3" to 16" Medium grey angular GRAVEL (crushed stone)		1.3
1			16" to 18" Dark black GRAVEL (crushed stone) <i>Soil sample</i>		30.0
			18" to 22" Dark grey stained CLAY <i>collected for analysis (16" to 20")</i>		885
2	1	39.5"	22" to 48" Red Brown CLAY , some Silt, little fine Sand, very little Gravel		
			Damp and compact		
3					69.2
4					0
5					188.8
6	2	40.0"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel		122.4
			Damp and compact		
7			<i>6' to 7' - Soil sample collected for lab analysis</i>		393.4
8			END OF BORING		365.2

Depth to Water: Not encountered	Comments: Groundwater not encountered in completed geoprobe boring.	Boring No. SB-25

EGMS		SUBSURFACE BORING LOG			Start Date: 10/16	Boring No. SB-26
					End Date: 10/16	
Project Number:		Geologist: N. Wohlabaugh		Weather: ~50°F, Overcast		
Client: HIGHLAND PLAZA		Project Manager: N. Wohlabaugh		Northing:		Datum:
Location (City, State): Tonawanda, New York		Driller: R. Steiner		Easting:		
Drill Rig Type: GeoProbe 6620 (Track Mounted)				Borehole Diameter (ft.): 0.25		
Type of Sampling Device: GeoProbe Macro-Core Sampler				Type of Casing:		
Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)	
0			0 to 3" Dark grey Topsoil		0.5	
			3" to 16.5" Medium grey angular GRAVEL (crushed stone)		1.0	
1			<i>17" to 22" - Soil sample collected for lab analysis</i>			
2	1	41.0"	16.5" to 48" Red Brown CLAY , some Silt, little fine Sand, very little Gravel		2	
			Damp and compact			
3					1.9	
4					0.7	
5					188.8	
6	2	46.0"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel		122.4	
			Damp and compact			
7					393.4	
			<i>7' to 8' - Soil sample collected for lab analysis</i>			
8			END OF BORING			365.2
Depth to Water: Not encountered				Comments: Groundwater not encountered in completed geoprobe boring.		Boring No. SB-26



SUBSURFACE BORING LOG

Start Date: 10/15

End Date: 10/15

Boring No. SB-27/MW-5

Project Number:	Geologist: N. Wohlabaugh	Weather: ~50°F, Sunny	
Client: HIGHLAND PLAZA	Project Manager: N. Wohlabaugh	Northing:	Datum:
Location (City, State): Tonawanda, New York	Driller: R. Steiner	Easting:	
Drill Rig Type: GeoProbe 6620 (Track Mounted)	Borehole Diameter (ft.): 0.25		

Type of Sampling Device: GeoProbe Macro-Core Sampler	Type of Casing:
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Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)
0			0 to 6" Dark grey Topsoil		0
			6" to 12" Medium grey angular GRAVEL (crushed stone)		0
1			17" to 22" - Soil sample collected for lab analysis		
			14" to 19" Dark grey CLAY (stained) some Silt, little fine Sand, very little Gravel; Damp and compact		0
2	1	40"	19" to 48" Red brown CLAY, some Silt, little fine Sand, very little Gravel		0
3			Damp and compact		
4					0
5					0
6	2	46"	Red Brown CLAY, some Silt, little fine Sand, very little Gravel		0
			Damp; very compact		
7					0
8					0
9					0
10	3	45.5"	Red Brown CLAY, some Silt, little fine Sand, very little Gravel		0
			Damp; very compact		
11					0.5
12					0.2
13					0
14	4	39.5"	Red Brown CLAY, some Silt, very little fine Sand, very little Gravel		2.7
			Damp to moist; less compact		
15			14' to 15' - Soil sample collected for lab analysis		9.6
16					3.8
17					0
18	5	43"	Red Brown CLAY, some Silt, little fine Sand, very little Gravel		0
			Moist to wet; less compact at 17.5' to 20'		
19					0
20					0
21					0
22	6	40.5"	Red Brown CLAY, some Silt, little fine Sand, very little Gravel		0
			Mois to wet; pliable to soft		
23			23' to 24' - Soil sample collected for lab analysis		0
24			END OF BORING		0

Depth to Water: Not encountered	Comments: Converted to MW-5	Boring No. SB-27
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EGMS		SUBSURFACE BORING LOG			Start Date: 10/16	Boring No. SB-28
					End Date:	
Project Number:		Geologist: N. Wohlabaugh		Weather: ~50°F, Overcast		
Client: HIGHLAND PLAZA		Project Manager: N. Wohlabaugh		Northing:		Datum:
Location (City, State): Tonawanda, New York		Driller: R. Steiner		Easting:		
Drill Rig Type: GeoProbe 6620 (Track Mounted)				Borehole Diameter (ft.): 0.25		
Type of Sampling Device: GeoProbe Macro-Core Sampler				Type of Casing:		
Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)	
0			0 to 2.5" Dark grey Topsoil		0.1	
			2.5" to 17" Medium grey angular GRAVEL (crushed stone)		1.0	
1			10" to 22" - Soil sample collected for lab analysis			
2	1	42.0"	17" to 48" Red Brown CLAY , some Silt, little fine Sand, very little Gravel		2.7	
			Damp and compact			
3					0	
4					0	
5					0	
6	2	45.5"	Red Brown CLAY , some Silt, little fine Sand, very little Gravel		0	
			Damp and compact			
7					0	
			7' to 8' - Soil sample collected for lab analysis			
8			END OF BORING			
Depth to Water: Not encountered				Comments: Groundwater not encountered in completed geoprobe boring.		Boring No. SB-28

EGMS		SUBSURFACE BORING LOG			Start Date:	Boring No. SB-29
					End Date:	
Project Number:		Geologist: N. Wohlabaug		Weather: ~50°F, Overcast		
Client: HIGHLAND PLAZA		Project Manager: N. Wohlabaug		Northing:		Datum:
Location (City, State): Tonawanda, New York		Driller: R. Steiner		Easting:		
Drill Rig Type: GeoProbe 6620 (Track Mounted)		Borehole Diameter (ft.): 0.25				
Depth (feet)	Sample ID	Recovery	SOIL DESCRIPTION	USCS Symbol	PID Screening (ppm)	
0			0 to 10" Medium grey angular GRAVEL (crushed stone)		1.1	
			10" to 16" Light grey angular GRAVEL (crushed stone)		1.0	
1			<i>17" to 22" - Soil sample collected for lab analysis</i>			
			16' to 26" Dark brown CLAY (stained) some Silt, little fine Sand, very Gravel; damp and compact		0.8	
2	1	45.5"	26" to 48" Red Brown CLAY, some Silt, little fine Sand, very little Gravel			
			Damp and compact		3.0	
4					5.7	
5					2.2	
6	2	44'	Red Brown CLAY, some Silt, little fine Sand, very little Gravel		32.9	
			Damp and compact			
7					21.5	
8			<i>7' to 8' - Soil sample collected for lab analysis</i>			
			END OF BORING		51.1	
Depth to Water: Not encountered				Comments: Groundwater not encountered in completed geoprobe boring.		Boring No. SB-29

**2017 NYSDEC REMEDIAL INVESTIGATION
HIGHLAND PLAZA OFF-SITE AREA
SITE NO. C915293A**



Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-30**

Page 1 of 1

Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/19/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/19/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/19/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
0	0-4'	90%	0	Fill: Fill, sandy silt, topsoil, trace gravel, little sand, organic matter, extremely moist Silty Sand: Silty sand with gravel, brown, little silt, moist Clay and Silt: Silty clay, reddish brown, trace gravel, trace sand, weakly laminated, extremely moist	Backfilled	
5	4-8'	95%	0.3		sample collected	
10	8-12'	85%	0.3		sample collected	
15	12-16'	95%	1.8		sample collected	
20	16-20'	97.5%	1.8	Clay and Silt: Silty clay with gravel, brown, trace to little sand, soft, extremely moist, no odors	sample collected	
25	20-24'	95%	1.5		sample collected	
30	24-28'	100%	1.0		sample collected	
	28-32'	97.5%	0.9		sample collected	

