February 22, 2024

Mr. Matthew Graubart, PE
Senior Project Manager, Telecommunications
Colliers Engineering & Design
2000 Midlantic Drive, Suite 100
Mount Laurel, NJ 08054

RE: Stormwater Investigation Letter

Project: NEP Magick Cauldron Telecommunications Site

Address: 119 Airport Road, East Stroudsburg, Smithfield Twp., Monroe County, PA 18301

Project #: 20230701

Dear Mr. Graubart:

Acer Associates, LLC (ACER) was retained by Colliers Engineering & Design (Colliers) to perform a stormwater investigation at the above referenced address. This letter serves to summarize the results of our investigation.

SITE & PROJECT DESCRIPTION

The project consists of a proposed telecommunications compound with drainage trenches to the west. The proposed compound is located approximately 200 feet to the west of Airport Road along an existing access road in East Stroudsburg, Smithfield Twp., Monroe County, Pennsylvania. At the time of the investigation, the proposed construction area was situated within the existing access road area, and a wooded area, and adjacent to a factory building to the north. The topography across the site sloped steeply towards the north. Based on information provided by Colliers, three (3) additional stormwater infiltration trenches (referenced as Trench 3, 4, & 5) are being proposed as part of the planned construction for the new telecommunications facility at the site.

FIELD INVESTIGATION

At the request of Colliers, ACER mobilized to the site on February 2, 2024, to perform a subsurface stormwater investigation at the property. A total of six (6) test pits, referenced as TP-1 through TP-6, were conducted at the site using trackhoe excavating equipment. The test pits were performed within the anticipated areas of the proposed stormwater infiltration trenches, at locations indicated on a site drawing provided to ACER by Colliers. Specially, TP-1 and TP-2 were performed within the area of Trench 5, TP-3 and TP-4 were performed within the area of Trench 4, and TP-5 and TP-6 were performed within the area of Trench 3. The test pits were

excavated to depths ranging from approximately 2.5 to 5 feet below ground surface (bgs) based on subsurface conditions.

In order to evaluate the permeability of the soils below the project area, ACER conducted a series of double-ring infiltration tests at the site, adjacent to the test pit locations. Six (6) double-ring infiltrometer tests, referenced as IT-1 through IT-6, were conducted in test trenches adjacent to test pit TP-1 through TP-6, respectively, at depths ranging from approximately 0.5 to 3 feet bgs. Specifically, IT-1 and IT-2 were performed within the area of Trench 5, IT-3 and IT-4 were performed within the area of Trench 4, and IT-5 and IT-6 were performed within the area of Trench 3. All testing was conducted in accordance with the *Pennsylvania Stormwater Best Management Practices Manual – Appendix C*.

The locations of the test pits and double-ring infiltrometer tests are shown on the *Test Location Plan* Included in Attachment A.

All soils encountered were described using standard USDA classification for texture, structure, and consistency. The subsurface was evaluated for "Limiting Zones", such as the groundwater table, indicators of the seasonal high groundwater table, hydraulically restrictive soils, bedrock, or any other impermeable subsurface obstructions. Soil descriptions, depths to compositional changes, and groundwater information encountered in the test pits were recorded in the field and are presented in the *Test Pit Logs* included in Attachment B. These subsurface conditions have been summarized in the following sections of this letter.

Soils

Test Pit TP-1 was excavated to a depth of approximately 5 feet bgs, at which point refusal on rock was encountered. The surface was covered by approximately 3 inches of very dark grayish brown topsoil with fine roots and leaves, which was underlain by dark brown gravelly silt loam to a depth of approximately 1.3 feet bgs, which was underlain by yellowish brown gravelly loam to a depth of approximately 3.5 feet bgs, which was underlain by yellowish brown channery silt loam that continued to the bottom of the test pit excavation, approximately 5 feet bgs. Double-ring infiltrometer test IT-1, conducted at a depth of approximately 3 feet bgs and adjacent to test pit TP-1, produced an infiltration rate of 12 inches per hour (K4).