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
		SB-30		p. 1 of 1



Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-31**

Page 1 of 1

Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/19/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/19/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/19/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	97.5%	0.9	Fill: Fill, Sandy silt, topsoil, little sand, organic matter, moist Fill: Silty sand with gravel, little sand Clay and Silt: Silty clay, reddish brown, trace gravel, trace sand, weakly laminated, hard	Backfilled	
5	4-8'	95%	1.1		sample collected	☒
10	8-12'	92.5	0.0	Clay and Silt: Clayey silt with gravel, massive, trace sand, moist		
15	12-16'	95%	2.1	Clay and Silt: Silty clay, trace sand, trace gravel, soft, weakly laminated to massive, extremely moist	sample collected	☒
20	16-20'	97.5%	1.9			
25	20-24'	97.5%	2.1		sample collected	☒
30	24-28'	95%	2.3		sample collected	☒
	28-32'	97.5%	1.6		sample collected	☒

Proportions Used:	Notes:	Blow Count Penetration Resistance:		Symbols:
Trace =	ft bg = feet below grade Field Screening measured in ppmv	Consistency (M&C)	Density (G&S)	Apparent Water Level
Few =		<2 = Very Soft	0-4 = Very Loose	☒
Little =		2-4 = Soft	4-10 = Loose	
Some =		4-8 = Medium	10-30 = Medium	
Adjective =		8-15 = Stiff	30-50 = Dense	
And =		15-30 = Very Stiff	50+ = Very Dense	
		>30 = Hard		



Soil Boring

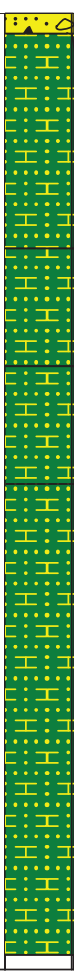
Groundwater & Environmental Services, Inc.



ID NO. **SB-32**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/19/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/19/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/19/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	87.5%	2.9	 Fill: Fill, dark brown to brown, sandy silt, topsoil, gravel, coarse sand, trace organic matter, medium stiffness, moist Clay and Silt: Silty clay, reddish brown to brown, trace gravel, trace sand, weakly laminated to massive, moist	Backfilled	
5	4-8'	92.5%	1.9		sample collected	☒
10	8-12'	87.5%	1.6	Clay and Silt: Silty clay, reddish brown, trace gravel, trace sand, laminated, stiff, moist		
15	12-16'	97.5%	2.1	Clay and Silt: Silty clay, reddish brown, trace gravel, trace sand, laminated, stiff, softer with depth after 15 feet, moist	sample collected, Duplicate	☒
20	16-20'	100%	0.4	Clay and Silt: Silty clay, brown, trace sand, trace gravel, soft, massive, extremely moist		
25	20-24'	97.5%	2.0		sample collected, MS/MSD	☒
30	24-28'	100%	1.6		sample collected	☒
	28-32'	100%	3.1		sample collected	☒

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) Density (G&S) <2 = Very Soft 0-4 = Very Loose 2-4 = Soft 4-10 = Loose 4-8 = Medium 10-30 = Medium 8-15 = Stiff 30-50 = Dense 15-30 = Very Stiff 50 > = Very Dense >30 = Hard	Symbols: Apparent Water Level  Lab Sample Location 
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Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-33**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/19/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/19/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/19/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	92.5%	3.5	Fill: Fill, gravely with some sand Clay and Silt: Silty clay with gravel, brown, trace sand, weakly laminated to blockey, moist	sample collected	
5	4-8'	97.5%	2.8	Clay and Silt: Silty clay, brown, trace gravel, trace sand, laminated, moist	sample collected	☒
10	8-12'	90%	2.8		sample collected	☒
15	12-16'	100%	2.1	Clay and Silt: Silty clay, brown, trace gravel, trace sand, weakly laminated, soft, moist	sample collected	☒
20	16-20'	100%	1.8		sample collected	☒
25	20-24'	97.5%	1.6		sample collected	☒
28	24-28'	100%	1.4		sample collected	☒
30	28-32'	100%	2.0		sample collected	☒

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) Density (G&S) <2 = Very Soft 0-4 = Very Loose 2-4 = Soft 4-10 = Loose 4-8 = Medium 10-30 = Medium 8-15 = Stiff 30-50 = Dense 15-30 = Very Stiff 50 > = Very Dense >30 = Hard	Symbols: Apparent Water Level Lab Sample Location
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Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-34**

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Project: NYSDEC Highland Plaza	Client: NYSDEC
Address: Tonawanda, NY	GES Job #: 0901703
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A
Logged By: Brandon Mikolin	Date Drilled: 6/20/2017 Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/20/2017 Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable Abandonment Completion Date: 6/20/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
0	0-4'	92.5%	0.5	Fill: Fill, black, sandy silt, topsoil, gravel, little sand, trace to little organic matter, moist Fill: Fill, sandy silt with gravel, little sand, trace clay, moist Clay and Silt: Silty clay, reddish brown, trace gravel, trace sand, trace organic matter, laminated, stiff, moist	Backfilled	
5	4-8'	97.5%	0.3		sample collected	
10	8-12'	90%	0.0	Clay and Silt: Silty clay, brown to reddish brown, some gravel, trace sand, weakly laminated, stiff, softens below 15 feet, moist to extremely moist		
15	12-16'	100%	0.0		sample collected	
20	16-20'	100%	0.0	Clay and Silt: Silty clay, brown, trace gravel, trace sand, soft, massive, extremely moist to wet		
25	20-24'	97.5%	0.5		sample collected	
30	24-28'	100%	0.0		sample collected	
	28-32'	100%	0.5		sample collected	

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
				SB-34 p. 1 of 1



Soil Boring

Groundwater & Environmental Services, Inc.

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 5/4/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 5/4/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 5/4/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
0	0-4'	100%	0.4	Gravel: Gravel	Backfilled	
			12.3	Fill: Fill, clay and gravel, dark brown to black	sample collected	☒
			19.0	Clay and Silt: Silty clay, brown, hard, dry		
5	4-8'	100%	21.2	Clay and Silt: Silty clay, brown, hard, dry, no odors	sample collected	☒
			13.6		sample collected	
10	8-12'	100%	5.2			
			0.5		sample collected	☒
15	12-16'	100%	0.0			
			0.0	Clay and Silt: Silty clay, brown, medium stiffness, dry, no odors	sample collected	☒
20	16-20'	100%	0.0			
			0.3		sample collected	☒
			0.0		sample collected	☒
25	20-24'	100%	0.0			
			0.2		sample collected	☒
			0.0		sample collected	☒
30	24-28'	100%	0.0			
			0.0		sample collected	☒
			0.0		sample collected	☒

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
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Soil Boring

Groundwater & Environmental Services, Inc.

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Eric Popken	Date Drilled: 5/4/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 5/4/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 5/4/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
0	0-4'	25%	4.2	Clay and Silt: Silty clay, brown, hard, trace gravel, no odors	Backfilled	
5	4-8'	100%	26.7	Clay and Silt: Silty clay, brown, hard, trace gravel, dry to moist, no odors	sample collected	
			30.3		sample collected	
10	8-12'	100%	27.1	Clay and Silt: Silty clay, brown, hard, trace gravel, moist to dry, no odors	sample collected	
			25.2			
15	12-16'	75%	20.7	Clay and Silt: Silty clay, brown, hard, trace gravel, moist, no odors	sample collected	
			7.8			
20	16-20'	0%	1.8	Clay and Silt: Silty clay, brown, medium stiffness, trace gravel, moist, no odors		
			1.7			
25	20-24'	100%	2.5	Clay and Silt: Silty clay, brown, soft, trace gravel, wet, no odors		
			1.6	Clay and Silt: Silty clay, brown, medium stiffness, trace gravel, wet, no odors	sample collected	
30	24-28'	100%	2.4	Clay and Silt: Silty clay, brown, medium stiffness, trace gravel, moist, no odors	sample collected	
			1.0		sample collected	
	28-32'	100%	1.5	Clay and Silt: Silty clay, brown, medium stiffness, trace gravel, moist, no odors	sample collected	
			0.8		sample collected	

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
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Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-37**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Eric Popken	Date Drilled: 5/4/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 5/4/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 5/4/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	100%	1.9	Gravel: Silty clay, brown, hard, moist, no odors	Backfilled sample collected	☒
				Fill: Fill, silty clay, brown, hard, trace gravel, trace organics, slight odor		
5	4-8'	95%	46.2	Clay and Silt: Silty clay, brown, soft to medium stiffness, trace gravel, dry, no odors	sample collected	☒
				Clay and Silt: Silty clay, brown, hard, trace gravel, dry to moist, no odors		
10	8-12'	75%	32.2	Clay and Silt: Silty clay, brown, hard, trace gravel, dry to moist, no odors	sample collected	☒
				Clay and Silt: Silty clay, brown, hard, trace gravel, dry to moist, no odors		
15	12-16'	100%	1195	Clay and Silt: Silty clay, brown, hard, trace gravel, dry to moist, odors between 14-15 feet	sample collected	☒
				>2,000		
20	16-20'	100%	>2,000	Clay and Silt: Silty clay, brown, hard, trace gravel, dry to moist, odors	sample collected	☒
				43.2		
25	20-24'	100%	20.0	Clay and Silt: Silty clay, brown, medium stiffness, trace gravel, dry to moist, no odors	sample collected	☒
				Clay: Clay, brown, soft to medium stiffness, dry to moist		
30	24-28'	100%	14.8	Clay: Clay, brown, soft to medium stiffness, dry to moist	sample collected	☒
				5.1		
30	28-32'	100%	2.5	Clay: Clay, brown, soft to medium stiffness, dry to moist	sample collected	☒
				2.9		
			1.8		sample collected	☒

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
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Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-38**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/21/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/21/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/21/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
0	0-4'	70%	0.7	Fill: Fill, brownish grey, sandy silt with gravel, little sand, dry to moist	Backfilled	
5	4-8'	100%	0.7	Clay and Silt: Silty clay, brown, trace sand, trace gravel, weakly laminated to blocky, very stiff, dry to moist	sample collected	☒
10	8-12'	92.5%	2.1			
15	12-16'	100%	35	Clay and Silt: Silty clay with gravel, brown, trace sand, weakly laminated to massive, medium stiffness to soft, moist	sample collected	☒
20	16-20'	100%	0.4	Clay and Silt: Silty clay with gravel, brown, trace sand, massive, soft, extremely moist to wet	sample collected	☒
25	20-24'	95%	0			
30	24-28'	100%	0			
	28-32'	100%	0.3		sample collected	☒

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
				SB-38 p. 1 of 1



Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-39**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken	
	NYSDEC Site No: C915293A	
Logged By: Eric Popken	Date Drilled: 5/4/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 5/4/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 5/4/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	87.5%	244	Gravel: Gravel	Backfilled	
				Fill: Fill, gravel, sand, clay, stained black, moist, solvent odor		
5	4-8'	100%	>2000	Clay and Silt: Silty clay, brown, hard, dry, solvent odor	sample collected	
				>2000		
10	8-12'	100%	201	Clay and Silt: Silty clay, brown, hard, dry, slight odors	sample collected	
15	12-16'	100%	418	Clay and Silt: Silty clay, brown, medium stiffness, dry, slight odors	sample collected	
20	16-20'	100%	88.8	Clay and Silt: Silty clay, brown, medium stiffness, dry, slight odors	sample collected	
25	20-24'	75%	3.4	Clay and Silt: Silty clay, brown, medium stiffness, dry, no odor	sample collected	
30	24-28'	0%	20.1	Clay and Silt: Silty clay, brown, medium stiffness, dry, no odor	sample collected	
	28-32'	0%	NA	No recovery	sample collected	

Proportions Used:	Notes:	Blow Count Penetration Resistance:		Symbols:
Trace =	ft bg = feet below grade Field Screening measured in ppmv	Consistency (M&C)	Density (G&S)	Apparent Water Level
Few =		<2 = Very Soft	0-4 = Very Loose	Lab Sample Location
Little =		2-4 = Soft	4-10 = Loose	
Some =		4-8 = Medium	10-30 = Medium	
Adjective =		8-15 = Stiff	30-50 = Dense	
And =		15-30 = Very Stiff	50+ = Very Dense	
		>30 = Hard		



Soil Boring

Groundwater & Environmental Services, Inc.

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken	
	NYSDEC Site No: C915293A	
Logged By: Eric Popken	Date Drilled: 5/3/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 5/3/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: 10'	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 5/3/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	50%	0.0	Clay: Clay, brown, hard, moist, no odors	Backfilled		
					sample collected		☒
5	4-8'	75%	0.1		sample collected		☒
			0.0		sample collected		☒
10	8-12'	100%	1.3		sample collected, water encountered		☒
			0.4		sample collected		☒
15	12-16'	15%	0.6		sample collected		☒
		25%					
20	16-20'	0%	0.8				
25	20-24'	12.5	NA				
30	24-28'	50%	0.6				
			0.0				
	28-32'	15%	0.0				

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
				SB-40 p. 1 of 1



Soil Boring











Groundwater & Environmental Services, Inc.



ID NO. **SB-41**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/22/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/22/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 24'	Depth to Water: 10'	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/22/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	85%	0.7	 Fill: Fill, brownish grey, sandy silt with gravel, little sand, trace concrete, trace slag, dry to moist	Backfilled	
				 Clay and Silt: Silty clay with gravel, brown, mottled, trace sand, weakly laminated, medium stiffness, moist		
5	4-8'	100%	0.5	 Clay and Silt: Silty clay with gravel, brown, trace sand, weakly laminated, very stiff, softer after 14 feet, dry to moist	sample collected	
10	8-12'	100%	0.8			
15	12-16'	100%	1.6		sample collected	
20	16-20'	100%	3.0	 Clay and Silt: Silty clay with gravel, brown, trace sand, massive, soft, extremely moist		
	20-24'	100%	0.6		sample collected	

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: <table border="1"> <tr> <th>Consistency (M&C)</th> <th>Density (G&S)</th> </tr> <tr> <td><2 = Very Soft</td> <td>0-4 = Very Loose</td> </tr> <tr> <td>2-4 = Soft</td> <td>4-10 = Loose</td> </tr> <tr> <td>4-8 = Medium</td> <td>10-30 = Medium</td> </tr> <tr> <td>8-15 = Stiff</td> <td>30-50 = Dense</td> </tr> <tr> <td>15-30 = Very Stiff</td> <td>50+ = Very Dense</td> </tr> <tr> <td>>30 = Hard</td> <td></td> </tr> </table>	Consistency (M&C)	Density (G&S)	<2 = Very Soft	0-4 = Very Loose	2-4 = Soft	4-10 = Loose	4-8 = Medium	10-30 = Medium	8-15 = Stiff	30-50 = Dense	15-30 = Very Stiff	50+ = Very Dense	>30 = Hard		Symbols: Apparent Water Level  Lab Sample Location 
Consistency (M&C)	Density (G&S)																
<2 = Very Soft	0-4 = Very Loose																
2-4 = Soft	4-10 = Loose																
4-8 = Medium	10-30 = Medium																
8-15 = Stiff	30-50 = Dense																
15-30 = Very Stiff	50+ = Very Dense																
>30 = Hard																	
			SB-41 p. 1 of 1														



Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-43**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken	
	NYSDEC Site No: C915293A	
Logged By: Eric Popken	Date Drilled: 5/3/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 5/3/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: 10'	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 5/3/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	100	0.3	Clay and Silt: Silty clay, brown, dry to moist, no odors	Backfilled	
5	4-8'	2.5%	0	Clay and Silt: Silty clay, brown, hard, dry to moist, no odors		
10	8-12'	50%	1.1		sample collected	☒
	12-16'	100%	0.8		sample collected, water encountered	☒
15	16-20'	7.5%	1.4		sample collected	☒
20	20-24'	0%	NA	No recovery		
25	24-28'	37.5%	0.4	Clay and Silt: Silty clay, brown, hard, dry to moist, no odors	sample collected	☒
30	28-32'	100%	1.0		sample collected	☒