Test Pit TP-2 was excavated to a depth of approximately 5 feet bgs, at which point refusal on rock was encountered. The surface was covered by approximately 2 inches of dark yellowish brown topsoil with roots, which was underlain by dark yellowish brown gravelly silt loam to a depth of approximately 0.8 feet bgs, which was underlain by yellowish brown gravelly silt loam to a depth of 2.3 feet bgs, which was underlain by brown extremely channery loam that continued to the bottom of the test pit excavation, approximately 5 feet bgs. Double-ring infiltrometer test IT-2, conducted at a depth of approximately 3 feet bgs and adjacent to test pit TP-2, produced an infiltration rate of 10.5 inches per hour (K4).

Test Pit TP-3 was excavated to a depth of approximately 3 feet bgs, at which point refusal on rock was encountered. The surface was covered by approximately 1 inch of brown topsoil with

roots, which was underlain by brown very gravelly silty clay loam to a depth of approximately 0.7 feet bgs, which was underlain by light yellowish brown very channery sandy loam to a depth of approximately 1.3 feet bgs, which was underlain by brown extremely channery silt loam that continued to the bottom of the test pit excavation, approximately 3 feet bgs. Double-ring infiltrometer test IT-3, conducted at a depth of approximately 1 feet bgs and adjacent to test pit TP-3, produced an infiltration rate of 19.5 inches per hour (K4).

Test Pit TP-4 was excavated to a depth of approximately 3 feet bgs, at which point refusal on rock was encountered. The surface was covered by approximately 2 inches of very dark gray topsoil with fine roots and leaves, which was underlain by very dark gray extremely gravelly silt loam to a depth of approximately 0.6 feet bgs, which was underlain by brown very channery loam to a depth of approximately 1.5 feet bgs, which was underlain by brownish yellow very channery silt loam that continued to the bottom of the test pit excavation, approximately 3 feet bgs. Double-ring infiltrometer test IT-4, conducted at a depth of approximately 1 feet bgs and adjacent to test pit TP-4, produced an infiltration rate of 10.5 inches per hour (K4).

Test Pit TP-5 was excavated to a depth of approximately 2.5 feet bgs, at which point refusal on rock was encountered. The surface was covered by approximately 1 inch of very dark grayish brown topsoil with fine roots and leaves, which was underlain by yellowish brown gravelly silt loam to a depth of approximately 0.7 feet bgs, which was underlain by yellowish brown gravelly silt loam to a depth of 1.7 feet bgs, which was underlain by yellowish brown very channery silt loam that continued to the bottom of the test pit excavation, approximately 2.5 feet bgs. Double-ring infiltrometer test IT-5, conducted at a depth of approximately 0.5 feet bgs and adjacent to test pit TP-5, produced an infiltration rate of 0.75 inches per hour (K2).

Test Pit TP-6 was excavated to a depth of approximately 2.5 feet bgs, at which point refusal on rock was encountered. The surface was covered by approximately 2 inches of very dark grayish brown topsoil with fine roots and leaves, which was underlain by dark yellowish brown gravelly silty clay loam to a depth of approximately 0.7 feet bgs, which was underlain by yellowish brown channery silty clay loam with chert and limestone fragments that continued to the bottom of the test pit excavation, approximately 2.5 feet bgs. Double-ring infiltrometer test IT-6, conducted at a depth of approximately 0.5 feet bgs and adjacent to test pit TP-6, produced an infiltration rate of 0 inches per hour (K0).

Bedrock

The competent bedrock surface was encountered within all of the test pit excavations performed at the site, at depths ranging from approximately 2.5 to 5 feet bgs.

Groundwater

Groundwater was not encountered within any of the test pit excavations at the site. It should be noted that these observations were made at the times of the test pit excavations and that groundwater table elevations may vary with daily, seasonal, and climatic variations.

Limiting Zone Considerations

As previously stated, ACER evaluated the subsurface for Limiting Zone features, such as the groundwater table, indicators of estimated seasonal high water, hydraulically restrictive soils, rock, or any other impermeable subsurface obstructions.