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
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Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-44**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken	
	NYSDEC Site No: C915293A	
Logged By: Eric Popken	Date Drilled: 5/3/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 5/3/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: 10'	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 5/3/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
0	0-4'	62.5%	2.0	Clay and Silt: Silty clay, brown, hard, moist, no odors	Backfilled sample collected	
5	4-8'	75%	1.8	Clay and Silt: Silty clay, brown, hard, dry to moist, no odors	sample collected	
10	8-12'	75%	1.0	Clay and Silt: Silty clay, brown, hard, moist, no odors	sample collected	
			2.3		sample collected	
15	12-16'	37.5%	2.0		water encountered	
					sample collected	
20	16-20'	20%	0.0	Clay and Silt: Silty clay, brown, medium stiffness, moist, no odors		
					sample collected	
25	20-24'	37.5%	2.0			
					sample collected	
			0.9			
30	24-28'	100%	0.8		sample collected	
					sample collected	
			0.0			
					sample collected	

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
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Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-45**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/20/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/20/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/20/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
0	0-4'	95%	42.0	Fill: Fill, dark brown, sandy silt with gravel, little sand, trace clay, trace slag, moist	Backfilled	
				Clay and Silt: Fill, dark brown to grey, silty clay, trace sand, trace gravel, trace asphalt, moist	sample collected	
5	4-8'	100%	102	Clay and Silt: Silty clay, reddish brown, trace sand, trace gravel, weakly laminated, stiff, dry to moist	sample collected	
					sample collected	
10	8-12'	95%	130			
					sample collected	
15	12-16'	95%	101	Clay and Silt: Silty clay, brown, trace gravel, trace sand, trace gravel, massive, soft, moist to extremely moist	sample collected	
20	16-20'	95%	63.8			
25	20-24'	100%	120			
					sample collected	
30	24-28'	100%	3.0			
					sample collected	
	28-32'	100%	1.2			
					sample collected	

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
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Soil Boring




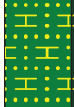

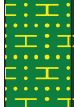

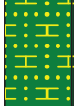



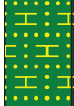

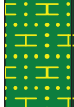

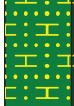

Groundwater & Environmental Services, Inc.



ID NO. **SB-46**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/20/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/20/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: 10'	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/20/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	95%	7.2	 Fill: Fill, dark grey, sandy silt, some gravel, little sand, massive, dry to moist	Backfilled	
				 Clay and Silt: Silty clay, trace sand and gravel, weakly laminated, stiff, dry to moist	sample collected	
5	4-8'	100%	148		sample collected	
					sample collected	
10	8-12'	100%	100		sample collected	
					sample collected	
15	12-16'	100%	27		sample collected	
					sample collected	
20	16-20'	100%	1.4	 Clay and Silt: Silty clay with gravel, brown, trace sand, massive, soft, moist to extremely moist	sample collected	
				sample collected		
25	20-24'	100%	1.1		sample collected	
					sample collected	
30	24-28'	100%	1.6		sample collected	
					sample collected	
	28-32'	100%	1.0		sample collected	

Proportions Used:	Notes:	Blow Count Penetration Resistance:		Symbols:
Trace =	ft bg = feet below grade Field Screening measured in ppmv	Consistency (M&C)	Density (G&S)	Apparent Water Level 
Few =		<2 = Very Soft	0-4 = Very Loose	Lab Sample Location 
Little =		2-4 = Soft	4-10 = Loose	
Some =		4-8 = Medium	10-30 = Medium	
Adjective =		8-15 = Stiff	30-50 = Dense	
And =		15-30 = Very Stiff	50+ = Very Dense	
		>30 = Hard		



Soil Boring









Groundwater & Environmental Services, Inc.



ID NO. **SB-47**

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Project: NYSDEC Highland Plaza	Client: NYSDEC
Address: Tonawanda, NY	GES Job #: 0901703
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A
Logged By: Brandon Mikolin	Date Drilled: 6/21/2017 Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/21/2017 Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable Abandonment Completion Date: 6/21/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	92.5%	206	 Fill: Fill, black to grey, sandy silt with gravel, little sand, trace asphalt, trace glass debris, massive, dry to moist	Backfilled	
5	4-8'	97.5%	203	 Clay and Silt: Silty clay with gravel, reddish brown, trace sand, weakly laminated, stiff, softer below 15 feet, moist, strongchemical odor at 11-12 feet	sample collected	
10	8-12'	87.5%	>2000		sample collected	
15	12-16'	100%	1824		sample collected	
20	16-20'	100%	465 77	 Clay and Silt: Silty clay, brown, trace gravel, trace sand, massive, soft, moist to extremely moist	sample collected	
25	20-24'	100%	30		sample collected	
30	24-28'	0%	NA	No recovery	sample collected	
30	28-32'	100%	2.1	 Clay and Silt: Silty clay, brown, trace gravel, trace sand, massive, soft, moist to extremely moist	sample collected, Duplicate MS/MSD	

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) Density (G&S) <2 = Very Soft 0-4 = Very Loose 2-4 = Soft 4-10 = Loose 4-8 = Medium 10-30 = Medium 8-15 = Stiff 30-50 = Dense 15-30 = Very Stiff 50 > = Very Dense >30 = Hard	Symbols: Apparent Water Level  Lab Sample Location 
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Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-48**

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Project: NYSDEC Highland Plaza	Client: NYSDEC
Address: Tonawanda, NY	GES Job #: 0901703
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A
Logged By: Brandon Mikolin	Date Drilled: 6/21/2017 Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/21/2017 Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable Abandonment Completion Date: 6/21/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
0	0-4'	100%	0.0	Fill: Fill, black to grey, sandy silt with gravel, little sand, trace red brick, trace slag debris, moist	Backfilled	
				Clay and Silt: Silty clay, brown, trace sand, trace gravel, blocky, medium stiff to hard, moist		
5	4-8'	100%	80.0		sample collected	☒
				Clay and Silt: Silty clay, reddish brown, trace gravel, trace sand, massive, very stiff, softer below 15 feet, dry to moist		
10	8-12'	97.5	43.0		sample collected	☒
				Clay and Silt: Silty clay, trace gravel, trace sand, weakly laminated to massive, medium stiffness to soft, moist to extremely moist		
15	12-16'	92.5%	12.3		sample collected	☒
				Clay and Silt: Silty clay, trace gravel, trace sand, weakly laminated to massive, medium stiffness to soft, moist to extremely moist		
20	16-20'	100%	1.8		sample collected	☒
				Clay and Silt: Silty clay with gravel, brown, trace sand, massive, soft, extremely moist		
25	20-24'	100%	1.8		sample collected	☒
				Clay and Silt: Silty clay, trace gravel, trace sand, weakly laminated to massive, medium stiffness to soft, moist to extremely moist		
30	24-28'	100%	1.1		sample collected	☒
				Clay and Silt: Silty clay, trace gravel, trace sand, weakly laminated to massive, medium stiffness to soft, moist to extremely moist		
	28-32'	100%	1.9		sample collected	☒

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) Density (G&S) <2 = Very Soft 0-4 = Very Loose 2-4 = Soft 4-10 = Loose 4-8 = Medium 10-30 = Medium 8-15 = Stiff 30-50 = Dense 15-30 = Very Stiff >30 = Hard >30 = Hard 50+ = Very Dense	Symbols: Apparent Water Level ▼ Lab Sample Location ☒
		SB-48	p. 1 of 1



Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-49**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/21/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/21/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/21/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	82.5%	30	Fill: Fill, brownish grey, sandy silt with gravel, little sand, trace slag debris, moist	Backfilled	☒
			160	Clay and Silt: Silty clay, reddish brown, trace sand, trace gravel, laminated, stiff, softer below 15 feet, moist	sample collected	
5	4-8'	100%	652		sample collected	☒
	8-12'	95%	174		sample collected	☒
10	12-16'	100%	75 165		sample collected	☒
	16-20'	100%	32	Clay and Silt: Silty clay with gravel, brown, trace sand, massive, soft, extremely moist	sample collected	☒
20	20-24'	100%	2.2		sample collected	☒
	24-28'	100%	1.3		sample collected	☒
25	28-32'	100%	2.3		sample collected	☒
					sample collected, Duplicate MS/MSD	☒

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
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Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-50**