Neither groundwater nor estimated seasonal high water indicators were observed within any of the test pit excavations at the site. However, the following subsurface conditions were encountered in the test pits that should be considered potential limiting zones:

Test Pit No.	Depth	Limiting Zone
Trench 5		
TP-1	5’	Bedrock
TP-2	5’	Bedrock
Trench 4		
TP-3	3’	Bedrock
TP-4	3’	Bedrock
Trench 3		
TP-5	2.5’	Bedrock
TP-6	0.1’ – 0.7’	Gravelly Silty Clay Loam
	0.7’ – 2.5’	Channery Silty Clay Loam
	2.5’	Bedrock

Infiltration Testing

As previously discussed, ACER performed in-situ double-ring infiltration testing at six (6) locations across the site, at locations identified on a site drawing provided by Colliers. The test locations are indicated on the *Test Location Plan* presented as Attachment A to this letter and described in the table on the following page. The results of the infiltration tests, which were conducted in accordance with the *Pennsylvania Stormwater Best Management Practices Manual – Appendix C*, are presented in the table on the following page.

Results of Infiltration Testing

Trench / Test Location	Test No.	Test Pit No.	Elevation (Topo Estimate)	Depth	Soil Description	Infiltration Rate
Trench 5	IT-1	TP-1	524 ft.	3 ft. bgs	Yellowish brown (10YR 5/4) gravelly loam; moderate, medium, subangular blocky; friable	12 in./hr. (K4)
Trench 5	IT-2	TP-2	524 ft.	3 ft. bgs	Brown (10YR 5/3) extremely channery loam; moderate, medium to coarse, subangular blocky; friable	10.5 in./hr. (K4)
Trench 4	IT-3	TP-3	521.5 ft.	1 ft. bgs	Light yellowish brown (10YR 6/4) very channery sandy loam; strong, medium, subangular blocky; friable	19.5 in./hr. (K4)
Trench 4	IT-4	TP-4	521.5 ft.	1 ft. bgs	Brown (10YR 5/3) very channery loam; moderate, fine to medium, subangular blocky; friable	10.5 in./hr. (K4)
Trench 3	IT-5	TP-5	525 ft.	0.5 ft. bgs	Brown (10YR 5/3) gravelly silt loam; moderate, medium, subangular blocky; friable	0.75 in./hr. (K2)
Trench 3	IT-6	TP-6	525 ft.	0.5 ft. bgs	Dark yellowish brown (10YR 4/4) gravelly silty clay loam; moderate, fine, subangular blocky; friable	0 in./hr. (K0)

LIMITATIONS

This letter was prepared for Colliers Engineering & Consulting of Mount Laurel, New Jersey.

The conclusions and recommendations contained in this letter are based upon the subsurface data collected and on details stated herein. Should these conditions be encountered during construction that differ from those specifically stated herein, our office should be notified immediately so that our recommendations can be reviewed and revised, if necessary.

The test pit logs are ACER's interpretation of the subsurface conditions found by reviewing the soil and rock profile within the excavations. Detailed soil descriptions and interfaces between each stratum are interpretive, and actual changes are gradational. The test pit logs are descriptive only of the subsurface conditions in the specific locations of the test pits at the exact time that each was excavated. Subsurface conditions at other locations in the project area may differ from those in the locations of the test pits.

ACER does not assume any responsibility in using this letter to generate design other than for the specific project described herein.

Should you have any questions or require additional information, please call our office at (856) 809-1202.

Prepared By:

Callie Stockton

Callie Stockton
Field Geologist

and

Stephen Kochenberger

Stephen Kochenberger
Project Manager

Reviewed By:

J. Scott Horn

J. Scott Horn, PG, CHMM
President

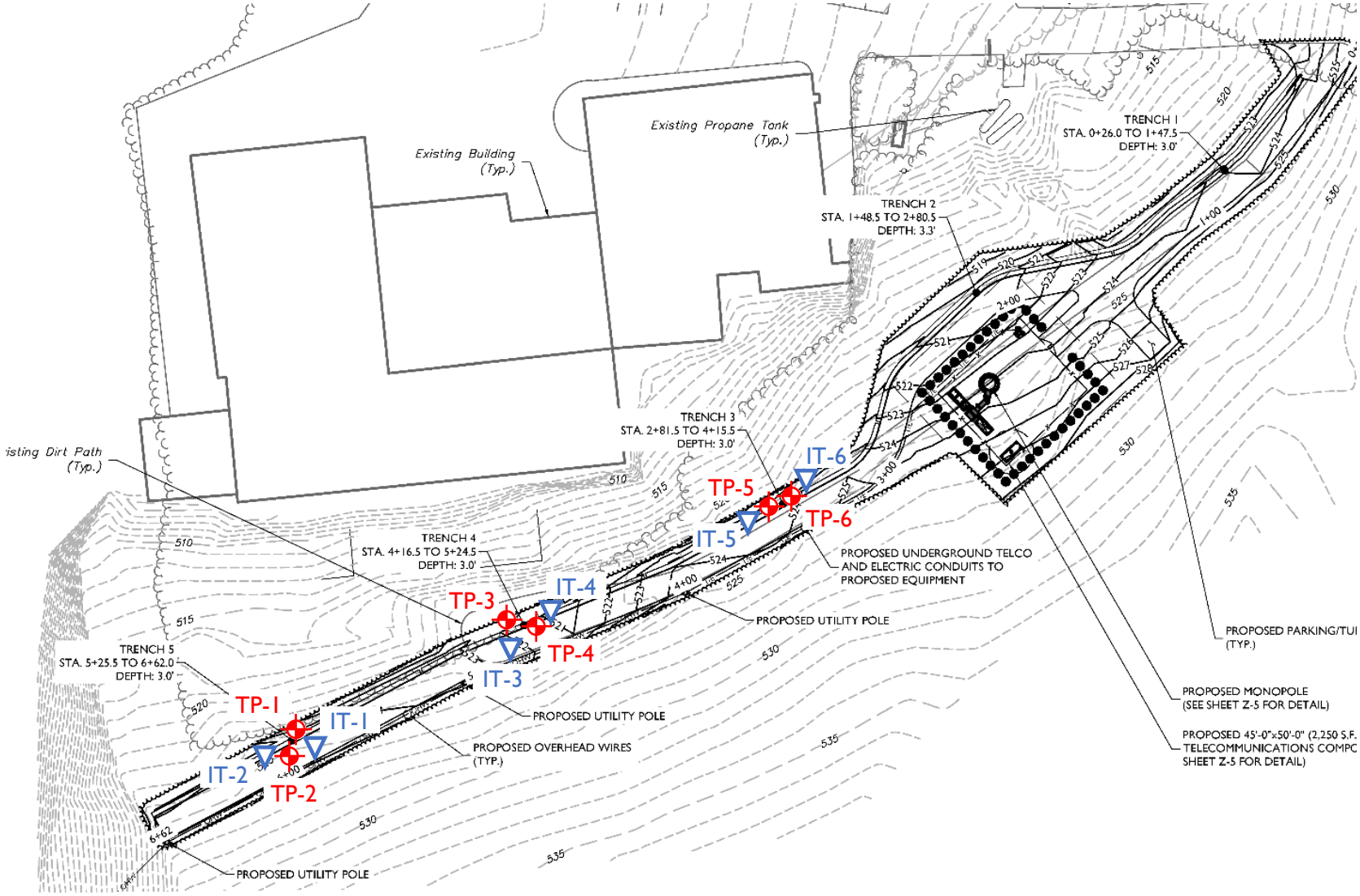
Attachments:

A. Test Location Plan
B. Test Pit Logs

ATTACHMENT A

TEST LOCATION PLAN

1012 Industrial Drive, West Berlin, New Jersey 08091
Tel. (856) 809-1202 Fax. (856) 809-1203



TP-# Test pit number and location

IT-# Infiltration test number and location

TEST LOCATION PLAN

"NEP Magick Cauldron"
119 Airport Road
East Stroudsburg, Monroe County, PA 18301

ACER ASSOCIATES, LLC

1012 INDUSTRIAL DRIVE
WEST BERLIN, NEW JERSEY 08091
TEL (856) 809-1202

ATTACHMENT B

TEST PIT LOGS

ACER ASSOCIATES, LLC
Environmental & Geotechnical Services

Project:		Project Number:	Date	Started:
NEP Magick Cauldron		20230701		2/2/2024
Location:		**Client:**		**Completed:**
119 Airport Rd, East Stroudsburg, PA 18301		Colliers Engineering & Design		2/2/2024
Excavating Contractor		**Excavator Type:**		
Neighbors Property Management		Bobcat E60 Trackhoe		
Test Pit No.	**Logged By:**	**Surface Elev (topo est)**		**Groundwater Depth:**
TP-1	SK	524' ±		N/E