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Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/22/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/22/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/22/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
0	0-4'	85%	0.0	Fill: Fill, dark grey, sandy silt with gravel, little sand, trace asphalt, trace slag, moist	Backfilled	
				Fill: Fill, dark brown, silty clay with gravel, blocky, moist to extremely moist		
5	4-8'	97.5%	0.0	Clay and Silt: Silty clay, dark brown, trace sand, trace gravel, blocky, medium stiffness, moist		
				Clay and Silt: Silty clay, brown, trace sand, trace gravel, laminated, very stiff, softer below 14 feet, moist	sample collected	☒
10	8-12'	85%	15.8			
	12-16'	100%	3.5		sample collected	☒
15	16-20'	100%	0.0			
				Clay and Silt: Silty clay with gravel, brown, trace sand, massive, soft, extremely moist		
20	20-24'	100%	2.8		sample collected	☒
25	24-28'	100%	1.0		sample collected	☒
	28-32'	100%	1.8		sample collected	☒

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard	Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
				SB-50 p. 1 of 1



Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-51**

Page 1 of 1

Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/22/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/22/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 24'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/22/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	100%	1.8	Fill: Fill, dark grey, sandy silt with gravel, little sand, trace ceramic debris, moist Clay and Silt: Silty clay, dark grey to brown, trace gravel, trace sand, blocky to massive, moist	Backfilled sample collected	
	4-8'	100%	157	Clay and Silt: Silty clay, brown, trace gravel, trace sand, weakly laminated to massive, very stiff, softer below 15 feet, moist	sample collected	
5	8-12'	100%	49.0		sample collected	
	12-16'	100%	9.0		sample collected, Duplicate sample collected	
15	16-20'	100%	0.0	Clay and Silt: Silty clay with gravel, brown, trace sand, massive, soft, extremely moist		
	20-24'	100%	0.0		sample collected	
20					sample collected	
					sample collected	

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) Density (G&S) <2 = Very Soft 0-4 = Very Loose 2-4 = Soft 4-10 = Loose 4-8 = Medium 10-30 = Medium 8-15 = Stiff 30-50 = Dense 15-30 = Very Stiff 50+ = Very Dense >30 = Hard	Symbols: Apparent Water Level Lab Sample Location
		SB-51	p. 1 of 1



Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-52**

Page 1 of 1

Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/22/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/22/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 24'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/22/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	95%	10	Fill: Gray, silt, many gravel, trace sand, trace clay and asphalt, moist Silt: Silt, brown, trace sand, blocky, moist	Backfilled	
					sample collected	
5	4-8'	100%	148	Silt: Silt, brown, trace sand and gravel, weakly A, very stiff, dry to moist, softer below 14.5', slight odor present	sample collected	
					sample collected	
10	8-12'	100%	76		sample collected, Duplicate MS/MSD	
					sample collected	
15	12-16'	95%	280		sample collected	
					sample collected	
20	16-20'	90%	>2000			
	20-24'	100%	407	Silt: Silt, gray/black, trace sand and gravel, wet at fracture, strong odor present, possible PCE chemical	sample collected	
				Silt: Silt, brown, little gravel, trace sand, massive, soft, extremely moist	sample collected	
			40		sample collected	

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) Density (G&S) <2 = Very Soft 0-4 = Very Loose 2-4 = Soft 4-10 = Loose 4-8 = Medium 10-30 = Medium 8-15 = Stiff 30-50 = Dense 15-30 = Very Stiff 50+ = Very Dense >30 = Hard	Symbols: Apparent Water Level Lab Sample Location SB-52 p. 1 of 1
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Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-53**

Page 1 of 1

Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/22/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/22/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 24'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/22/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
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0	0-4'	92.5%	107	<p>Topsoil: Topsoil, dark brown, sandy silty, little sand, trace gravel, trace organic matter, moist</p>	Backfilled sample collected		
	4-8'	100%	>2000	Clay and Silt: Silty clay, brown, trace gravel, trace sand, blocky to weakly laminated, medium stiffness, moist	sample collected		
5	8-12'	100%	>2000	Clay and Silt: Silty clay, brown, trace gravel, trace sand, weakly laminated, very stiff, softer after 15 feet, dry to moist	sample collected, Duplicate		
	12-16'	100%	766		sample collected		
10	16-20'	100%	163		sample collected		
	20-24'	100%	90.0	Clay and Silt: Silty clay with gravel, brown, trace sand, massive, soft, moist to extremely moist	sample collected		
15			3.0		sample collected		
					sample collected		

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) Density (G&S) <2 = Very Soft 0-4 = Very Loose 2-4 = Soft 4-10 = Loose 4-8 = Medium 10-30 = Medium 8-15 = Stiff 30-50 = Dense 15-30 = Very Stiff 50+ = Very Dense >30 = Hard	Symbols: Apparent Water Level Lab Sample Location SB-53 p. 1 of 1
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Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-54**

Page 1 of 1

Project: NYSDEC Highland Plaza	Client: NYSDEC	
Address: Tonawanda, NY	GES Job #: 0901703	
County: Erie County	GES Project Mgr: Eric Popken NYSDEC Site No: C915293A	
Logged By: Brandon Mikolin	Date Drilled: 6/20/2017	Split Spoon/Acetate Sleeve Dia: 1.75"
Drilling Company: Empire Geo Services, Inc.	Completion Date: 6/20/2017	Split Spoon/Acetate Sleeve Length:
Drill Operator: Art Koske	Drilling Method: Direct Push/Auger	Soil Classification System: Mod. Burnmeister
Drill Rig Type: Geoprobe 6620 DT	Sampling Method: MacroCore	Field Screening: PID, 10.2 eV Lamp (ppmv)
Borehole Diameter: 3"	Surface Elevation: Not Surveyed	Abandonment Method: Backfilled
Total Depth: 32'	Depth to Water: Not Encountered	Backfill Material: Soil Cuttings
Refusal Depth: Not Applicable	Well Diameter: Not Applicable	Abandonment Completion Date: 6/20/2017

Depth (feet)	Sample Interval	Recovery (inches)	Field Screen (ppm)	Geologic Description	Comments	Abandonment Detail
0	0-4'	100%	0.0	Fill: Fill, light brown, sandy silt with gravel, little sand, trace brick and concrete debris, dry to moist	Backfilled	
				Clay and Silt: Silty clay, reddish brown, trace sand and gravel, stiff, dry to moist, slight odor at 10 feet	sample collected	☒
5	4-8'	97.5%	40.6			
					sample collected	☒
10	8-12'	100%	62.0		sample collected	☒
					sample collected	
15	12-16'	100%	5.0	Clay and Silt: Silty clay, reddish brown, trace sand and gravel, stiff, dry to moist, slight odor at 15 feet	sample collected	☒
20	16-20'	100%	59.0	Clay and Silt: Silty clay, brown, trace gravel, trace sand, massive, soft, extremely moist		
25	20-24'	100%	0.5		sample collected	☒
30	24-28'	100%	0.9		sample collected	☒
	28-32'	100%	0.0		sample collected	☒

Proportions Used: Trace = Few = Little = Some = Adjective = And =	Notes: ft bg = feet below grade Field Screening measured in ppmv	Blow Count Penetration Resistance: Consistency (M&C) <2 = Very Soft 2-4 = Soft 4-8 = Medium 8-15 = Stiff 15-30 = Very Stiff >30 = Hard Density (G&S) 0-4 = Very Loose 4-10 = Loose 10-30 = Medium 30-50 = Dense 50+ = Very Dense	Symbols: Apparent Water Level Lab Sample Location
		SB-54	p. 1 of 1

**2023 NYSDEC PHASE II
REMEDIAL INVESTIGATION
HIGHLAND PLAZA OFF-SITE AREA
SITE NO. C915293A**



LiRo Engineers, Inc.

TEST BORING LOG

PROJECT: Phase II Remedial Investigation - Highland Plaza Off-Site Area					BORING NO.: SB-55		
CLIENT: New York State Department of Environmental Conservation					SHEET: 1 of 12		
BORING CONTRACTOR: NW Contracting					JOB NO.: 17-013-0289		
GROUNDWATER:					LOCATION: As per plan		
					GROUND ELEVATION: 613.56 ft		
					DATE STARTED: October 2, 2023		
					DATE FINISHED: October 2, 2023		
					DRILLER: Steve Gingrich		
					GEOLOGIST: Jon Williams		
					REVIEWED BY: Jason Kryszak		

DEPTH FEET	STRATA	SAMPLE				DESCRIPTION			USCS	REMARKS
		"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	CAS. COLOR	SAMPLER HARDNESS	TUBE MATERIAL DESCRIPTION		
1	[Strata Diagram]					Dark Gray	Loose	0 - 0.8' - Fill, asphalt and angular gravel	FILL	Dry, 0.1 ppm
					68%	Brown	Very Stiff	0.8 - 10.0' - SILT, trace clay.	ML	Dry, 0 ppm
										Dry, 0 ppm
5										Dry, 0 ppm
										No recovery
						100%	Red Brown	Very Stiff	ML	Dry to moist, 0 ppm
								Dry to moist, 0 ppm		
								Dry to moist, 0 ppm		
10								Dry to moist, 0 ppm		
15										
20										
25										
30										
35										

COMMENTS: Soil classified using the Unified Soil Classification System (USCS).					PROJECT NO.: 17-013-0289		
					BORING NO.: SB-55		



LiRo Engineers, Inc.