Depth (feet)	Depth (feet)	Infiltration Test Data	Graphic Log	Description	Remarks
0 5 10 15 20 25	0 - 0.3 0.3 - 1.3 1.2 - 3.5 3.5 - 5	**IT-1 @ 3' = 12 in/hr (K4)**		0.3' - Very dark grayish brown (10YR 3/2) topsoil with fine roots and leaves Dark brown (10YR 3/3) gravelly silt loam with fine to medium roots; moderate, medium, subangular blocky; friable; clear, smooth boundary Yellowish brown (10YR 5/4) gravelly loam; moderate, medium, subangular blocky; friable; diffuse, wavy boundary Yellowish brown (10YR 5/8) channery silt loam with chert rock fragments; moderate, medium, subangular blocky; friable END OF TEST PIT AT 5 FEET REFUSAL ON BEDROCK (Chert & Limestone)	*Indicators of Seasonal High Groundwater Table not Observed*

▼ Stabilized Groundwater ▽ Groundwater At Time of Test Pit

ACER ASSOCIATES, LLC

Environmental & Geotechnical Services

Project:		Project Number:	Date	Started:
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119 Airport Rd, East Stroudsburg, PA 18301		Colliers Engineering & Design		2/2/2024
Excavating Contractor		**Excavator Type:**		
Neighbors Property Management		Bobcat E60 Trackhoe		
Test Pit No.	**Logged By:**	**Surface Elev (topo est)**		**Groundwater Depth:**
TP-2	SK	524' ±		N/E

Depth (feet)	Depth (feet)	Infiltration Test Data	Graphic Log	Description	Remarks
0 5 10 15 20 25	0 - 0.2 0.2 - 0.8 0.8 - 2.3 2.3 - 5	**IT-2 @ 3' = 10.5 in/hr (K4)**		0.2 - Dark yellowish brown (10YR 3/4) topsoil Dark yellowish brown (10YR 3/4) gravelly silt loam; moderate, fine to medium, subangular blocky; friable; clear, smooth boundary Yellowish brown (10YR 5/4) gravelly silt loam; moderate, fine, subangular blocky; friable; gradual, wavy boundary Brown (10YR 5/3) extremely channery loam; moderate, medium to coarse, subangular blocky; friable END OF TEST PIT AT 5 FEET REFUSAL ON BEDROCK (Chert & Limestone)	*Indicators of Seasonal High Groundwater Table not Observed*

▼ Stabilized Groundwater ▽ Groundwater At Time of Test Pit

ACER ASSOCIATES, LLC
Environmental & Geotechnical Services

Project:		Project Number:	Date	Started:
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119 Airport Rd, East Stroudsburg, PA 18301		Colliers Engineering & Design		2/2/2024
Excavating Contractor		**Excavator Type:**		
Neighbors Property Management		Bobcat E60 Trackhoe		
Test Pit No.	**Logged By:**	**Surface Elev (topo est)**		**Groundwater Depth:**
TP-3	SK	521.5' ±		N/E

Depth (feet)	Depth (feet)	Infiltration Test Data	Graphic Log	Description	Remarks
	0 - 0.1 0.1 - 0.7 0.7 - 1.3 1.3 - 3	**IT-3 @ 1' = 19.5 in/hr (K4)**		0.1 - Very dark grayish brown (10YR 3/2) topsoil with fine roots and leaves Brown (7.5YR 5/3) very gravelly silty clay loam; strong, medium, subangular blocky; firm; clear, smooth boundary Light yellowish brown (10YR 6/4) very channery sandy loam; strong, medium, subangular blocky; friable; gradual, smooth boundary Brown (10YR 5/3) extremely channery silt loam with chert and limestone fragments; moderate, medium, subangular blocky; firm END OF TEST PIT AT 3 FEET REFUSAL ON BEDROCK (Chert & Limestone)	*Indicators of Seasonal High Groundwater Table not Observed*
5					
10					
15					
20					
25					