TEST BORING LOG

PROJECT: Phase II Remedial Investigation - Highland Plaza Off-Site Area					BORING NO.: SB-57				
CLIENT: New York State Department of Environmental Conservation					SHEET: 3 of 12				
BORING CONTRACTOR: NW Contracting					JOB NO.: 17-013-0289				
GROUNDWATER:					LOCATION: As per plan				
					GROUND ELEVATION: 613.52 ft				
DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	TUBE	DATE STARTED: October 2, 2023	
			NA	DIA.		Geoprobe		DATE FINISHED: October 2, 2023	
				WT.				DRILLER: Steve Gingrich	
				FALL				GEOLOGIST: Jon Williams	
					REVIEWED BY: Jason Kryszak				

DEPTH FEET	SAMPLE				DESCRIPTION				USCS	REMARKS
	STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION		
1						Dark Gray	Loose	0-0.7' - Asphalt and angular Gravel	FILL	Dry to moist, 0 ppm
5					56%	Brown to Red Brown	Very Stiff	0.7-10.0' - SILT, trace clay.	ML	Dry to moist, 0 ppm
10					100%	Red Brown	Very Stiff			Dry to moist, 0 ppm
15								10.0' - End of Boring.		Dry to moist, 0 ppm
20									Dry to moist, 0 ppm	
25										Dry to moist, 0 ppm
30										Dry to moist, 0 ppm
35										Dry to moist, 0 ppm

COMMENTS: Soil classified using the Unified Soil Classification System (USCS).	PROJECT NO.: 17-013-0289
	BORING NO.: SB-57



LiRo Engineers, Inc.

TEST BORING LOG

PROJECT: Phase II Remedial Investigation - Highland Plaza Off-Site Area					BORING NO.: SB-59				
CLIENT: New York State Department of Environmental Conservation					SHEET: 5 of 12				
BORING CONTRACTOR: NW Contracting					JOB NO.: 17-013-0289				
GROUNDWATER:					LOCATION: As per plan				
					CAS.				
					SAMPLER				
					TUBE				
					GROUND ELEVATION: 613.96 ft				
DATE					DATE STARTED: October 2, 2023				
TIME					DATE FINISHED: October 2, 2023				
LEVEL					DRILLER: Steve Gingrich				
TYPE					GEOLOGIST: Jon Williams				
TYPE					REVIEWED BY: Jason Kryszak				

DEPTH FEET	STRATA	SAMPLE			DESCRIPTION				USCS	REMARKS
		"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	CAS. COLOR	SAMPLER HARDNESS	TUBE MATERIAL DESCRIPTION		
1						Dark Gray	Loose	0-0.7' - Asphalt and gravel.	FILL	
5					76%	Brown	Very Stiff	0.7-10.0' - SILT, trace clay.	ML	
10					100%	Red Brown	Very Stiff			
15								10.0' - End of Boring.		
20										
25										
30										
35										

COMMENTS: Soil classified using the Unified Soil Classification System (USCS).					PROJECT NO.: 17-013-0289				
					BORING NO.: SB-59				



LiRo Engineers, Inc.

TEST BORING LOG

PROJECT: Phase II Remedial Investigation - Highland Plaza Off-Site Area					BORING NO.: SB-60				
CLIENT: New York State Department of Environmental Conservation					SHEET: 6 of 12				
BORING CONTRACTOR: NW Contracting					JOB NO.: 17-013-0289				
GROUNDWATER:					LOCATION: As per plan				
					GROUND ELEVATION: 614.96 ft				
DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	TUBE	DATE STARTED: October 2, 2023	
			NA	DIA.		Geoprobe		DATE FINISHED: October 2, 2023	
				WT.				DRILLER: Steve Gingrich	
				FALL				GEOLOGIST: Jon Williams	
					REVIEWED BY: Jason Kryszak				

DEPTH FEET	STRATA	SAMPLE			DESCRIPTION				USCS	REMARKS
		"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION		
1						Gray	Loose	0-1.4' - f.-m. Sand and angular Gravel.	FILL	Dry, 0 ppm
					70%	Brown	Very Stiff	1.4-10.0' - SILT, trace to little clay.	ML	Dry, 0 ppm
5						Red Brown	Very Stiff			Dry, 0 ppm
					100%					Dry, 0 ppm
10										no recovery
										Dry to moist, 10.2 ppm
										Dry to moist, 23.3 ppm
										Dry to moist, 8.7 ppm
										Dry to moist, 2.2 ppm
										Dry to moist, 6.4 ppm
								10.0' - End of Boring.		
15										
20										
25										
30										
35										

COMMENTS: Soil classified using the Unified Soil Classification System (USCS).	PROJECT NO.: 17-013-0289
	BORING NO.: SB-60



LiRo Engineers, Inc.

TEST BORING LOG

PROJECT: Phase II Remedial Investigation - Highland Plaza Off-Site Area					BORING NO.: SB-61				
CLIENT: New York State Department of Environmental Conservation					SHEET: 7 of 12				
BORING CONTRACTOR: NW Contracting					JOB NO.: 17-013-0289				
GROUNDWATER:					LOCATION: As per plan				
					GROUND ELEVATION: 615.00 ft				
DATE					DATE STARTED: October 2, 2023				
TIME					DATE FINISHED: October 2, 2023				
LEVEL					DRILLER: Steve Gingrich				
TYPE					GEOLOGIST: Jon Williams				
TYPE					REVIEWED BY: Jason Kryszak				
CAS.									
SAMPLER					Geoprobe				
TUBE									

DEPTH FEET	STRATA	SAMPLE			DESCRIPTION				USCS	REMARKS	
		"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION			
1	[Strata Diagram]					Black/Gray	Loose	0-1.1' - f.-m. Sand and angular Gravel	FILL	Dry, 0.5 ppm	
					76%	Brown to Red Brown	Very Stiff	1.1-10.0' - SILT, trace to little clay.	ML	Dry, 0 ppm	
5										no recovery	
										no recovery	
						100%	Brown to Red Brown	Very Stiff			Dry to moist, 0 ppm
											Dry to moist, 0 ppm
											Dry to moist, 0 ppm
10											Dry to moist, 0 ppm
											Dry to moist, 0.1 ppm
									10.0' - End of Boring.		
15											
20											
25											
30											
35											

COMMENTS: Soil classified using the Unified Soil Classification System (USCS).					PROJECT NO.: 17-013-0289				
					BORING NO.: SB-61				



LiRo Engineers, Inc.

TEST BORING LOG

PROJECT: Phase II Remedial Investigation - Highland Plaza Off-Site Area					BORING NO.: SB-62				
CLIENT: New York State Department of Environmental Conservation					SHEET: 8 of 12				
BORING CONTRACTOR: NW Contracting					JOB NO.: 17-013-0289				
GROUNDWATER:					LOCATION: As per plan				
					GROUND ELEVATION: 615.07 ft				
DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	TUBE	DATE STARTED: October 2, 2023	
			NA	DIA.		Geoprobe		DATE FINISHED: October 2, 2023	
				WT.				DRILLER: Steve Gingrich	
				FALL				GEOLOGIST: Jon Williams	
					REVIEWED BY: Jason Kryszak				

DEPTH FEET	STRATA	SAMPLE			DESCRIPTION				USCS	REMARKS	
		"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION			
1	[Strata Diagram]					Black/Gray	Loose	0-0.7' - f.-m. Sand and angular Gravel.	FILL	Dry, 0 ppm	
					62%	Brown to Red Brown	Very Stiff	0.7-10.0' - SILT, trace to little clay.	ML	Dry, 0 ppm	
5										no recovery	
										no recovery	
						100%	Brown to Red Brown	Very Stiff			Dry to moist, 0 ppm
											Dry to moist, 0 ppm
10											Dry to moist, 0 ppm
											Dry to moist, 0 ppm
											Dry to moist, 0 ppm
											Dry to moist, 0 ppm
15											
20											
25											
30											
35											
								10.0' - End of Boring.			

COMMENTS: Soil classified using the Unified Soil Classification System (USCS).					PROJECT NO.: 17-013-0289				
					BORING NO.: SB-62				



LiRo Engineers, Inc.

TEST BORING LOG

PROJECT: Phase II Remedial Investigation - Highland Plaza Off-Site Area					BORING NO.: SB-63						
CLIENT: New York State Department of Environmental Conservation					SHEET: 9 of 12						
BORING CONTRACTOR: NW Contracting					JOB NO.: 17-013-0289						
GROUNDWATER:					LOCATION: As per plan						
					GROUND ELEVATION: 615.02 ft						
DATE		TIME		LEVEL		TYPE		TYPE		DATE STARTED: October 2, 2023	
						NA		DIA.		DATE FINISHED: October 2, 2023	
										DRILLER: Steve Gingrich	
										GEOLOGIST: Jon Williams	
										REVIEWED BY: Jason Kryszak	

DEPTH FEET	STRATA	SAMPLE			BLOWS PER 6"	DESCRIPTION			USCS	REMARKS		
		"S" NO.	"N" NO.	REC% RQD%		CAS. COLOR	SAMPLER HARDNESS	TUBE MATERIAL DESCRIPTION				
1	[Strata Diagram]						Black/Gray	Loose		0-0.8' - f.-m. Sand and angular Gravel.	FILL	Dry, 0 ppm
					60%	Brown to Red Brown	Very Stiff		0.8-10.0' - SILT, trace to little clay.	ML	Dry, 0 ppm	
5											Dry, 0 ppm	
						100%	Brown to Red Brown	Very Stiff		Dry, 0 ppm		
10												Dry to moist, 0 ppm
												Dry to moist, 0 ppm
												Dry to moist, 0 ppm
15												Dry to moist, 0 ppm
												Dry to moist, 0 ppm
												Dry to moist, 0 ppm
20												Dry to moist, 0 ppm
												Dry to moist, 0 ppm
												Dry to moist, 0 ppm
25												Dry to moist, 0 ppm
												Dry to moist, 0 ppm
												Dry to moist, 0 ppm
30												Dry to moist, 0 ppm
												Dry to moist, 0 ppm
												Dry to moist, 0 ppm
35												Dry to moist, 0 ppm
										10.0' - End of Boring.		

COMMENTS: Soil classified using the Unified Soil Classification System (USCS).					PROJECT NO.: 17-013-0289				
					BORING NO.: SB-63				



LiRo Engineers, Inc.

TEST BORING LOG

PROJECT: Phase II Remedial Investigation - Highland Plaza Off-Site Area					BORING ID: MW-5R	
CLIENT: New York State Department of Environmental Conservation					SHEET: 11 of 12	
BORING CONTRACTOR: NW Contracting					JOB NO.: 17-013-0289	
GROUNDWATER: None upon completion					LOCATION: As per plan	
CAS. HSA			SAMPLER 2' Split Spoon		GROUND ELEVATION: 615.32 ft	
DATE	TIME	LEVEL	TYPE	TYPE	DATE STARTED:	October 3, 2023
			DIA.	I.D. 4 1/4"	DATE FINISHED:	October 3, 2023
			WT.	140 lb	DRILLER:	Steve Gingrich
			FALL	30"	GEOLOGIST:	Jason Kryszak
					REVIEWED BY: Jason Kryszak	

DEPTH FEET	STRATA	SAMPLE				DESCRIPTION			USCS	REMARKS	
		"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION			
			15	4	7	66%	brown	medium dense	FILL: SILT and SAND, dry, with trace to little gravel, trace clay (0-1.8)	FILL	0 ppm
				8	4						0 ppm
			12	3	5	54%	reddish brown	stiff	Silty CLAY, dry to moist, with trace sand and gravel (1.8-4.0)		0.2 ppm
				7	8						0.2 ppm
5			16	2	7	92%	reddish brown	very stiff	Silty CLAY, dry to moist, trace sand, blocky soil structure (4.0-8.0)		0 ppm
				9	10						0 ppm
			19	5	8	79%					0 ppm
				11	12						0 ppm
10			23	7	9	96%			Silty CLAY, moist, trace sand and gravel, weakly laminated, occasional desiccation cracks (8.0-16.0)	(CL)	0 ppm
				14	20						0 ppm
			25	6	11	100%	reddish brown	very stiff			0 ppm
				14	16						0 ppm
			21	6	9	71%					0 ppm
				12	14						0 ppm
15			14	5	6	88%					0 ppm
				8	10						0 ppm
			10	3	4	96%			Silty CLAY, moist, trace gravel, laminated (16.0-24.0)		0 ppm
				6	9						0 ppm
20			9	3	4	83%	reddish brown	stiff			0 ppm
				5	7						0 ppm
			10	4	4	75%					0 ppm
				6	8						0 ppm
			11	4	6	71%					0 ppm
				5	7						0 ppm
25						Boring Completion at 24.0 Feet					
30											
35											

COMMENTS: Monitoring well installed at completion (0-24.0'). See well construction log for additional details.					PROJECT NO.: 17-013-0289	
					BORING NO.: MW-5R	



LiRo Engineers, Inc.

TEST BORING LOG

PROJECT: Phase II Remedial Investigation - Highland Plaza Off-Site Area					BORING ID: MW-7	
CLIENT: New York State Department of Environmental Conservation					SHEET: 12 of 12	
BORING CONTRACTOR: NW Contracting					JOB NO.: 17-013-0289	
GROUNDWATER: None upon completion					LOCATION: As per plan	
					GROUND ELEVATION: 613.36 ft	
DATE	TIME	LEVEL	TYPE	TYPE	HSA	SAMPLER
				DIA.	I.D. 4 1/4"	2'
				WT.		140 lb
				FALL		30"
					DATE STARTED: October 4, 2023	
					DATE FINISHED: October 4, 2023	
					DRILLER: Steve Gingrich	
					GEOLOGIST: Jason Kryszak	
					REVIEWED BY: Jason Kryszak	

DEPTH FEET	STRATA	SAMPLE				DESCRIPTION			USCS	REMARKS												
		"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION														
5	[Pattern]			24	10	44%	black	hard	Asphalt pavement (0-0.5) FILL: SAND and GRAVEL, dry, with trace to little silt (0.5-1.5)	FILL	0 ppm											
				14	9		grey	medium dense			0.7 ppm											
				28	7	9	92%	redish brown	very stiff		Reworked: SILT and CLAY, dry, with trace sand and gravel (1.5-4.0)	0.2 ppm										
					14	12		0 ppm														
				14	5	6	67%	redish brown	stiff		Silty CLAY, dry to moist, trace sand and gravel, blocky to weakly laminated (4.0-6.0)	0 ppm										
					8	9		0.1 ppm														
				17	4	7	96%	redish brown	very stiff		Silty CLAY, dry to moist, trace gravel, weakly laminated with occasional desiccation cracks (6.0-14)	0 ppm										
					10	12						0.1 ppm										
				22	5	10	96%					redish brown	very stiff	Silty CLAY, dry to moist, trace gravel, weakly laminated with occasional desiccation cracks (6.0-14)	0.1 ppm							
					12	16									0 ppm							
				10	7	9	100%								redish brown	very stiff	Silty CLAY, dry to moist, trace gravel, weakly laminated with occasional desiccation cracks (6.0-14)	0 ppm				
					13	15												0 ppm				
20	3	10	71%	redish brown	very stiff	Silty CLAY, dry to moist, trace gravel, weakly laminated with occasional desiccation cracks (6.0-14)	0 ppm															
	10	13					0 ppm															
15	3	5	100%				redish brown			very stiff								Silty CLAY, dry to moist, trace gravel, weakly laminated with occasional desiccation cracks (6.0-14)	0 ppm			
	7	9																	0 ppm			
10	3	4	83%																redish brown	very stiff	Silty CLAY, dry to moist, trace gravel, weakly laminated with occasional desiccation cracks (6.0-14)	0 ppm
	6	6																				0 ppm
20	2	5	96%					redish brown	very stiff		Silty CLAY, dry to moist, trace gravel, weakly laminated with occasional desiccation cracks (6.0-14)											0 ppm
	4	5																				0 ppm
7	2	4	100%									redish brown	very stiff	Silty CLAY, dry to moist, trace gravel, weakly laminated with occasional desiccation cracks (6.0-14)								0 ppm
	3	4																				0 ppm
5	2	2	100%												redish brown	very stiff	Silty CLAY, dry to moist, trace gravel, weakly laminated with occasional desiccation cracks (6.0-14)					0 ppm
	3	4																				0 ppm
25						same as above																0 ppm
																						0 ppm
Boring Completion at 24.0 Feet																						
30																						
35																						