▼ Stabilized Groundwater ▽ Groundwater At Time of Test Pit

ACER ASSOCIATES, LLC

Environmental & Geotechnical Services

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119 Airport Rd, East Stroudsburg, PA 18301		Colliers Engineering & Design		2/2/2024
Excavating Contractor		**Excavator Type:**		
Neighbors Property Management		Bobcat E60 Trackhoe		
Test Pit No.	**Logged By:**	**Surface Elev (topo est)**		**Groundwater Depth:**
TP-4	SK	521.5' ±		N/E

Depth (feet)	Depth (feet)	Infiltration Test Data	Graphic Log	Description	Remarks
	0 - 0.2 0.2 - 0.6 0.6 - 1.5 1.5 - 3	**IT-4 @ 1' = 10.5 in/hr (K4)**		0.2 - Very dark gray (10YR 3/1) topsoil with fine roots and leaves Very dark gray (7.5YR 3/1) extremely gravelly silt loam; structureless, fine to very coarse, subangular blocky; loose; gradual, smooth boundary Brown (10YR 5/3) very channery loam; moderate, fine to medium, subangular blocky; friable; gradual, smooth boundary Brownish yellow (10YR 6/6) very channery silt loam; moderate, medium, subangular blocky; friable END OF TEST PIT AT 3 FEET REFUSAL ON BEDROCK (Chert and Limestone)	*Indicators of Seasonal High Groundwater Table not Observed*
5					
10					
15					
20					
25					

▼ Stabilized Groundwater ▽ Groundwater At Time of Test Pit

ACER ASSOCIATES, LLC

Environmental & Geotechnical Services

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119 Airport Rd, East Stroudsburg, PA 18301		Colliers Engineering & Design		2/2/2024
Excavating Contractor		**Excavator Type:**		
Neighbors Property Management		Bobcat E60 Trackhoe		
Test Pit No.	**Logged By:**	**Surface Elev (topo est)**		**Groundwater Depth:**
TP-5	SK	525' ±		N/E

Depth (feet)	Depth (feet)	Infiltration Test Data	Graphic Log	Description	Remarks
	0 - 0.1 0.1 - 0.7 0.7 - 1.7 1.7 - 2.5	**IT-5 @ 0.5' = 0.75 in/hr (K2)**		0.1' - Very dark grayish brown (10YR 3/2) topsoil with fine roots and leaves Brown (10YR 5/3) gravelly silt loam; moderate, medium, subangular blocky; friable; clear, smooth boundary Yellowish brown (10YR 5/4) gravelly silt loam; moderate, fine to medium, subangular blocky; friable; gradual, smooth boundary Yellowish brown (10YR 5/4) very channery silt loam with chert fragments; moderate, fine to medium; subangular blocky; friable END OF TEST PIT AT 2.5 FEET REFUSAL ON BEDROCK (Chert and Limestone)	*Indicators of Seasonal High Groundwater Table not Observed*
5					
10					
15					
20					
25					

▼ Stabilized Groundwater ▽ Groundwater At Time of Test Pit

ACER ASSOCIATES, LLC

Environmental & Geotechnical Services

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Excavating Contractor		**Excavator Type:**		
Neighbors Property Management		Bobcat E60 Trackhoe		
Test Pit No.	**Logged By:**	**Surface Elev (topo est)**		**Groundwater Depth:**
TP-6	SK	525' ±		N/E

Depth (feet)	Depth (feet)	Infiltration Test Data	Graphic Log	Description	Remarks
	0 - 0.2 0.2 - 0.7 0.7 - 2.5	**IT-6 @ 0.5' = 0 in/hr (K0)**		0.2 - Very dark grayish brown (10YR 3/2) topsoil with fine roots and leaves Dark yellowish brown (10YR 4/4) gravelly silty clay loam; moderate, fine, subangular blocky; friable; clear, smooth boundary Yellowish brown (10YR 5/6) channery silty clay loam with chert and limestone fragments; strong, fine, subangular blocky; friable END OF TEST PIT AT 2.5 FEET REFUSAL ON BEDROCK (Chert and Limestone)	*Indicators of Seasonal High Groundwater Table not Observed*
5					
10					
15					
20					
25					

▼ Stabilized Groundwater ▽ Groundwater At Time of Test Pit