COMMENTS: Monitoring well installed at completion (0-24.0'). See well construction log for additional details.	PROJECT NO.: 17-013-0289
	BORING NO.: MW-7

**UNIFIED SOIL CLASSIFICATION
INCLUDING IDENTIFICATION AND DESCRIPTION**

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 3 inches and basing fractions on estimated weights)				Group Symbols	Typical Names	Graphic	Graphic Notes	
Coarse-grained Soils More Than Half Of Material Is Larger Than No. 200 Sieve Size The No. 200 US Standard Sieve Is About The Smallest Particle Visible To The Naked Eye	Gravels More Than Half Of Coarse Fraction Is Larger Than No. 4 Sieve	Clean Gravels (Little or No Fines)	Wide range in grain size and substantial amounts of intermediate particle sizes	GW	Well-graded (poorly sorted) gravel or gravel-sand mixtures, little or no fines		Graphic is Picture Inside an Autoshape (copy & paste to use)	
			Predominantly one size or a range of sizes with some intermediate sizes missing	GP	Poorly-graded (well sorted) gravel or gravel-sand mixtures, little or no fines		Graphic is Picture Inside an Autoshape (copy & paste to use)	
		Gravels With Fines (Appreciable Fines)	Non-plastic fines (for identification procedures see ML below)	GM	Silty Gravels, gravel-sand-silt mixtures		Graphic is Picture Inside an Autoshape (copy & paste to use)	
			Plastic fines (for identification procedures see CL below)	GC	Clayey Gravels, gravel-sand-clay mixtures		Graphic is Picture Inside an Autoshape (copy & paste to use)	
		Sands More Than Half Of Coarse Fraction Is Smaller Than No. 4 Sieve	Clean Sands (Little or No Fines)	Wide range in grain size and substantial amounts of intermediate particle sizes	SW	Well-graded (poorly sorted) sand or gravelly-sands, little or no fines		Select Rectangle Auto Shape Fill / Color / Fill Effect (Excel Pattern = 'Large Confetti')
				Predominantly one size or a range of sizes with some intermediate sizes missing	SP	Poorly-graded (well sorted) sand or gravelly-sands, little or no fines		Select Rectangle Auto Shape Fill / Color / Fill Effect (Excel Pattern = 'Small Confetti')
	Sands With Fines (Appreciable Fines)		Non-plastic fines (for identification procedures see ML below)	SM	Silty sands, sand silt mixtures		Select Rectangle Auto Shape Fill / Color / Fill Effect (Excel Pattern = 'Dashed Vertical')	
			Plastic fines (for identification procedures see CL below)	SC	Clayey sands, sand-clay mixtures		Select Rectangle Auto Shape Fill / Color / Fill Effect (Excel Pattern = 'Dashed Horizontal')	
	Fine-grained Soils More Than Half Of Material Is Smaller Than No. 200 Sieve Size The No. 200 US Standard Sieve Is About The Smallest Particle Visible To The Naked Eye	ID Procedures on Fraction Smaller Than No. 40 Sieve Size						
		Silts & Clays Liquid Limit Less Than 50	Dry Strength (Crushing Characteristics)	Dilatancy (Reaction to Shaking)	Toughness (Consistency Near Plastic Limit)			
None to Low			Rapid to Slow	None	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands with slight plasticity		Graphic is Picture Inside an Autoshape (copy & paste to use)
Medium to High			None to Very Slow	Medium	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		Graphic is Picture Inside an Autoshape (copy & paste to use)
Silts & Clays Liquid Limit Less Than 50		Low to Medium	Slow	Low	OL	Organic silts and organic silty-clays of low plasticity		Select Rectangle Auto Shape Fill / Color / Fill Effect (Excel Pattern = 'Outlined Diamond')
		Low to Medium	Slow to None	Slight to Medium	MH	Inorganic silts and inorganic silty-clays of low plasticity		Select Rectangle Auto Shape Fill / Color / Fill Effect (Excel Pattern = 'Light Vertical')
		High to Very High	None	High	CH	Inorganic clays of high plasticity, fat clays		Select Rectangle Auto Shape Fill / Color / Fill Effect (Excel Pattern = 'Wide Upward Diagonal')
		Medium to High	None to Very Slow	Low to Medium	OH	Organic clays of medium to high plasticity, organic silts		Select Rectangle Auto Shape Fill / Color / Fill Effect (Excel Pattern = 'Wave')
Highly Organic Soils		Readily identified by color, odor, spongy feel and frequently by fibrous texture		PT	Peat and other highly organic soils		Select Rectangle Auto Shape Fill / Color / Fill Effect (Excel Pattern = 'Shingle')	
Fill		Readily identified by inclusion of Anthropogenic Materials and Deposition		FILL	Various		Select Rectangle Auto Shape Fill / Color / Fill Effect (Excel Pattern = 'Large Grid')	

MISCELLANEOUS BORINGS
175 WILLOWBREEZE ROAD

DATE:
 START 5/18/2017
 FINISH 5/18/2017
 SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. B-1
 SURF. ELEV 96.9'
 G.W. DEPTH See Notes

PROJECT: PROPOSED FOUNDATION REPAIRS LOCATION: 175 WILLOW BREEZE ROAD
 PROJ. NO.: BE-17-079 TONAWANDA, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER				SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N		
5	1	2	2			Brown Silty CLAY, tr.gravel, tr.sand, tr.organics, tr.brick (moist, FILL)	WOH = Weight of Hammer and Rods
		3	3		5		
5	2	7	8			Brown Silty CLAY, little f-c Gravel, little f-c Sand (moist, v.stiff, CL / Possible Fill)	
		11	14		19		
5	3	11	11			Brown Silty CLAY, tr.gravel, tr.sand (moist, v.stiff, CL)	
		14	19		25		
10	4	20	22			Contains little f-c Gravel (hard)	
		29	24		51		
10	5	7	11			Contains tr.gravel (v.stiff)	
		17	18		28		
15	6	8	9			Becomes Dark Brown	
		13	13		22		
15	7	15	12			(medium)	
		17	21		29		
20	8	1	2			(stiff)	
		3	5		5		
20	9	5	5			(medium)	
		6	6		11		
20	10	WOH	2			(stiff)	
		3	9		5		
25	11	4	5			Contains little f-c Gravel	
		5	7		10		
30	12	1	3			Contains tr.gravel	
		7	7		10		
35	13	4	5				
		5	5		10		
40	14	3	5				
		4	6		9		

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist
 DRILLER: A. KOSKE DRILL RIG TYPE: CME-75
 METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE:
 START 5/18/2017
 FINISH 5/18/2017
 SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. B-1
 SURF. ELEV 96.9'
 G.W. DEPTH See Notes

PROJECT: PROPOSED FOUNDATION REPAIRS LOCATION: 175 WILLOW BREEZE
 PROJ. NO.: BE-17-079 TONAWANDA, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER				SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N		
45	15	2	5			Contains little f-c Gravel	
		4	6		9		
50	16	WOH	WOH			Gray f-c SAND, some f-c Gravel, little Silty Clay (moist-wet, v.loose, SC)	REF = Sample Spoon Refusal
		1	4		1		
55	17	50.0.2			REF	Contains Gray Shale rock fragments	No Free Standing Water encountered at Boring Completion
60						Boring Complete with Split Spoon Refusal at 48.2'	
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist
 DRILLER: A. KOSKE DRILL RIG TYPE: CME-75
 METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS